Banc Ceannais na hÉireann
Central Bank of Ireland

Eurosystem

Financial Stability Review

2022:II

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Notes

1. Unless otherwise stated, this document refers to data available on 4 November 2022.

2. Unless otherwise stated, the aggregate banking data refer to all credit institutions operating in the Republic of Ireland.

- Irish retail banks refer to the five banks offering retail-banking services within the Irish State: Allied Irish Banks plc, The Governor and Company of the Bank of Ireland, Permanent TSB, KBC Bank Ireland plc and Ulster Bank Ireland Designated Activity Company, unless stated otherwise.

3. The following symbols are used:

e	estimate	H	half-year
f	forecast	rhs	right-hand scale
Q	quarter	lhs	left-hand scale

Enquiries relating to this Review should be addressed to:
Macro-financial Division,
Central Bank of Ireland
PO Box 559,
Dublin 1,
Ireland
Email: mfdadmin@centralbank.ie

www.centralbank.ie

Preface

The Central Bank is responsible for maintaining monetary and financial stability and ensuring the financial system works in the interests of the community.

The *Financial Stability Review* evaluates the main risks facing the financial system and assesses the resilience of the financial system to those risks. A resilient financial system is one that is able to provide services to Irish households and businesses, both in good times and in bad. The Central Bank's policy actions seek to ensure that the financial system is able to absorb, rather than amplify, adverse shocks.

The structure of this publication mirrors the overall approach the Central Bank takes in reaching a judgement around its macroprudential policy stance.

- The first section outlines the Central Bank's assessment of the main risks facing the Irish financial system over the short to medium term.
- The second section outlines the Central Bank's assessment of the resilience of the domestic financial system to adverse shocks and its ability to absorb, rather than amplify, shocks of this nature.
- The third section explains the Central Bank's policy actions to safeguard financial stability and ensure that the resilience of the financial system is proportionate to the risks it faces.

Ireland is host to a large and diverse financial sector. A growing part of that financial sector serves international clients, with limited direct implications for the domestic economy. This publication focuses on the segments of the financial sector that provide services to Irish households and businesses.

The *Review* reflects, and is informed by, the deliberations of the Central Bank's Financial Stability Committee and Macroprudential Measures Committee. The aim of the *Review* is not to provide an economic forecast, but instead focuses on adverse outcomes that may materialise, and their potential implications for domestic financial stability in the event of materialisation. The Central Bank is committed to transparency over its judgements around financial stability and uses this publication as a key vehicle to explain the policy actions taken, within its mandate, to safeguard financial stability.

Réamhrá

Tá an Banc Ceannais freagrach as cobhsaíocht airgeadaíochta agus airgeadais a choimeád ar bun agus as a chinntiú go bhfeidhmeoidh an córas airgeadais ar mhaithe le leas an phobail.

San *Athbhreithniú ar Chobhsaíocht Airgeadais*, déanaimid measúnú ar na príomhrioscaí atá ann don chóras airgeadais agus ar athléimneacht an chórais airgeadais i leith na rioscaí sin. Is ionann córas airgeadais athléimneach agus córas atá in ann seirbhísí a chur ar fáil do theaghlaigh agus do ghnóthaí Éireannacha le linn tréimhsí maithe agus drochthréimhsí araon. Le gníomhaíochtaí beartais an Bhainc Ceannais, féachtar lena chinntiú go bhfuil an córas airgeadais in ann turraingí dochracha a iompar seachas a mhéadú.

Tá struchtúr an fhoilseacháin seo ag teacht leis an gcur chuige foriomlán atá ag an mBanc Ceannais chun teacht ar bhreithniú maidir lena sheasamh beartais macrastuamachta.

- Sa chéad mhír, déantar cur síos ar mheasúnú an Bhainc Ceannais ar na príomhrioscaí atá roimh chóras airgeadais na hÉireann sa ghearrthéarma agus sa mheántéarma.
- Sa dara mír, leagtar amach measúnú an Bhainc Ceannais ar athléimneacht an chórais airgeadais intíre i leith turraingí dochracha agus ar a chumas rioscaí den sórt sin a iompar seachas a mhéadú.
- Sa tríú mír, déantar cur síos ar ghníomhaíochtaí beartais an Bhainc Ceannais chun cobhsaíocht airgeadais a chosaint agus chun a chinntiú go bhfuil athléimneacht an chórais airgeadais comhréireach leis na rioscaí atá roimhe.

Tá earnáil mhór ilchineálach airgeadais in Éirinn. Tá fás ag teacht ar an gcuid sin de sheirbhísí earnála airgeadais a fhreastalaíonn ar chliaint idirnáisiúnta, agus tá impleachtaí díreacha teoranta ann don gheilleagar intíre. Dírítear san fhoilseachán seo ar na codanna sin den earnáil airgeadais a chuireann seirbhísí ar fáil do theaghlaigh agus do ghnóthaí Éireannacha.

San *Athbhreithniú*, léirítear breithnithe ón gCoiste um Chobhsaíocht Airgeadais agus ón gCoiste um Bearta Macrastuamachta de chuid an Bhainc Ceannais agus tá na breithnithe sin mar bhonn eolais don *Athbhreithniú*. Ní hé is aidhm don *Athbhreithniú* réamhaisnéis eacnamaíoch a chur ar fáil, ina ionad sin díríonn sé ar thorthaí díobhálacha a d'fhéadfadh teacht chun cinn agus ar na himpleachtaí a d'fhéadfadh a bheith acu don chobhsaíocht airgeadais intíre. Tá an Banc Ceannais tiomanta do thrédhearcacht a chuid breithnithe maidir le cobhsaíocht airgeadais agus tá sé beartaithe aige an foilseachán seo a úsáid mar bhealach tábhachtach chun míniú a thabhairt ar na gníomhaíochtaí beartais a ghlactar laistigh dá shainordú chun cobhsaíocht airgeadais a chosaint.

Overview

The world economy is adjusting to a sharply changed macro-financial environment, driven by inflation which has become more broad-based and persistent in the last six months. Monetary policy is tightening more quickly, and in a more pronounced fashion, than was previously expected, leading to heightened risks as global financial markets adjust. Pockets of vulnerability built up over the past decade of low interest rates have already been exposed. Many central banks are at the beginning of a process of balance sheet reduction, reversing a long phase of asset purchases under quantitative easing. In this rapidly evolving environment, there is heightened uncertainty around the potential source of further shocks in global financial markets, with the gilt market turbulence in the UK following September 23rd a prominent example of the inherent unpredictability of these events. In the real economy, confidence has fallen and weaker global growth is expected, while the likelihood of adverse outcomes has increased. Domestically, the ongoing energy shock and wider price and real income pressures have led to a downgrade in growth forecasts and have increased downside risks.

The central expectation for the economy and labour market in Ireland remains nonetheless for positive growth and a strong labour market into 2023, albeit subject to the above set of global risks, which have risen since the last *Review*. Households, businesses and banks are also benefitting from the decade of prudent lending standards and the build-up in resilience that preceded this shock, providing capacity to absorb adverse outcomes. Given the central expectation for growth, the fact that under a baseline scenario higher interest rates are expected to be positive for banks' profitability, and the importance of building resilience in advance of a potential materialisation of risks, the Central Bank is continuing the gradual rebuilding of the Countercyclical Capital Buffer (CCyB) with an increase from 0.5 to 1 per cent. This marks a further step towards the 1.5 per cent target rate for the CCyB in periods when cyclical risks are neither elevated nor subdued.

Given the scale of the sector in Ireland and growing connections to the domestic economy, developing macroprudential policy for non-banks is a key priority for the Central Bank. As a result, the Central Bank is introducing macroprudential measures for Irish property funds investing in Irish commercial property. To address risks from excessive leverage, the Central Bank is introducing a sixty per cent leverage limit. Guidance on liquidity timeframes is being introduced to address liquidity mismatch within this fund cohort.

The global economy is slowing, with growth forecasts downgraded in all major trading partners in the last six months. High inflation across the global economy has been driven primarily by the energy price impact of Russia's invasion of Ukraine, but inflationary pressures have become more broad-based throughout the year. Growth expectations have dampened, with the probability of economic downturns rising across the globe. Downside risks in the UK, a key trading partner, are particularly high relative to similar economies, with direct and indirect financial stability implications for Ireland through banks' asset holdings and wider economic linkages.

Global financial conditions have tightened considerably amid a pronounced shift in monetary policy, exposing previously built-up vulnerabilities and overvaluations. The elevated risk of broad and persistent inflation relative to the last *Review* has increased the degree and synchronisation of monetary policy tightening globally. A range of financial vulnerabilities, across financial and real estate markets, highlighted in numerous *Reviews* in recent years, are now being tested under a higher interest rate environment.

There is uncertainty surrounding the resilience of non-bank financial intermediaries, with the potential for them to further amplify bouts of volatility. Pockets of the non-bank financial sector may be particularly exposed to price corrections in a range of financial and real estate markets. The gilt market turbulence of late September in the UK is evidence of the fragility of elements of the non-bank sector to underlying shocks. As central banks globally embark on the reversal of a decade of asset purchases, there is the potential for further shocks to emerge in pockets of the non-bank financial system, particularly where market liquidity conditions are less accommodative and leverage or liquidity mismatches amongst market participants are higher.

The real economy in Ireland is facing increased downside risks given the size of the energy and inflation shock, with growing numbers of businesses expected to run losses. While the outlook is weaker, Ireland's domestic economy continues to grow in 2022 and is projected to have positive, if weaker, growth in 2023. Profit margins are likely falling for large cohorts of the SME population, while a small cohort of more vulnerable businesses is likely to become loss-making based on price developments this year. The sectors more affected by the pandemic are also more likely on average to be suffering due to inflation, highlighting the challenges posed by interlocking unexpected macro shocks.

Households are facing a combined inflation and interest rate shock, but enter it with strong balance sheet resilience. Household finances are under pressure due to the increasing cost of living and the necessary monetary policy response. However, a high degree of mortgage interest rate fixation, slow pass-through on SVR mortgage rates, substantial savings accumulation, nominal income growth in a strong labour market, strong housing equity positions, and prudent underwriting of mortgages in the last ten years will aid households to withstand current shocks. The share of households at risk of financial distress is modelled to rise by up to one third due to the inflation and interest rate increases experienced during 2022, although reduced consumption in the face of higher prices may further support some household budget positions.

Domestic retail banks will be exposed to risks from distressed borrowers, but have capital headroom currently, and profitability prospects are strong due to higher interest rates. Capital headroom among the three remaining domestic retail banks is falling due to the planned onboarding of portfolios of the two exiting lenders and the continued phasing out of transitional arrangements, but remains well in excess of regulatory minimum requirements. Credit risk will undoubtedly rise as the effect of higher inflation and interest rates erodes borrowers' repayment capacity, but profitability is expected to grow under the central economic outlook due to gains from higher interest margins.

Recent strong fiscal returns are facilitating the provision of support to households and businesses affected by the energy shock, but risks persist. Extraordinary growth in corporate tax receipts, as well as solid growth in other tax heads, means that the government can currently finance growing spending needs arising from the inflation shock. Debt ratios are projected to decline under baseline economic projections, and borrowing costs remain contained despite increased monetary policy rates currently. Relative to European peers, however, debt ratios remain high and fiscal planning must remain sustainable. Recent announcements of layoffs by some of the world's largest technology companies point to the risks inherent in Ireland's currently concentrated corporate tax base.

While the increased non-bank financing of the domestic economy brings benefits it also poses risks of being pro-cyclical as interest rates rise. Non-bank entities such as non-bank mortgage lenders and a range of specialist finance companies lending to SMEs and NFCs have all played an important role financing the domestic economy in recent years, increasing diversification and competition for borrowers. Recent indications and lessons from previous crises are that credit supply may retrench under stress more quickly from these entities than from retail banks, in line with a more direct reliance of these entities on non-deposit sources of funding.

The Central Bank is increasing the CCyB rate on Irish exposures from 0.5 to 1 per cent. In June, as part of a refreshed strategy for macroprudential capital buffers, the Central Bank announced its strategy whereby it would build up the CCyB rate to 1.5 per cent when cyclical risk conditions are neither elevated nor subdued. Following the release of the buffer to 0 per cent in March 2020, the Central Bank is currently in a process of a gradual rebuilding of the buffer towards the 1.5 per cent rate, with an increase in the buffer rate to 0.5 per cent announced in June. Under current economic projections, there are positive implications for banks through higher interest margins and continued positive growth in the Irish economy. While downside risks are rising, it is important to continue to build resilience in the banking sector in advance of any evidence of systemic risk materialising.[1] The increase to 1 per cent will build banks' capital resilience at a time when systemic risks have not yet crystallised.

The mortgage measures continue to guard against unsustainable lending practices, with targeted changes coming into effect on January 1st 2023. The refreshed macroprudential mortgage measures framework was announced in October 2022. The Central Bank's targeted policy change will allow for certain costs of the mortgage measures, relating to activity in the housing market and access to homeownership for potential FTBs, to be alleviated. At the same time, the LTI limit will allow the benefits of the measures to be retained, continuing to guard against unsustainable lending standards in the mortgage market, with debt service burdens continuing to be contained even under interest rate stress.

The Central Bank is introducing macroprudential policy measures on Irish property funds with limits on leverage and Guidance on liquidity timeframes, the first under the non-bank pillar of its macroprudential policy framework. The objective of the leverage limit is to build resilience ex-ante so that funds could better withstand a downturn in the CRE market that could result in forced asset sales. Following extensive analysis and engagement, the Central Bank has calibrated the leverage limit at sixty per cent. To address the liquidity mismatch observed in property funds, the Central Bank is at the same time introducing new Guidance. This is designed to better align the investment objective of funds' assets and their redemption profiles. Both measures will apply immediately to newly authorised Irish property funds.

[1] In its recent Warning on vulnerabilities in the Union financial system, the ESRB highlighted the importance of enhancing the resilience of the financial sector, including through further building up macroprudential buffers, to ensure the financial systems' capacity to support the real economy if and when financial stability risks materialise.

Forbhreathnú

Tá geilleagar an domhain ag dul i dtaithí ar thimpeallacht mhacra-airgeadais atá athraithe go mór, arna spreagadh ag an mboilsciú, atá éirithe níos fairsinge agus níos marthanaí le 6 mhí anuas. Tá beartas airgeadaíochta ag géarú níos tapúla, ar bhealach níos suntasaí mar a bhíodh á meas, as ar tháinig rioscaí níos mó chun cinn agus margaí domhanda airgeadais á gcur féin in oiriúint. Forbraíodh pócaí laigeachta sna 10 mbliana seo ina bhfuil rátaí ísle úis nochta cheana féin. Tá roinnt bainc cheannais i dtús próisis ina laghdófar an clár comhardaithe, lena rachfar siar ar 10 mbliana de cheannacháin sócmhainní faoi éascú cainníochtúil. Sa timpeallacht seo a bhíonn ag athrú go mear, tá éiginnteacht níos mó ann maidir le foinse fhéideartha tuilleadh suaitheadh i margaí airgeadais an domhain, le suaitheadh mhargadh sárurrúis na Ríochta Aontaithe i ndiaidh an 23 Meán Fómhair ina shampla feiceálach de dhothuarthacht na n-imeachtaí seo. San fhíorgheilleagar, tá an mhuinín tite agus táthar ag súil le fás domhanda níos laige, agus tá méadú tagtha ar an dóchúlacht go dtiocfaidh torthaí diúltacha chun cinn. Anseo sa bhaile, tá íosghrádú tagtha ar réamhaisnéisí fáis agus tá méadú tagtha ar rioscaí meathlaithe mar gheall ar an ngéarchéim leanúnach fuinnimh agus ar bhrúnna níos leithne praghsanna agus fíorioncaim.

Mar sin féin, is é ionchas lárnach do gheilleagar agus do mhargadh saothair na hÉireann fós é fás dearfach agus margadh láidir saothair do 2023, cé go bhfuil sé faoi réir na sraithe rioscaí domhanda thuasluaite, ar tháinig méadú orthu ón *Athbhreithniú* deireanach. Tá teaghlaigh, gnólachtaí agus bainc ag baint tairbhe freisin as 10 mbliana d'iompar críonna iasachtaithe agus as an méadú ar an athléimneacht a tharla roimh an suaitheadh seo, lena mbeidh an acmhainneacht ann torthaí neamhfhabhracha a ionsú. I bhfianaise an ionchais lárnaigh don fhás, a bhfuiltear ag súil go mbeidh tionchar dearfach ag rátaí níos airde úis ar bhrabúsacht na mbanc i gcás bunlíne agus chomh tábhachtach is atá sé athléimneacht a fhorbairt sula dtarlaíonn na rioscaí, tá an Banc Ceannais fós ag leanúint le atógáil de réir a chéile an Chúlchiste Fhritimthriallaigh (CCyB) le hardú ó 0.5% go 1%. Léirítear céim bhreise leis sin i dtreo an ráta sprice 1.5% don CCyB i dtréimhsí nach bhfuil rioscaí ardaithe ná maolaithe iontu.

I bhfianaise scála na hearnála in Éirinn agus an nasc atá ag fás leis an ngeilleagar baile, is príomhthosaíocht don Bhanc Ceannais é beartas macrastuamachta chun neamhbhainc a fhorbairt. Mar thoradh air sin, tá an Banc Ceannais ag tabhairt bearta macrastuamachta isteach do chistí maoine na hÉireann a bhíonn ag infheistiú i maoin tráchtála na hÉireann. Chun aghaidh a thabhairt ar an mbaol ó luamhánú iomarcach, tá teorainn luamhánaithe á tabhairt isteach ag an mBanc Ceannais. Tá treoir maidir le tráthchláir leachtachta á dtabhairt isteach chun aghaidh a thabhairt ar neamhréir leachtachta laistigh de chohórt an chiste seo.

Tá an geilleagar domhanda ag maolú, le híosghrádú ar réamhaisnéisí fáis i ngach príomh-chomhpháirtí trádála. Spreagadh boilsciú ard ar fud an gheilleagair dhomhanda go príomha mar gheall ar an tionchar a bhí ag ionradh na Rúise ar an Úcráin ar phraghsanna fuinnimh, ach tá bonn níos leithne tagtha faoi i gcaitheamh na bliana. Tá smúit tagtha ar na hionchais fáis, leis an dóchúlacht do tiocfaidh sleabhcadh eacnamaíoch chun cinn ag méadú ar fud an domhain. Tá rioscaí meathlaithe sa Ríocht Aontaithe, ar príomh-chomhpháirtí trádála iad, an-ard i gcomparáid le geilleagair chomhchosúla, le himpleachtaí díreacha agus indíreacha cobhsaíochta airgeadais d'Éirinn trí shealúchas sócmhainní na mbanc agus trí nascálacha eacnamaíocha níos leithne.

D'éirigh na coinníollacha airgeadais domhanda níos doichte le linn athrú feiceálach i mbeartas airgeadaíochta, inar nochtadh laigí agus róluachálacha a méadaíodh cheana. Tá méadú tagtha ar leibhéal agus sioncrónú ghéarú domhanda an bheartais airgeadaíochta mar gheall ar an riosca ardaithe de bhoilsciú leathan agus seasmhach i gcomparáid leis an *Athbhreithniú* deireanach. Tá raon laigí airgeadais, thar mhargaí airgeadais agus eastát réadach, a leagadh béim orthu i roinnt *Athbhreithnithe* le blianta beaga anuas, anois á dtástáil i dtimpeallacht ráta níos airde úis.

Tá éiginnteacht maidir le hathléimneacht na n-idirghabhálaithe airgeadais neamhbhainc, lena mbeadh sé d'acmhainn acu babhtaí luaineachta a dhéanamh níos mó. D'fhéadfaí go mbeadh ceartúcháin ar phraghsanna i ndán do phócaí na hearnála airgeadais neamhbhainc i raon margaí airgeadais agus eastát réadach. Is fianaise i leith leochaileacht eiliminti na hearnála neamhbhainc i ndáil le bunshuaitheadh í an chorraíl sa mhargadh sárurrúis ag deireadh mhí Mheán Fómhair sa Ríocht Aontaithe. Agus bainc cheannais ag dul i mbun aisiompú ar 10 mbliana de cheannacháin sócmhainní, d'fhéadfadh tuilleadh suaite teacht chun cinn i bpócaí an chórais airgeadais neamhbhainc, go háirithe sa chás nach bhfuil coinníollacha leachtachta margaidh chomh réidh céanna agus luamhánú agus neamhréireanna leachtachta i measc rannpháirtithe margaidh níos airde i gceist leis.

Tá fíorgheilleagar na hÉireann ag tabhairt aghaidh ar rioscaí meathlaithe i bhfianaise mhéid an tsuaite fuinnimh agus boilscithe, lena meastar go mbeadh caillteanais i ndán do líon méadaitheach gnólachtaí. Cé go bhfuil an tuar níos laige, tá geilleagar baile na hÉireann fós ag fás in 2022 agus tuartar go mbeidh fás dearfach, fiú más níos laige féin é, ann in 2023. Tá corrlaigh bhrabúis ag titim do chohóirt mhóra na FBManna, agus measfar go mbeidh cohórt beag de na gnólachtaí is laige ina ngnólachtaí caillteacha, bunaithe ar fhorbairtí praghsanna i mbliana. Is mó seans go mbeidh na hearnálacha a ndearna an phaindéim níos mó difear dóibh ag fulaingt i ngeall ar an mboilsciú, rud a léiríonn na dúshláin a bhaineann le macra-shuaitheadh gan choinne a chomhghlasáil.

Tá teaghlaigh ag tabhairt aghaidh ar shuaitheadh comhcheangailte idir an boilsciú agus an ráta úis, ach táthar ag dul i ngleic le hathléimneacht láidir maidir le clár comhardaithe. Tá airgeadas na dteaghlach faoi bhrú i ngeall ar an gcostas maireachtála atá ag méadú agus ar an bhfreagairt beartais airgeadaíochta is gá. É sin ráite, cuideoidh leibhéal ard socraithe rátaí úis morgáiste, cur ar aghaidh mall ar rátaí morgáiste SVR, carnadh suntasach coigiltis, fás ainmniúil ioncaim i margadh láidir saothair, suíomhanna láidre cothromais tithíochta, agus frithghealladh críonna morgáistí le 10 mbliana anuas, le teaghlaigh dul i ngleic leis na preaba reatha. Meastar go dtiocfaidh méadú de thrian ar sciar na dteaghlach atá i mbaol anás airgeadais i ngeall ar mhéaduithe an bhoilscithe agus na rátaí úis a tharla in 2022, ach d'fhéadfadh tomhaltas laghdaithe in aimsir praghsanna arda tacú le suíomhanna buiséid roinnt teaghlach.

Beidh na bainc mhiondíola baile neamhchosanta ar rioscaí ó iasachtaithe i ngátar, ach tá spás caipitil anois acu, agus tá na hionchais bhrabúsachta láidir mar gheall ar rátaí níos airde úis. Tá an spás caipitil i measc na mbanc miondíola baile atá fós ann ag titim i ngeall ar ionduchtú pleanáilte punanna an dá iasachtaí atá ag imeacht agus ar an deireadh atá ag teacht ar shocruithe an aistrithe de réir a chéile, ach tá sé fós go mór os cionn íoscheanglais rialála. Níl aon dabht ach go dtiocfaidh ardú ar an riosca creidmheasa dé réir mar a bheidh éifeacht na rátaí níos airde boilscithe agus úis ag creimeadh cumas aisíocaíochta na n-iasachtaithe, ach meastar go dtiocfaidh fás ar bhrabúsacht faoin dearcadh eacnamaíochta lárnach mar thoradh ar ghnóthachain ó chorrlaigh úis níos airde.

Leis na sochair láidre fhioscacha a rinneadh le déanaí, cuirtear tacaíocht ar fáil do theaghlaigh agus do ghnólachtaí a bhfuil an suaitheadh fuinnimh ag déanamh difear dóibh, ach tá rioscaí ann i gcónaí. Ciallaíonn fás as cuimse i bhfáltais ó cháin chorparáide, chomh maith le fás láidir i réimsí eile cánach, gur féidir leis an rialtas riachtanais caiteachais atá ag teacht as suaitheadh an bhoilscithe a mhaoiniú. Meastar go dtiocfaidh laghdú ar chóimheasa fiachais faoi ionchais eacnamaíocha bonnlíne, agus tá costais iasachtaithe faoi smacht i gcónaí in ainneoin na rátaí ardaithe beartais airgeadaíochta. I gcomparáid le piaraí Eorpacha, áfach, tá cóimheasa fiachais ard go fóill agus ní mór an phleanáil fhioscach a choinneáil inbhuanaithe. Tugtar le fios le fógairtí go mbeidh daoine á mbriseadh as a bpost ag cuid de na cuideachtaí teicneolaíochta is mó ar domhan na rioscaí is gné de bhonn cánach corparáideach na hÉireann atá comhchruinnithe faoi láthair.

Cé go bhfuil tairbhí le baint as maoiniú méadaithe neamhbhainc an gheilleagair bhaile, tá rioscaí ag baint leis freisin de bheith comhthimthriallach agus rátaí úis ag dul i méid. Bhí ról tábhachtach ag eintitis neamhbhainc amhail iasachtóirí morgáiste neamhbhainc agus raon cuideachtaí airgeadais saineolacha ag tabhairt airgead ar iasacht do FBManna agus NFCanna maidir leis an ngeilleagar baile a mhaoiniú le blianta beaga anuas. Tháinig méadú ar an éagsúlú agus ar an iomaíocht d'iasachtaithe leis sin. De réir tásca a rinneadh le déanaí, d'fhéadfaí go ngearrfaí siar ar sholáthar creidmheasa níos tapúla faoi strus ó na heintitis sin ná ó bhainc mhiondíola, i gcomhréir le spleáchas na n-eintiteas ar fhoinsí neamhthaisce maoinithe.

Tá an Banc Ceannais ag méadú an ráta CCyB ar neamhchosaint na hÉireann ó 0.5% go 1%. I mí an Mheithimh, mar chuid de straitéis athnuaite le haghaidh cúlchistí macrastuamachta caipitil, d'fhógair an Banc Ceannais a straitéis faoina gcuirfí leis an ráta CCyB go dtí 1.5% nuair nach bhfuil rioscaí timthriallacha ardaithe ná maolaithe. Tar éis scaoileadh an chúlchiste go 0% i mí an Mhárta 2020, tá an Banc Ceannais i bpróiseas ina ndéanfar an cúlchiste a atógáil de réir a chéile i dtreo an ráta 1.5%, le méadú ar an ráta cúlchiste go 0.5%, mar a fógraíodh i mí an Mheithimh. Faoi réamh-mheastacháin reatha eacnamaíocha, tá impleachtaí dearfacha ann do bhainc trí éarlaisí úis agus trí fhás dearfach leanúnach i ngeilleagar na hÉireann. Cé go bhfuil méadú ag teacht ar rioscaí meathlaithe, tá sé tábhachtach leanúint de bheith ag cur leis an athléimneacht in earnáil na baincéireachta roimh aon fhianaise go dtarlóidh riosca sistéimeach.[2] Cuirfear le hathléimneacht caipitil na mbanc leis an méadú go 1%, tráth nach bhfuil rioscaí sistéamacha tagtha chun cinn fós..

Cosnaíonn na bearta morgáiste i gcónaí i gcoinne cleachtais neamh-inbhuanaithe iasachtaithe, le hathruithe spriocdhírithe ag teacht i bhfeidhm an 1 Eanáir 2023. Fógraíodh an creat athnuaite do bhearta macrastuamachta morgáiste i mí Dheireadh Fómhair 2022. Le hathrú spriocdhírithe beartais an Bhainc Cheannais, beifear in ann costais áirithe na beart morgáiste, a mhéid a bhaineann le gníomhaíocht i margadh na tithíochta agus le rochtain ar úinéireacht tí do FTBanna féideartha a fhuascailt. Ag an am céanna, leis an teorainn LTI, beifear in ann tairbhí na mbeart a choinneáil, lena leanfar leis an gcosaint i gcoinne caighdeáin neamh-inbhuanaithe iasachtaithe sa mhargadh morgáiste, le hualaigh seirbhísí fiacha á gcoinneáil i gcónaí, fiú faoi strus na rátaí úis.

Tá bearta i dtaobh beartais mhacrastuamachta á dtabhairt isteach ag an mBanc Ceannais ar chistí maoine na hÉireann le teorainneacha ar luamhánú agus Treoir maidir le tráthchláir leachtachta, an chéad treoir faoi cholún neamhbhainc a creata beartais macrastuamachta. Is é is cuspóir don

[2]Ina Rabhadh maidir le laigí i gcóras airgeadais an Aontais, leag an Bord Eorpach um Riosca Sistéamach béim ar a thábhachtaí agus atá sé cur le hathléimneacht earnáil an airgeadais, lena n-áirítear trí chúlchistí macrastuamachta a fhorbairt, chun cumas na gcóras airgeadais a chinntiú i leith tacú leis an bhfíorgheilleagar má thagann rioscaí cobhsaíochta airgeadais chun solais agus nuair a thiocfaidh siad chun solais.

teorainn luamhánaithe cur le hathléimneacht ex-ante ionas go mbeidh cistí in ann seasamh níos láidre i gcoinne sleabhcadh sa mhargadh CRE, rud a bhféadfadh díol éigeantach sócmhainní a bheith mar thoradh air. Tar éis dul i mbun anailís agus rannpháirtíocht chuimsitheach, rinne an Banc Ceannais an teorainn luamhánaithe a chalabrú ag seasca faoin gcéad. Tá tréimhse cur chun feidhme 5 bliana ann do chistí atá ann cheana chun an teorainn a chomhlíonadh. Chun aghaidh a thabhairt ar an neamhréir leachtachta i gcistí maoine, tá Treoir nua á tabhairt isteach ag an mBanc Ceannais ag an am céanna. Tá sin leagtha amach chun go mbeidh cuspóir infheistíochta shócmhainní na gcistí a chur i gcomhréim ag teacht níos fearr lena bpróifílí fuascailte. Beidh feidhm láithreach ag an dá bheart maidir le cistí maoine nua-údaraithe na hÉireann.

Risks

Persistent stagflationary dynamics within the global economy

Risks to the global economic outlook have increased markedly since the last Review, with the balance of risks firmly tilted to the downside. Inflation internationally has now reached multi-decade highs, with inflationary pressures broadening across different sectors of the global economy. A number of factors, including the tightening of monetary policy internationally in response to stubbornly high inflation, the associated tightening of global financial conditions, the war in Ukraine, as well as a slowdown in Chinese economic activity have all weighed on global growth prospects. Persistent levels of high inflation internationally have increased the risk that inflation expectations could become de-anchored. At the same time, further supply-side shocks could exacerbate stagflationary dynamics in the global economy. A further deterioration in the international macroeconomic environment, including amongst key trading partners such as the UK, would further increase downside risks to the Irish macro-financial outlook. These factors are particularly important given the highly-globalised nature of the Irish economy and financial system.

The global economic outlook has deteriorated significantly since the last *Review*, while downside risks to the macroeconomic outlook have increased. Risks emanating from high inflation rates and energy prices globally, elevated geopolitical concerns including the war in Ukraine, tighter global financial conditions and an economic slowdown in China have all weighed on the global economic outlook. As a result, global growth forecasts have been revised down since the last *Review* (Chart 1). The outlook is significantly weaker than projected six months ago, with sharp downward revisions to growth forecasts for 2023. The downward revisions reflect the impact of high inflation internationally, which has eroded real incomes. Monetary policy has continued to tighten in recent months in response to high inflation, adding to concerns regarding a global macroeconomic slowdown.

Business and consumer confidence have declined markedly in recent months reflecting the significant slowdown in global economic activity. In many countries, consumer confidence has fallen to levels below those recorded at the start of the COVID-19 pandemic, while business confidence has trended downwards since the start of the year (Chart 2). In the UK, consumer confidence has fallen to its lowest level on record, with UK households now confronted with higher mortgage costs and the prospect of tax increases (see Box A). Across Europe, high levels of uncertainty have led to a deceleration in private consumption with knock-on implications for retail sales and consumer durables. Weaker business confidence also reflects a worsening trading environment amid a global slowdown in economic activity coupled with rising financing costs for firms.

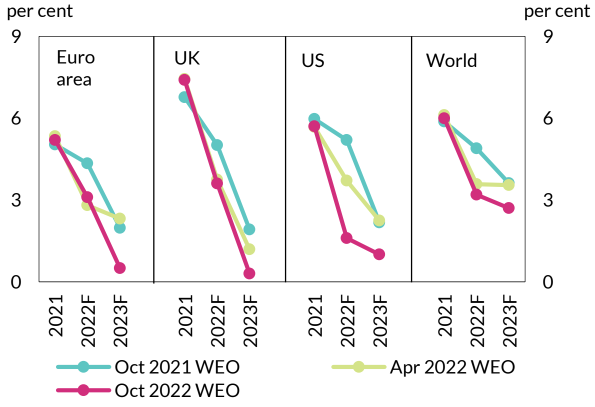
Inflation internationally has increased to multi-decade highs. Global inflation forecasts have been revised upwards as headline inflation rates internationally remain stubbornly high (Chart 3). While energy and food prices have accounted for much of the increase in inflation internationally, price pressures have become more broadly-based. Labour markets also remain tight, with the prospect of wage pressures adding to inflationary concerns.[3] The increase in inflation has resulted in a

[3] The euro area seasonally-adjusted unemployment rate was 6.6 per cent in September 2022, down from 7.3 per cent in September 2021.

decline in real disposable incomes for households in the euro area. This decline has decreased household purchasing power and also weighed on consumer confidence (Chart 2). At the same time, the non-financial corporate sector is confronted with a significant rise in input prices and weakened demand, which could weigh on profit margins and investments.

Chart 1: Global growth forecasts have been revised downwards since the last *Review*

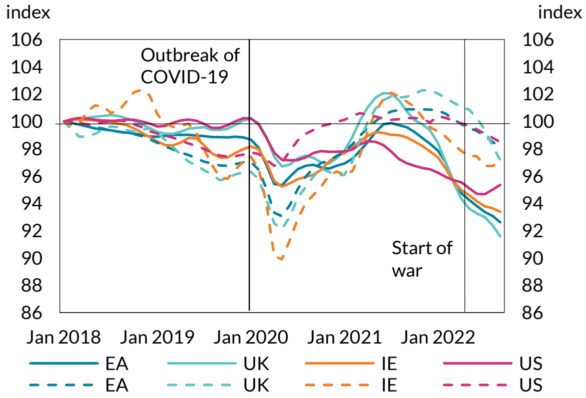
Evolution of global GDP growth forecasts



Source: IMF World Economic Outlook, October 2021, April 2022 and October 2022, and Central Bank of Ireland calculations.

Chart 2: Consumer and business confidence internationally has fallen in recent months

OECD business and consumer confidence indices



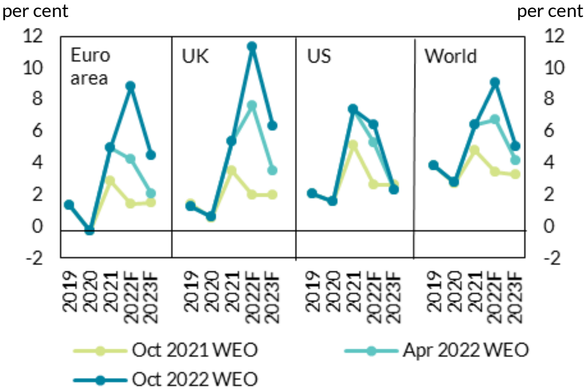
Source: OECD.
Notes: Solid line refers to consumer confidence while broken line refers to business confidence. Values above 100 signal a boost in confidence towards the future economic situation. Values below 100 indicate a pessimistic attitude towards future developments in the economy. Index: 1st January 2018 = 100. Last observation September 2022.

Persistently high inflation rates internationally increase the risk that inflation expectations could become de-anchored. Central banks internationally have accelerated the pace of monetary policy tightening in recent months (Chart 4), seeking to ensure that inflation returns to target over the medium-term and that inflation expectations remain anchored. In the euro area, most measures of longer-term inflation expectations remain around 2 per cent. However, a number of medium-term indicators are pointing towards an elevated risk of de-anchoring.[4] Any such de-anchoring of inflationary expectations increases the risk of wage-price spirals internationally, further adding to macroeconomic tail risks. In addition, such dynamics could lead to further price increases with knock-on implications for monetary policy internationally as well as for global financing conditions (See *Risks: Global repricing*).

[4] For more information on inflation expectations see the ECB Survey of Professional Forecasters.

Chart 3: Inflation forecasts globally have been revised upwards since the last *Review*

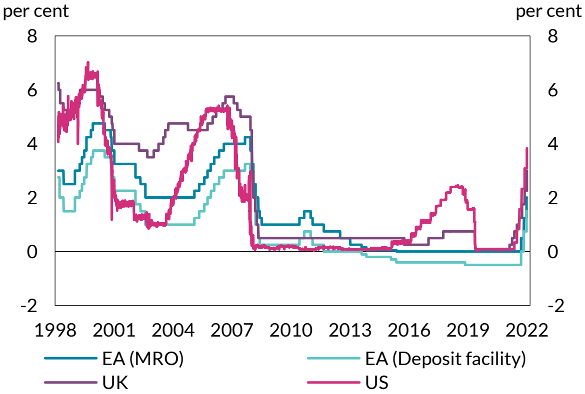
Evolution of global inflation forecasts



Source: IMF WEO.
Notes: The reference period in the legend denotes the publication date of the forecasts.

Chart 4: Central banks have rapidly tightened monetary policy rates in 2022

Changes to monetary policy rates in the US, UK and euro area



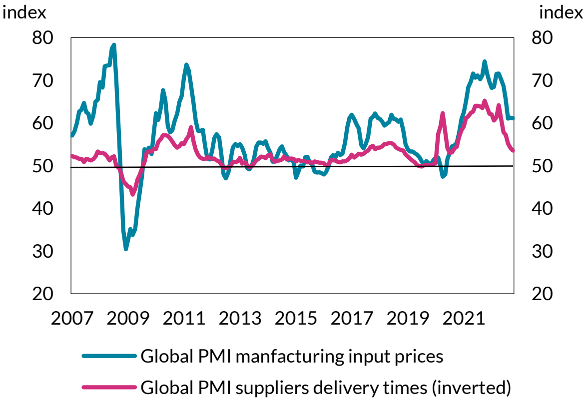
Source: Bloomberg.
Notes: The policy rate for the US refers to the effective federal funds rate and the UK policy rate refers to the Bank of England's Bank Rate. "MRO" refers to the ECB's main refinancing operations. Last observation 4 November 2022.

Global supply chain disruptions have eased in recent months, but significant downside risks to global trade remain due to geopolitical tensions and mounting fragilities in the Chinese economy. Global indicators of supply chain disruptions have fallen as trade disruptions and supply bottlenecks abate. For instance, the Federal Reserve Bank of New York's Global Supply Chain Pressures Index has declined sharply over the past year, suggesting global supply chain pressures are falling back in line with historical levels.[5] Freight rates have declined sharply due to weaker European and US demand for goods arriving from China. In some cases rates have fallen back to pre-pandemic levels. Global purchasing managers' surveys also indicate shorter delivery times and a slower pace of increases in manufacturing input prices (Chart 5). Despite these improvements, downside risks to global supply chains have the potential to aggravate an already challenging operating environment for international trade. For example, geopolitical tensions between the US and China remain elevated, in particular in relation to Taiwan. There are potential spillover effects to the rest of the world via the trade channel if these tensions were to increase further. Additionally, mounting fragilities in the Chinese economy as well as China's zero-COVID policy could pose additional risks to international trade by further affecting supply chains. Survey data from China suggests manufacturing output has slowed as COVID-19 containment measures and weaker global demand has led to a fall in new orders and new export orders (Chart 6).

[5] See the Federal Reserve Bank of New York's Global Supply Chain Pressures Index.

Chart 5: Global supplier delivery times and manufacturing input prices have improved in recent months

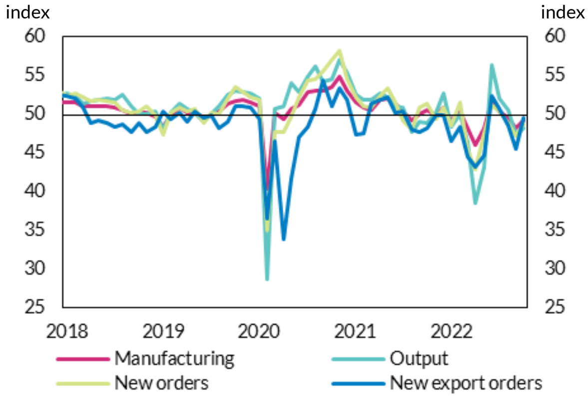
Global PMI manufacturing suppliers' delivery times and input prices



Source: IHS Markit via Datastream.
Notes: Values greater than 50 represent higher input prices and slower delivery times. Last observation October 2022.

Chart 6: Chinese manufacturing activity has slowed as domestic activity and international demand have weakened

Chinese manufacturing PMIs



Source: Caixin via Refinitiv.
Notes: An index value above 50 indicates an expansion, whereas a value below 50 indicates a contraction. Last observation October 2022.

While global commodity prices have started to fall, the European energy market remains fragile, with risks of energy disruptions over the medium-term. The war in Ukraine continues to have a material impact on global commodities markets, causing significant volatility in energy and food prices (Chart 7). The war has exacerbated existing pandemic-related stress, where there have been supply chain disruptions following a rapid rebound in global demand. However, there are some signs that commodity prices are beginning to ease. Food prices have declined to pre-war levels as futures prices have fallen and global demand for broader commodities has softened in response to rising interest rates and US dollar appreciation. Wholesale gas prices in Europe have fallen by more than 60 per cent since peaking in August, while the flow of Russian pipeline gas has declined to about 20 percent of its level of one year ago (Chart 8). This fall in prices has been aided by a fall in demand for gas due to warmer weather and the ability of EU Member States to increase their gas storage capacities above the EU's target of 85 per cent by the end of the year.[6] However, there is still the potential for increased gas demand over the medium-term, including from colder than expected weather, which would lead to greater competition for gas supplies and further add to price pressures (see Box B). The fragility of the European gas market is highlighted by the high futures curve throughout 2023, which suggests an average gas price of over 130 EUR/MWh, significantly higher than the current spot price.[7] The EU is seeking to address the energy crisis through a range of options, which could include price caps on Russian gas, a mandatory EU-wide reduction in electricity use and a ceiling on the revenues of non-gas power generators.

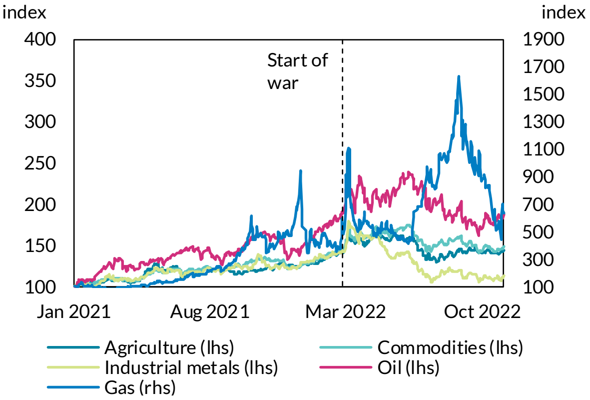
Stagflationary dynamics within the global economy, including the crystallisation of the aforementioned tail risks, would have adverse implications for the Irish financial system. These shocks could occur through a number of channels and could severely impair the debt servicing capacity of some corporates and households. A sharp and protracted slowdown in global economic activity would have negative spillovers effects to the domestic economy and financial system (see *Risks: Domestic macro-financial).* Significantly higher consumer prices risk adversely impacting household finances and spending in the domestic economy, while a further sharp erosion of real

[6] See European Council's press release of 27 June 2022.
[7] See ECB Economic Bulletin Issue 7, 2022.

incomes would give rise to debt servicing capacity concerns for many borrowers. For corporates, slower global economic activity amid falling external demand, particularly from key trading partners such as the UK, coupled with rising input costs, may lead to a retrenchment in business investment with knock-on implications for wider domestic economic activity, including employment. Moreover, further supply-side inflation shocks could lead to adverse spillovers to the real economy in Ireland given the heavy reliance of households and corporates on imported energy and commodities.

Chart 7: Supply-side shocks have resulted in elevated commodity prices but prices have started to fall in recent months

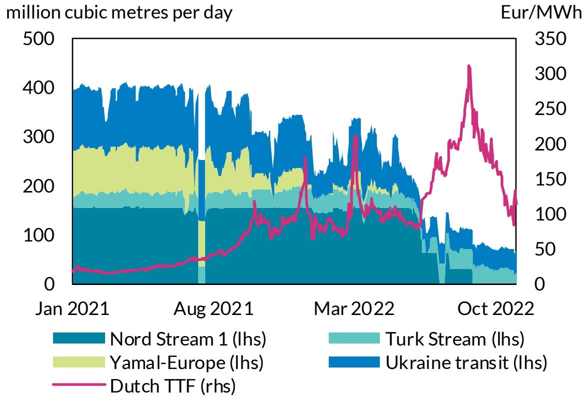
Volatility in commodity prices



Source: Bloomberg and Central Bank of Ireland calculations.
Notes: Index: 1 January 2021 = 100. The dotted line refers to the 24 February. Last observation 4 November 2022.

Chart 8: The flow of Russian gas to the EU has declined while wholesale gas prices have fallen in recent months

Declining flow of Russian gas to the EU



Source: Bloomberg and Central Bank of Ireland calculations.
Notes: Dutch TTF is the European benchmark for gas prices. Last observation 4 November 2022.

Ireland's open and highly-globalised economy is also structurally exposed to wider global macroeconomic developments due to its heavy reliance on international trade and foreign direct investment. As noted above, sharp contractions in the growth of important trading partners such as the UK (see Box A) could have adverse implications for international trade and particularly Irish exports. Such a slowdown in the global economy could lead to weaker demand prospects and more challenging conditions with implications for domestic consumption and investment activity. Beyond these cyclical developments, Ireland remains exposed to ongoing structural changes in the international trading environment given its integrated role within global value chains. A "regionalisation" of the global economy could be positive for Irish aggregate output in the long run as some goods which were previously imported may be produced within markets such as the EU, including Ireland. However, any such reshoring of production would also likely give rise to further inflationary effects in the short- and medium-term, given the importance of imports from lower-priced economies in maintaining low inflation rates in recent decades.[8]

[8] Clancy, D., Valenta, V. and D. Smith (forthcoming), "Reshoring production in small open economies".

A sharp and protracted tightening of global financing conditions leading to disorderly asset price adjustments

Global financial conditions have tightened considerably since the last Review. This reflects the pronounced and synchronised monetary policy tightening across the globe amid rising inflationary pressures. Downside risks to the global economic outlook have also increased. Uncertainty over the ultimate extent of monetary policy tightening that will be required to bring inflation back to target, together with weaker global growth prospects, could trigger a further sharp and protracted deterioration in global financial conditions. This could be amplified by financial vulnerabilities that have built up over the past decade, especially in parts of the non-bank financial sector. Indeed, as is evident in recent developments in gilt markets following the UK 'mini-budget', such underlying financial vulnerabilities in segments of the non-bank financial sector could contribute to disruption in 'core' financial markets. More broadly, high levels of global indebtedness, both public and private, may amplify market stress amid a further sharp repricing of risk premia with the potential for disorderly asset price adjustments.

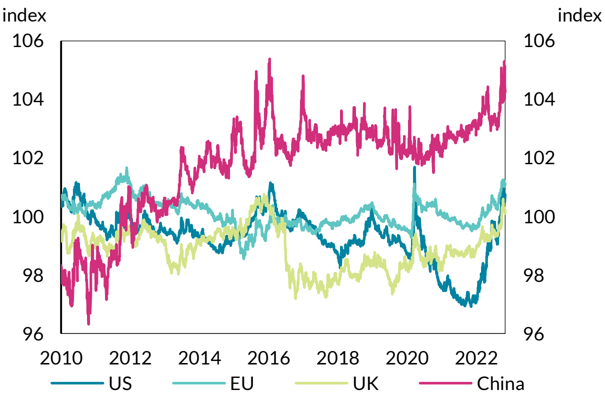
Global financial conditions have continued to tighten internationally since the last *Review*. This has been driven by a number of factors, including the pronounced tightening of monetary policy internationally in response to high and persistent inflation, the economic impact of the war in Ukraine and a slower post-pandemic economic recovery in recent months (see *Risks: Stagflation*). Indeed, financial conditions are already suggesting more elevated risks than average in advanced economies and are now near their March 2020 level in emerging markets, where weaker currencies and wider US dollar funding spreads have pushed up the cost of external borrowing (Chart 9). The adjustment to higher interest rates has been more pronounced in the US compared to the euro area in recent months. Given market conditions in the US are important in determining wider global financial conditions, this adjustment to higher rates may contribute to exposing market vulnerabilities globally.

The adjustment to tighter global financing conditions amid higher interest rates may pose challenges for some borrowers, particularly given the build-up on significant levels of debt over the last decade. The tightening of global financial conditions coupled with a deterioration in the global macroeconomic outlook has also reduced the debt-servicing capacity of NFCs and households. As documented in previous *Reviews*, there has been a build-up of significant levels of both public and private debt over the past decade, particularly after the COVID-19 shock (Chart 10). This build-up has of debt occurred amid the low interest rate environment where global financial conditions were accommodative. As global financial markets adjust to tighter financing conditions, some borrowers, including households and firms, will encounter further challenges in servicing their debt.

Amid high uncertainty, downside risks within global financial markets have increased in recent months, particularly in parts of the non-bank financial sector. Uncertainty over the ultimate extent of the monetary policy tightening that will be required to bring inflation back to target, together with weaker global growth prospects (see *Risks: Stagflation*) in recent months, could trigger a further sharp and protracted deterioration in global financial conditions. This could potentially exacerbate existing systemic vulnerabilities in pockets of the non-bank financial sector in particular. Beyond the increase in interest rates internationally, quantitative tightening – the reduction in central banks' balance sheets globally – could also have implications for market functioning and broader market liquidity. The high levels of global indebtedness may amplify market stress were a sharp repricing of risk premia to occur, as the equity of entities with a higher share of debt funding are more sensitive to changes in the prices of their assets. If these challenges were to be coupled with other shocks such as the sharp repricing of risk premia, it may lead to disruption in 'core' financial markets and potentially lead to disorderly asset price adjustments.

Chart 9: Financial conditions have tightened globally, particularly in the US and China

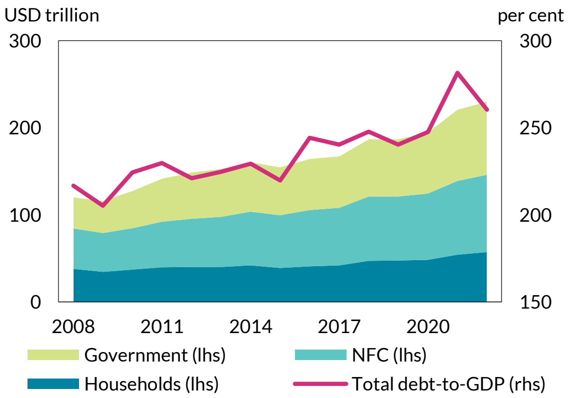
Global Financial Conditions Index



Source: Goldman Sachs and Bloomberg.
Notes: Higher values denote tighter financial conditions. Last observation 4 November 2022.

Chart 10: Global indebtedness remains elevated, having increased following the COVID-19 shock

Indebtedness of governments, NFCs and households



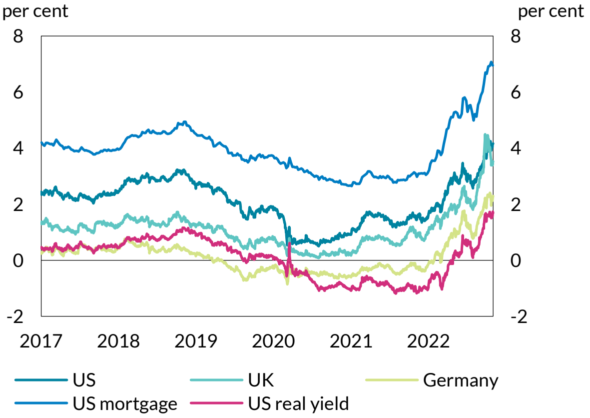
Source: BIS credit statistics.
Notes: Government debt is at market value. Values represent total credit to the specific sector (core debt) for all economies reporting to BIS. All reporting economies comprise the economies listed under the advanced and emerging market economies (AE and EM). AE: Australia, Canada, Denmark, the euro area, Japan, New Zealand, Norway, Sweden, Switzerland, the United Kingdom and the United States. EM: comprise Argentina, Brazil, Chile, China, Colombia, Czech Republic, Hong Kong SAR, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, Poland, Russia, Saudi Arabia, Singapore, South Africa, Thailand and Turkey. Last observation 2022 Q1.

Sovereign bond yields internationally have risen sharply since the last *Review*. The rise in sovereign bond yields follows pronounced monetary policy tightening globally to tame persistent inflationary pressures in recent months (Chart 11). Central banks have raised policy rates rapidly, in some cases resorting to levels of increase not seen in decades. As a result, the market-implied expected path of policy rates has shifted substantially higher across major economies since the beginning of the year (Chart 12). The degree of synchronicity in the tightening of monetary policy, as many central banks simultaneously have responded to high inflation, adds to uncertainty over the cumulative impact of tightening financial conditions on the prospects for the global economy (Chart 13).

The tightening of global financing conditions across the EU is heterogeneous giving rise to potential risks. Financial conditions are not changing uniformly across the EU, with tighter financial conditions already contributing to a divergence in sovereign spreads between countries with different fiscal and economic factors, raising concerns around the risk of financial fragmentation in the euro area. As noted above, the normalisation of monetary policy is taking place amid increased public indebtedness following the COVID-19 shock, while fiscal supports to cushion the impact of inflation and energy prices shocks will further increase indebtedness for a number of sovereigns. To avoid such divergence impacting the transmission of monetary policy decisions, the ECB has introduced a new tool, the Transmission Protection Instrument, to counter unwarranted, disorderly market dynamics across the euro area.[9]

Chart 11: Government bond yields have risen steadily in advanced economies in 2022, feeding through to other funding markets

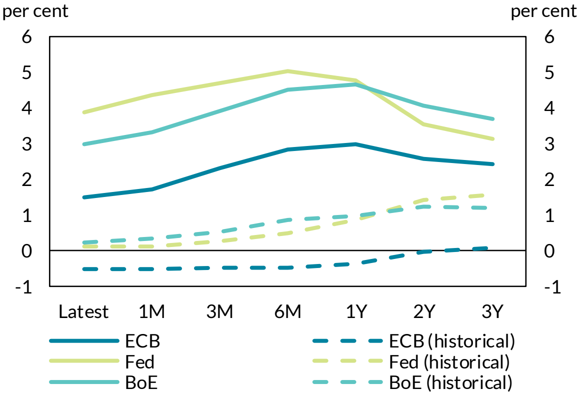
30-year fixed-rate mortgage in the US and developments in 10-year bond yields in advanced economies



Source: Bloomberg, Freddie Mae's Primary Mortgage Market Survey and Central Bank of Ireland calculations.
Notes: The "US 30-year mortgage rate" series shows the average interest rate on a 30-year mortgage in the US. The "US real yield" refers to inflation-indexed market yield on 10y US treasury bills. Last observation 4 November 2022.

Chart 12: Market-implied expectations of policy rates internationally have risen substantially since the last *Review*

Policy rate expectations for the Fed, ECB, and BoE



Source: Bloomberg.
Notes: Data show implied market expectations of policy rates as at 18 November 2022. Historical series show expectations as at 3 January 2022. The ECB rate refers to the deposit facility rate.

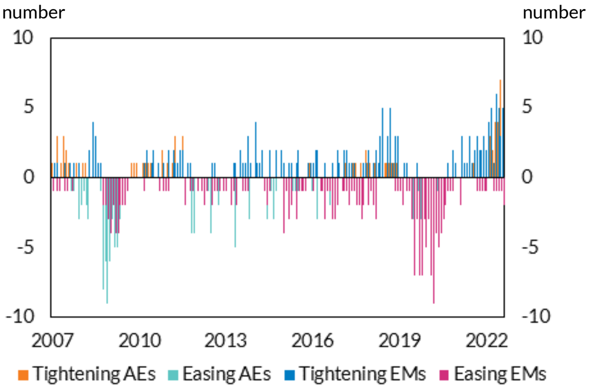
A sharp increase in volatility of commodity prices has led to increased liquidity pressures for some energy market participants.[10] The war in Ukraine has added to the increased volatility in global financial markets. Given the important role of both Russia and Ukraine in global commodity markets, the war has led to a sharp increase in the volatility of commodity markets, including crude oil and natural gas (see *Risks: Stagflation*), while market uncertainty remains at elevated levels. Rising margin requirements, particularly related to in sharp increases in energy prices, are adding to liquidity strains in commodity markets.

The tightening of global financial conditions could be amplified by financial vulnerabilities that have built-up over the past decade, especially in parts of the non-bank financial sector, as shown by recent developments in the UK following the 'mini-budget'. The dislocations in the UK gilt markets, triggered by the speed with which longer gilt yields rose after the government's late-September financial statement, were amplified by liquidity strains amongst Liability-Driven Investment (LDI) strategies employed by pension funds and which relied on high levels of leverage. These funds experienced significant margin and collateral calls, and their risk of insolvency significantly increased, following the rise in gilt yields (see Box C), which required them to sell gilts amid weak liquidity conditions, and added to market pressures. This resulted in increased market volatility and widening bid-ask spreads with the potential to further expose underlying vulnerabilities in the non-bank financial sector (Chart 14), and required the Bank of England to step in via their financial stability mandate. Additionally, there's an environment of reduced market liquidity globally, even in the deepest markets in the world including US treasuries (Chart 14). Since the last *Review*, the US treasuries market has experienced it highest volatility and lowest

[9] See ECB Press Release, 21 July 2022.
[10] See IMF World Economic Outlook Update July 2022.

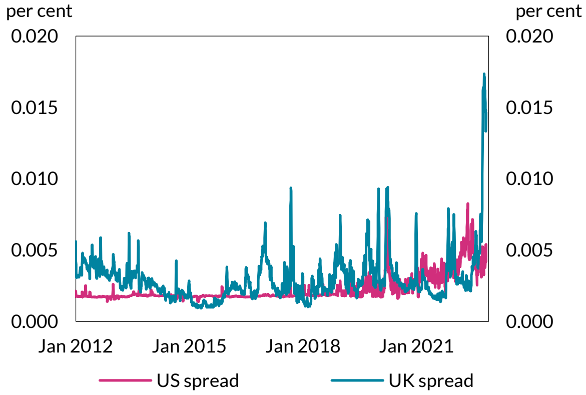
liquidity levels since March 2020. Such market dynamics may be further amplified by an increase in vulnerabilities in the non-bank financial sector.

Chart 13: Monetary policy tightening is increasingly synchronised globally
Number of increases and cuts in policy rates



Source: IMF.
Notes: AE - advanced economies, EM - emerging markets. Last observation August 2022.

Chart 14: Market liquidity conditions have deteriorated since the last *Review*
Bid-ask spreads for 10-year government bonds



Source: Bloomberg.
Notes: Data show the bid-ask spread between US and UK 10 year government bonds. Data show a five day rolling average for spreads. Last observation 4 November 2022.

In equity markets, volatility in US and euro area stock prices increased at the onset of the war. Investor risk appetite has deteriorated significantly since the start of the war in Ukraine. Starting from stretched valuations in a number of sectors and countries, equity prices have fallen sharply. Rising interest rates have been an important factor behind the precipitous drop in US equity prices.[11] Following a partial recovery between June and August, late September saw equity markets reach their lowest valuation of the year.[12] This highlights the vulnerability of the equity market in the current economic environment. The use of leverage by investors has dropped slightly in recent months, lessening the risk of loss amplification.[13] However, the current high uncertainty and market volatility suggests the risk of a sharp repricing of equity markets remains elevated.

In real estate markets, uncertainty has increased since the last *Review* while house price growth is starting to stall or reverse, amid rising interest rates internationally. Both price-to-income and price-to-rent ratios in residential real estate markets have been increasing in many countries in recent years suggesting a build-up of fragilities (Chart 15). Housing markets internationally remain vulnerable to rising interest rates. In the US, for example, there is already evidence that the sharp increase in mortgage rates since the end of 2021 (Chart 11) is leading to a sharp decline in housing market activity. Such market dynamics are evident in many countries across the world. Rising mortgage rates and deteriorating debt-servicing capacity increase the risk of a sharp decline in house prices internationally with potential knock-on implications for the wider global financial system, including an impact on banks' capital.

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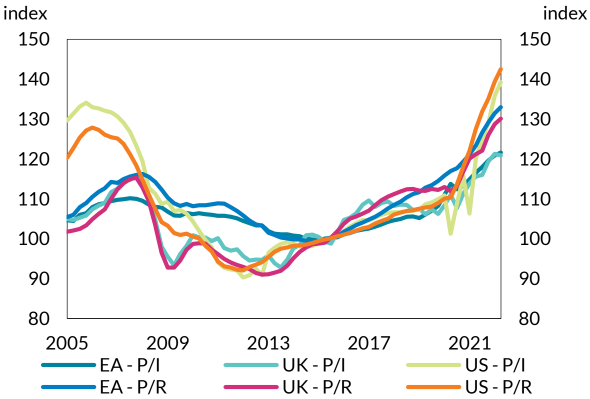
[11] Higher interest rates mean that businesses are impacted by higher borrowing costs, and exposed to the adverse effects of lower consumer demand. Due to this, the estimated amount of future cash flows will drop, and this will lower the price of stocks.
[12] Following a drop of over 20 per cent between end of March and mid-June, S&P 500 regained over 7 per cent out of these losses up to the end of August, but then dropped again with a total loss of around 25 per cent between the end of 2021 and end of September 2022.
[13] According to the US Financial Industry Regulatory Authority (FINRA), the combined margin debt of member firms' customers stands at USD 697 billion in July 2022, having fallen from a height of USD 935 billion in October 2021.

Chart 15: Price-to-rent and price-to-income ratios in housing markets have increased internationally

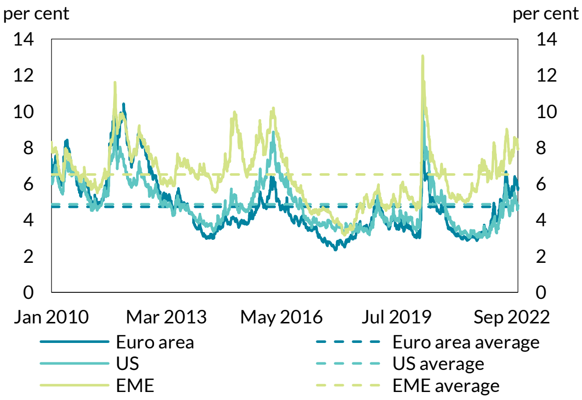
Price-to-rent and price-to-income ratios, index = 2015



Source: OECD.
Notes: The price to income ratio (P/I) is the nominal house price index divided by the nominal disposable income per head and can be considered as a measure of affordability. The price to rent ratio (P/R) is the nominal house price index divided by the housing rent price index and can be considered as a measure of the profitability of house ownership. The price-to-income and price-to-rent ratios are indices with base year 2015. Last observation 2022Q2.

Chart 16: High-yield corporate bond spreads are rising following the war in Ukraine

High-yield corporate bond spreads



Source: St Louis Fed and Central Bank of Ireland calculations.
Notes: ICE BofAML Option-Adjusted Spreads on below investment grade corporate bonds. Dashed lines indicate historic averages since 2010. EME refers to emerging market economies. Last observation 4 November 2022.

Reduced risk appetite in global financial markets in recent months is evident in lower issuance and higher volatility in high yield corporate bonds and collateralised loan obligations markets alongside large losses in crypto markets. New issuances of high yield corporate bonds have slowed and spreads on existing high-yield corporate bonds have widened towards historical averages (Chart 16). Yields in lower-rated bonds are particularly sensitive to market conditions amid uncertainty about potential downgrades. Such downgrades could result in sharp drops in prices and increases in yields, putting additional strains on these debt markets. Likewise, in the collateralised loan obligation (CLO) market, issuance has slowed and spreads have widened in both secondary market leveraged loans and CLO tranches since the last *Review*. CLO AAA spreads reached around 200 bps in the middle of 2022, but have narrowed more recently. In another example of rising market volatility, crypto markets have experienced a dramatic sell-off that has led to large losses in crypto investment vehicles and caused the failure of algorithmic stablecoins.[14] In recent weeks one of the largest crypto exchanges, FTX, filed for bankruptcy linked with very low levels of liquid assets, fuelling volatility spikes and leading to further disruptions in crypto markets. However, on the whole, spillovers from such disruptions in crypto markets to the broader financial system have remained relatively limited since the last *Review*.

Increased recourse to high-yield bonds and leveraged loans over recent years points to a build-up of fragility within the corporate debt sector globally. The search-for-yield behaviour over the last decade means that investors have significant exposures to inherently more volatile instruments. The withdrawal of government COVID-19 related supports and lower-than-expected economic activity can exacerbate existing fragilities within various non-financial corporate sectors, putting strains on their funding, in particular if the funding is through high-yield bonds or leveraged loans. These effects will be particularly acute when coupled with higher interest rates and quantitative tightening by central banks internationally.

[14] See, for example, IMF World Economic Outlook Update, July 2022.

A sudden financial market correction and a deterioration in global financial conditions could have adverse consequences for the Irish financial system through a number of channels. Given the structure of the economy, Ireland is exposed to downside risks in global financial conditions. As documented in previous *Reviews*, Ireland is more vulnerable to a tightening in global financial conditions when compared to the euro area average.[15] Alongside tighter global financing conditions, a further repricing of risk could also reverberate to the domestic economy through a decline in investor sentiment leading to reduced foreign investment, including, for example, in the CRE sector (see *Risks: Cyclical*). Significant volumes of investment in the Irish CRE market are from foreign sources, much of which is intermediated by non-bank financial institutions such as property funds. While foreign financing of the CRE market brings many benefits including a diversification of funding sources, it also presents risks, were investor sentiment and global financing conditions to change abruptly.

Tighter global financial conditions are also likely to increase the cost of funding for Irish resident financial institutions dependent on market-based financing, and in turn, challenge the debt servicing capacity of borrowers. A broader market repricing could lead to increased costs or reduced availability of market-based funding for non-bank lenders. This may affect credit supply or interest rates offered to SMEs or to mortgage borrowers given recent growth in SME and mortgage debt extended by non-banks (see *Resilience: Non-bank financial sector*).[16] Irish-resident corporates and financial institutions, particularly those with larger debt burdens or those active in high-yield markets, would also be exposed to a tightening of global financing conditions and a further repricing of risk premia. The synchronisation of monetary policy tightening internationally alongside less favourable global financing conditions may undermine the debt servicing capacity of borrowers, including households and corporates in Ireland (See *Risks: Macro-financial*).

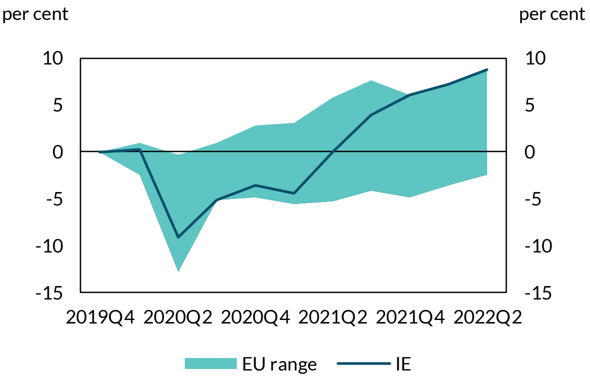
[15] See Box 1 of Financial Stability Review 2022:I.
[16] See Gaffney, E., Hennessy, C. and F. McCann (2022), "Non-bank mortgage lending in Ireland – recent developments and macroprudential considerations", Central Bank of Ireland, Financial Stability Notes, Vol. 2022, No. 3.

A severe and prolonged domestic macroeconomic shock, challenging the financial positions of households and corporates

The recovery in the domestic economy following the pandemic shock has slowed. This reflects the weakening of the international macroeconomic environment, the real income shock to households and businesses and less accommodative financing conditions, given the ongoing tightening of monetary policy internationally since the last Review. Growth forecasts in Ireland have been revised downwards in recent months, while inflation remains stubbornly high. In this environment, the possibility of adverse tail macroeconomic outcomes has also increased. This would risk a further erosion in real incomes and may ultimately undermine the financial position of some Irish households and corporates. Such dynamics, which may be amplified by existing vulnerabilities in the domestic real estate market, would have negative implications for the wider financial system.

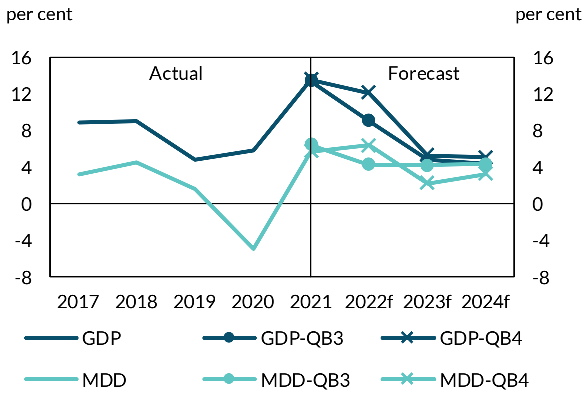
The outlook for the domestic economy has deteriorated since the last *Review*. The recovery in the domestic economy since the COVID-19 pandemic is most evident in the strong employment growth numbers seen since the easing of the public health restrictions (Chart 17). The labour market has recovered to a position close to full employment. Forecasts for 2023 point to growth in the Irish economy, albeit at lower levels than had been expected at the time of the last *Review* with modified domestic demand (MDD) forecasts revised downward to 2.3 per cent (Chart 18). This revision reflects the ongoing inflationary shock, the economic consequences of the war in Ukraine and an overall weaker international macroeconomic environment (see *Risks: Stagflation*).

Chart 17: The Irish labour market has recovered strongly compared to peers in the EU
Change in total employment from pre-pandemic level in Ireland and EU countries by quarter



Source: Eurostat.

Chart 18: The domestic growth outlook, while positive, has been revised down since the last *Review*
Actual and forecast economic growth

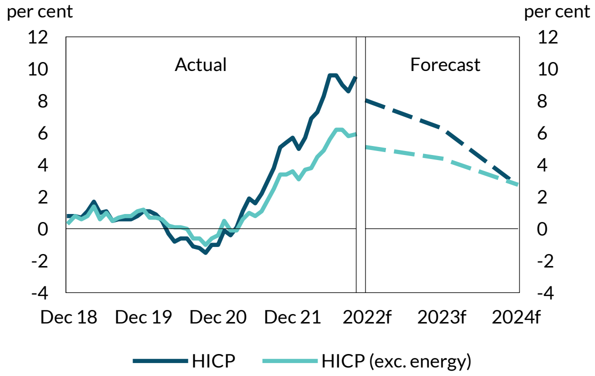


Source: CSO and Central Bank of Ireland.
Notes: Modified Domestic Demand (MDD) excludes investment in intellectual property and aircraft related to the leasing industry. Forecasts as of July (QB3) and October (QB4).

Inflationary pressures in the domestic economy continue to mount, eroding real incomes. Projections for inflation have been further revised up for this year and for 2023. The combination of higher inflation and lower growth in the domestic economy is expected to lead to a reduction in real incomes. Following strong growth in the first half of the year consumption growth is expected to slow sharply in light on the heightened uncertainty. Targeted measures outlined in the recent Budget will help support the most vulnerable in society from the inflationary shocks. While this may cushion the adverse effects of the shock to real demand, the size and scope of the wider budget may also risk adding to the current inflationary pressures. Inflation is expected to moderate to below 3 per cent over 2024, but there are risks around those projections (Chart 19). Ongoing supply difficulties in gas markets are expected to continue into 2023. The baseline projections for inflation assume exceptionally high prices for natural gas and that precautionary energy saving measures agreed at the EU level will avoid the need for a rationing energy supplies. However, in the event that energy restrictions are required, this is likely to have a more severe impact on EU-wide economic activity with significant implications for domestic economic activity.

Chart 19: Inflation in Ireland has increased further during 2022

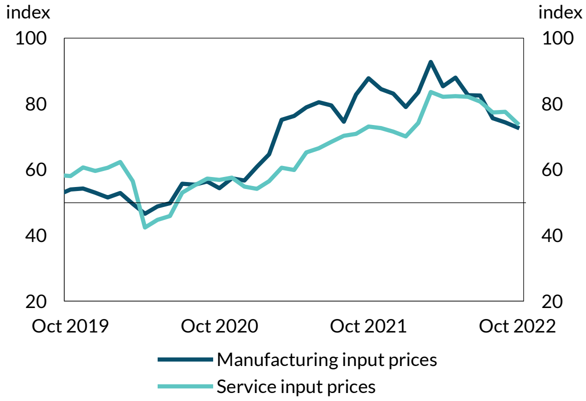
Actual and forecast inflation rates



Source: CSO and Central Bank of Ireland.
Notes: HICP forecasts are taken from the Central Bank of Ireland's 2022Q4 (October) Quarterly Bulletin. Last observation of actual data October 2022.

Chart 20: Survey data suggest price pressures across the domestic manufacturing and services sectors remain elevated

PMI input prices indices



Source: AIB/S&P Global
Notes: A PMI value above 50 indicates an increase in manufacturing and services input prices whereas a value below 50 represents a decrease. Last observation October 2022.

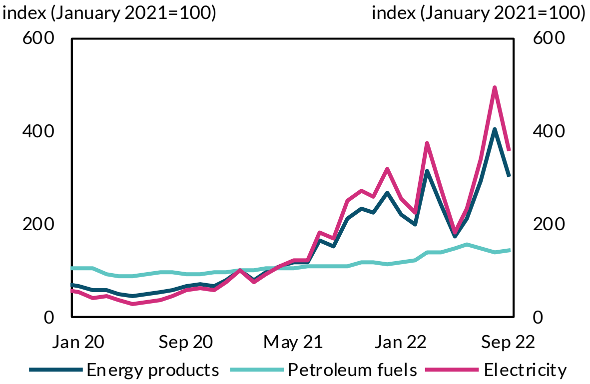
Survey data suggest that prices pressures across the domestic manufacturing and services sector remain elevated. Input price indices have been above long-run trends in recent years (Chart 20) with pandemic related supply chain issues the main contributing factor for much of the increase over the past two years. However, inflationary pressures have become more broadly-based in recent months, including due to the very sharp increases in energy prices and the depreciation of the euro against the US dollar.

Irish businesses are faced with significantly higher input costs, particularly higher energy costs. Wholesale energy prices have increased by 227 per cent between March 2021 and March of this year (Chart 21). Since then, energy prices have exhibited substantial volatility, primarily due to fluctuations in electricity prices. The impact of higher energy prices is not uniform across sectors however (Chart 22). Survey data suggest that for some sectors, such as the hotels and restaurants sector, the cost base is particularly sensitive to energy prices (see *Resilience: Non-Financial Corporations* for more detailed analysis). Beyond energy costs, ongoing tightness in the labour market may feed into further wage pressures in the short-term. The risks of rising costs for businesses comes against the backdrop of a corporate sector still recovering from the impact of the COVID-19 shock and the tapering of government supports. Beyond elevated operating costs, Irish firms are facing into a period of lower than expected economic activity, both domestically and in key trading partners such as the UK.

The growing importance of the ICT sector to the domestic economy means that Ireland is particularly exposed to cyclical challenges faced by this sector. The resilience of the technology sector during the COVID-19 shock helped to support domestic output and employment. Indeed, the information and communication sector accounted for 19 per cent of the growth in employment since 2019Q4.[17] Overall, the share of total employment accounted for by the ICT sector stood at approximately 6.5 per cent by mid-2022. However, given the deterioration in the global economy, confidence surrounding the outlook for the ICT sector has declined in recent months and is reflected in the recent equity price performance of the sector. In addition, a weaker operating position has led to a number of high profile announcements with regard to job cuts across global technology firms. While the number of announced redundancies in Ireland is at present low, and follows significant and abrupt expansion in headcounts over the last year, downside risks facing the technology sector have increased since the last *Review*. A weaker outlook for the technology sector risks further exacerbating an already deteriorating domestic macro-financial growth outlook. More broadly, the Irish economy has a strong macroeconomic reliance on a small number of economic sectors, in particular the pharmaceutical and ICT sector (see *Risks: Structural*). This increases the risks that adverse sector specific shocks, such as reduced investment and job losses, are more likely to have a more material macro-financial impact.

Chart 21: Wholesale energy prices faced by firms remain markedly higher than earlier in the year

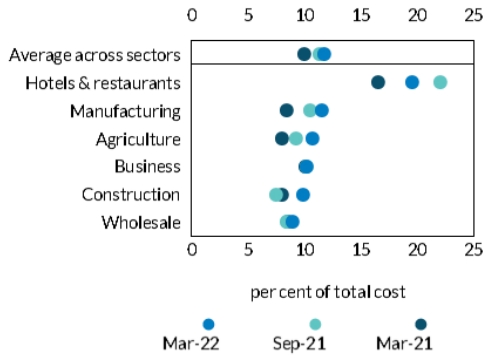
Wholesale energy prices



Source: CSO.
Notes: Last observation September 2022.

Chart 22: Increasing energy costs significantly impacted some domestic sectors, even before the sharpest increases since the war in Ukraine

Energy costs as a percentage of total expenses by sector



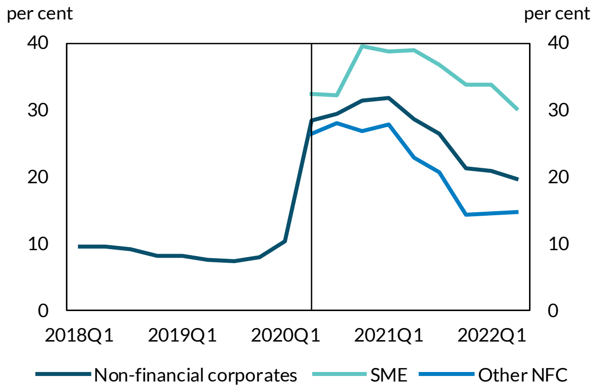
Source: Department of Finance, Credit Demand Survey.

A weaker macroeconomic environment in Ireland comes at a time when firms face tighter financing conditions including rising interest rates. As noted above, monetary policy has tightened significantly since the last *Review* while tighter financing conditions may act as an additional squeeze on Irish firms' balance sheets at a time when credit risk in the sector remains a concern (Chart 23). Lower turnover coupled with higher energy costs may adversely impact the capacity of corporates to absorb higher funding costs and maintain their debt servicing capacity.

[17] Analysis is based on data contained within the CSO's Quarterly Labour Force Survey. For more see www.cso.ie

Chart 23: Asset quality concerns persist for some corporate lending

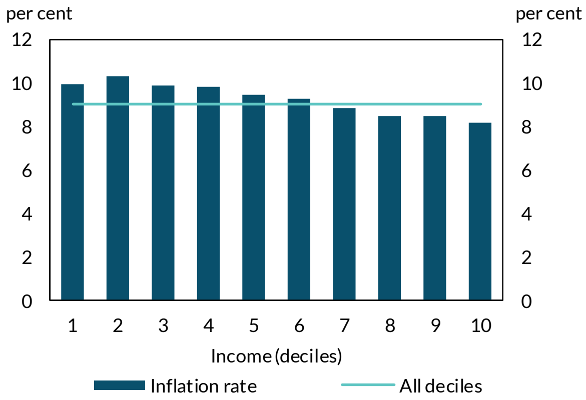
Share of corporate lending classified as stage 2 under IFRS



Source: Central Bank of Ireland.
Notes: Based on data submitted by Irish retail banks. Stage 2 assets refer to assets where there has been a significant increase in credit risk since the time they were originally recognised. SME and Other NFC are subsets of non-financial corporates available from 2020Q2. Last observation 2022Q2.

Chart 24: The inflation shock is particularly sharp for Irish households with lower incomes

Inflation rate by household income



Source: CSO.
Notes: Data as at June 2022.

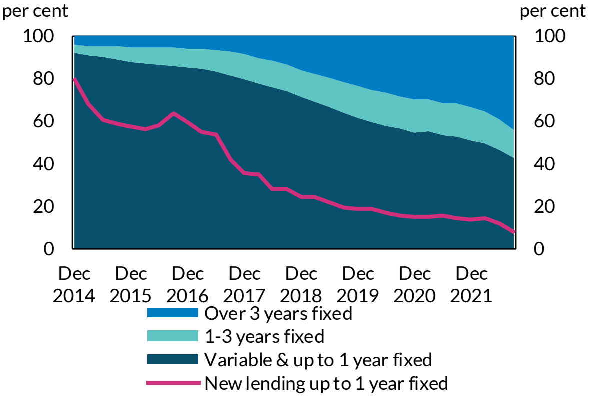
A significant proportion of Irish households are exposed to the impact of high inflation. Recent analysis shows that approximately 15 per cent of all households are classified as “economically precarious” and would be exposed to a severe inflationary shock.[18] These most vulnerable households are generally younger, have limited savings buffers, are on lower incomes and are more likely to be in the rental market. The data highlight how energy and utilities expenditure account for a greater proportion of total expenditure among lower income households and, as a result, those cohorts are facing a higher effective rate of inflation (Chart 24). Temporary policy measures in the most recent Budget will help to reduce the immediate impact of higher energy costs in the short term (see *Resilience: Households*).

Mortgage rate fixation in recent years will insulate just over half of mortgagors from the immediate effects of interest rate increases, but many are exposed over the medium-term. The prevalence of fixed rate mortgages has increased in recent years which has helped to reduce some households’ exposures to rising interest rates in the short term. However, 44 per cent of mortgages remain at variable rates of interest (Chart 25), of whom 26 per cent are tracker customers, directly exposed to increases in ECB policy rates, while 18 per cent are SVR customers, for whom banks have discretion over mortgage rates. Of those households who have availed of fixed-rate mortgages only 39 per cent are fixed for greater than 3 years. As these fixed rates mature many households will be faced with higher interest rates and potentially stretched mortgage repayments, although a range of developments in recent years are supportive of resilience to this shock (see *Resilience: Households*).

[18] Economically precarious refers to households with limited buffers or illiquid assets. For more see Arrigoni et al (2022) “Household Economic Resilience”, Central Bank of Ireland Quarterly Bulletin 04, October.

Chart 25: Most mortgages in Ireland are exposed to potentially higher interest rates over the medium-term

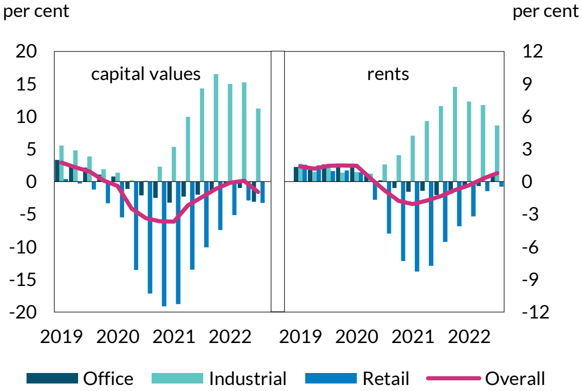
Breakdown of new and existing mortgage lending by period of fixation



Source: Central Bank of Ireland Money and Banking Statistics and Central Bank of Ireland calculations.
Notes: Last observation 2022Q3.

Chart 26: Aggregate CRE values mask a wide variance in performance at a sectoral level

Annual change in CRE capital value and rental growth indices



Source: MSCI.
Notes: Observations in LHS pane denote annual changes in CRE capital values, while those in RHS pane denote annual changes in CRE rents. Last observation 2022Q3.

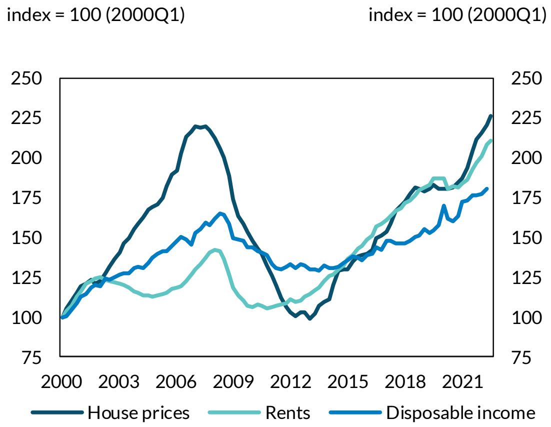
The likelihood of more severe macro-economic outcomes in Ireland has increased since the last *Review*. While the baseline scenario is for continued, albeit lower, growth in the domestic economy, there is significant uncertainty around the outlook, and downside risks have increased. A more protracted macroeconomic slowdown could be triggered by developments in the rest of the world (see *Risks: Stagflation* and *Risks: Global repricing*). In addition, inflation across the euro area could prove more persistent, requiring more pronounced tightening in monetary policy, with implications for both economic activity and financing conditions facing Irish households and businesses. These dynamics could impair businesses' turnover and profitability, which – in turn – could lead to an increase in unemployment, with knock-on implications for the wider macro-financial environment, including households.

A significant contraction in domestic economic activity or a slowdown of corporate investment could weigh on the CRE market in Ireland, amplifying an economic downturn. The Irish CRE market has started to recover from the COVID-19 shock although aggregate figures mask a wide variation in valuations at a sectoral level (Chart 26). A prolonged macroeconomic shock may lead to a reduction in the demand for CRE assets. This would have a knock-on impact on CRE capital values and rents, and ultimately investor returns, which could prompt a reassessment of sentiment towards the Irish CRE market amongst some investors. While the commercial property yield and risk premium available to those investing in the Irish CRE market compares favourably with the rates available in other markets at present, the domestic commercial property market remains vulnerable to abrupt changes in investor behaviour.[19]

[19] For instance in a sample of 11 European countries, including Ireland, the latest net initial yield (NIY) on Irish CRE was over 5 per cent compared to a sample average of just over 4 per cent, on observations at 2021Q4 (Portugal, Belgium, Luxembourg, Spain, Austria and Germany), 2022Q2 (UK, Italy, France and the Netherlands) and 2022Q3 (Ireland).

Chart 27: House prices continue to grow broadly in-line with rents, with both growing faster than incomes

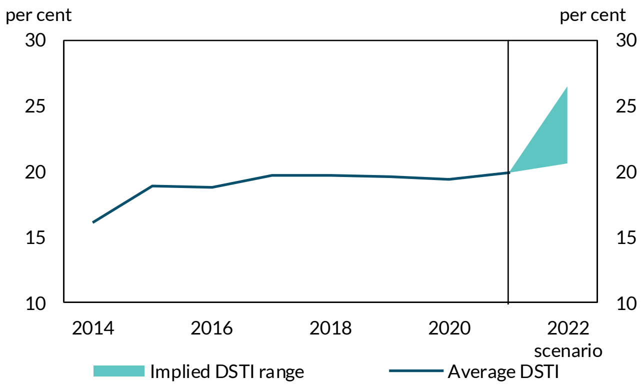
House price, rent and household disposable income indices



Source: CSO and Central Bank of Ireland calculations.
Notes: Last observation 2022Q3 for house prices and rents and 2022Q2 for disposable income.

Chart 28: Irish households' debt service capacity will be impacted by the future path of mortgage interest rates

Debt service to income ratio for average new mortgage lending by year and potential impact of a change in selected mortgage rates



Source: Central Bank of Ireland.
Notes: Data are average mortgage repayment burdens as a percentage of disposable income. Date refers to year of origination. 2022 scenario uses 2022H1 data projected forward assuming a range of selected interest rates. The scenario, which is for illustrative purposes, ranges from 2.74 per cent up to and including 5 per cent.

An adverse macro-economic shock could also be amplified through the domestic residential property market. The pace of growth in household incomes has been considerably slower than that of both house prices and rents since the financial crisis, adding to housing affordability pressures (Chart 27). The ongoing normalisation in interest rates coupled with lower real incomes may affect the willingness or ability of some potential property purchasers to buy. Higher interest rates will, all other things being equal, lead to higher repayment burdens (Chart 28). In addition, credit providers' willingness to lend mortgage credit will likely reflect developments in the overall economy, changes in their own credit policies and their access to financing. Banks have already reported a slight tightening in credit standards for loans to households in 2022Q3.[20] Banks have also indicated they expect the demand for housing credit to increase in 2022Q4. A tightening of lending standards by some non-bank lenders has also been observed, consistent with mortgage market developments in recent months. Such changes would be amplified in a deteriorating macro-financial outlook, with adverse implications for housing market activity and asset valuations.

[20] See Bank Lending Survey results, October 2022.

Overall Risk Environment

The overall risk environment has deteriorated since the last *Review* as downside risks facing the financial system have increased. A number of factors, including the tightening of monetary policy internationally in response to stubbornly high inflation, the associated tightening in global financing conditions, and the war in Ukraine, have all weighed on the domestic macro-financial outlook. Uncertainty over the ultimate magnitude of monetary policy tightening that will be required to bring inflation back to target, together with weaker global growth prospects, increases the possibility of adverse tail macro-economic outcomes materialising. The risk of a further erosion in real incomes due to increases in the cost of living has increased since the last *Review*, which could ultimately undermine the financial position of some Irish households and corporates. Such dynamics, which could be amplified by existing vulnerabilities in the domestic real estate market, would have negative implications for the wider financial system.

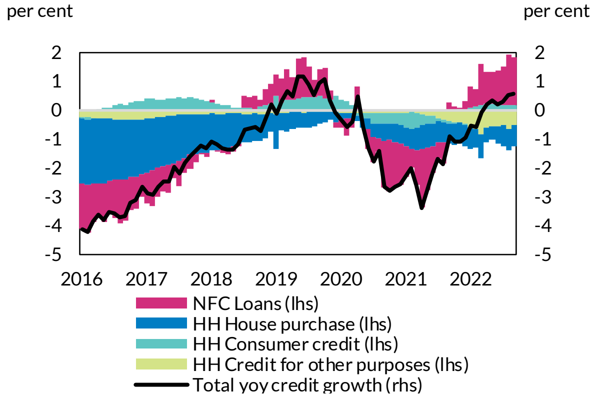
At the same time, there are a number of structural vulnerabilities facing the Irish financial system given the small, open and highly globalised nature of the economy. These include an over-reliance on a small number of sectors which increases the dependence of the overall economy on the performance of these individual sectors as drivers of macroeconomic performance as well as a source for government tax revenue. Moreover, other structural features, such an increasingly complex domestic financial system as well as increasing cyber and climate risks also pose challenges for the macro-financial outlook in Ireland.

Cyclical Risk

Cyclical risks relate to developments in credit, asset markets (including real estate), risk-taking behaviour, the broader economic cycle and external vulnerabilities. The Central Bank monitors the evolution of the cyclical risk environment on an ongoing basis to inform policy decisions such as the CCyB (see *Policy: CCyB*).

Chart 29: Bank credit growth has increased modestly since the last *Review*

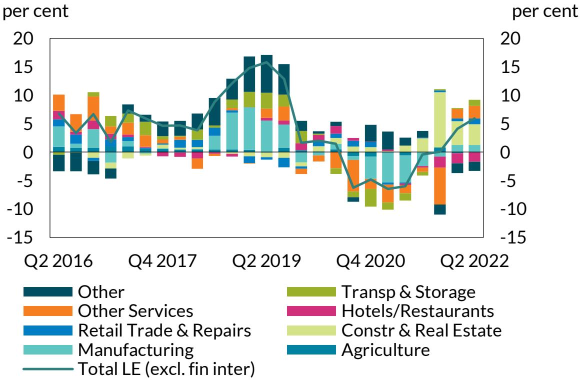
Contribution by type of loan to the annual growth rate of total credit



Source: Central Bank of Ireland Money and Banking statistics, Central Bank of Ireland calculations.
Notes: Calculations based on data from Tables A.1 and A.6. As of January 2022 Table A.6 has been discontinued following an updated ECB regulation on the treatment of securitised loans. - see Money & Banking Statistics. Credit considers only loans from banks to Irish residents. HH – households. Last observation September 2022.

Chart 30: The construction and real estate sectors are the main drivers of credit growth to large Irish enterprises

Growth rate of outstanding credit to large enterprises by sector

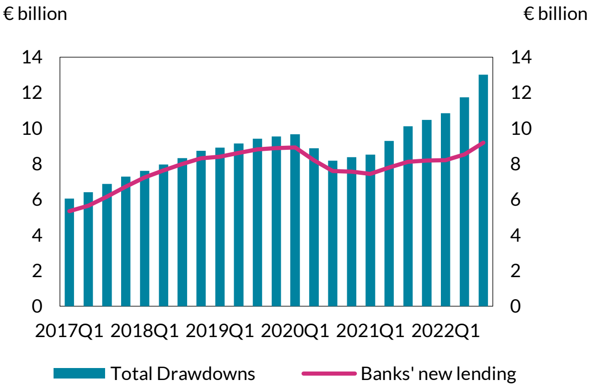


Source: Central Bank of Ireland Money and Banking Statistics and Central Bank of Ireland calculations.
Notes: "Other" includes Electricity, Gas, Steam and Air Conditioning Supply, Water Supply, Sewerage, Waste Management and Remediation Activities, Hotels and Restaurant, Transportation and Storage, Community, Social and Personal services, Education, Human health and social work. The chart excludes financial intermediation services. Last observation 2022Q2.

Overall, aggregate credit growth has continued to recover from pandemic lows, although credit developments vary across sectors. Bank credit growth has grown modestly since the last *Review*, with NFC and consumer credit continuing to grow, while bank credit for house purchases continued to decline (Chart 29). The upward trend in credit to NFCs is mainly driven by credit to large enterprises, which consists of around 50 per cent of total outstanding credit. The construction and real estate sectors are the main drivers of credit growth to large enterprises (Chart 30). Given that much of the aggregate credit data relates to lending provided by the banking sector, it will not capture fully the contribution to credit growth by non-banks, which has grown in importance recently in the mortgage market as well as the SME sector.

Chart 31: Mortgage drawdowns in Ireland are on an upward trend since the last *Review*

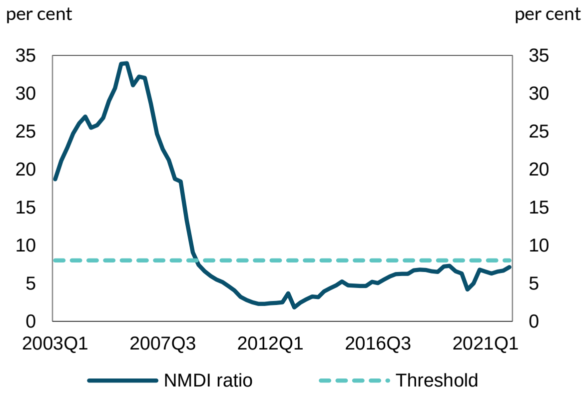
Mortgage drawdowns and new bank mortgages



Source: Banking and Payments Federation Ireland, Central Bank of Ireland Retail Interest Rates and Central Bank of Ireland calculations.
Notes: The chart shows 4-quarter rolling sums. Banks' new lending series refers to new mortgages granted by resident credit institutions as per Table B.3.1 of Retail Interest Rates Statistics. Last observation 2022Q3.

Chart 32: The volume of new mortgage lending remains consistent with broader economic developments, despite recent increases in the NMDI ratio

New mortgage lending to disposable income ratio



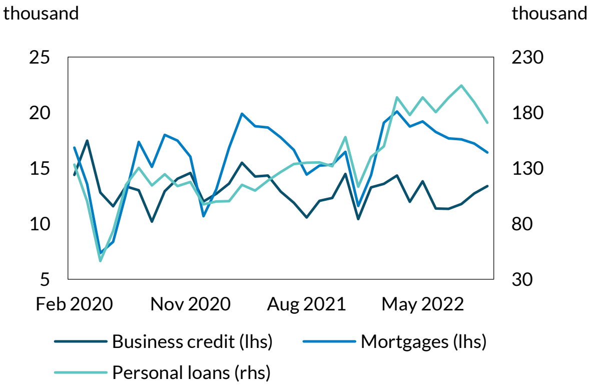
Source: Central Bank of Ireland calculations.
Notes: For more details on this indicator see Keenan and O'Brien, "New mortgage lending in a comparative context", Central Bank of Ireland, 2018. Last observation 2022Q1.

Across banks and non-banks, gross mortgage lending has shown a strong upward trend although forward-looking credit enquiries data for mortgages are weaker. Mortgage drawdowns have steadily increased at a double-digit growth rate in the latest quarters (21 per cent in 2022 Q2), driven by new lending to FTBs and re-mortgages (see *Policy: Mortgage Measures*). Credit provided by banks alone has remained somewhat stable in recent quarters, pointing to the growing importance of non-bank mortgage lending (Chart 31), mostly active in the refinance segment (see *Policy: Mortgage measures* (Chart 105)). The ratio of new mortgage lending to economy-wide household disposable income remains below the estimated threshold above which cyclical systemic risk in the mortgage market would point to growing concerns (Chart 32).

Forward-looking credit enquiries data point to a heterogeneous developments in credit across different market segments. Data from the Central Credit Register suggest that credit enquiries' developments are strongly heterogeneous across sectors. With respect to personal loans, credit applications have recently remained above pre-pandemic levels on a monthly basis. On the other hand, credit demand for house purchase are now on a downward trend while monthly business credit enquiries have increased in recent months and now stand above 13,000 (Chart 33).

Chart 33: Forward-looking credit demand indicators vary across type of loans

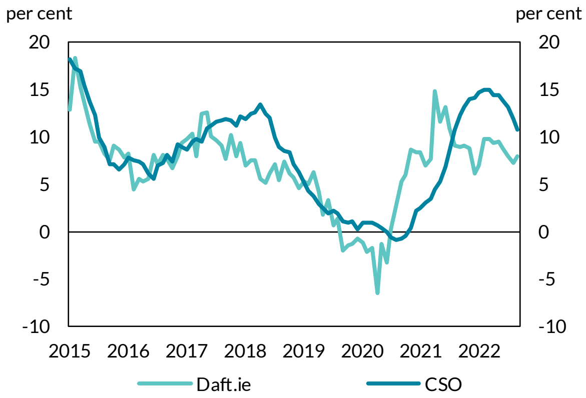
Monthly credit enquiries by sector and loan type



Source: Central Credit Register and Central Bank of Ireland calculations.
Notes: Data refer to monthly sums. Last observation October 2022.

Chart 34: While the supply and demand imbalance has continued to push house prices upward, there are signs that the pace of increase is moderating

Annual growth in CSO RPPI and Daft.ie asking prices



Source: CSO and Daft.ie.
Notes: Last observation September 2022.

Existing imbalances in the supply and demand of housing have continued to place significant upward pressure on residential property prices and rents since the last *Review*. While the pace of house price growth has eased somewhat in recent months, from 15 per cent nationally in the year to March 2022 to just over 10.8 per cent in September (Chart 34), nominal residential property prices have surpassed their previous 2007 peak and are now approximately 3 per cent above their 2007 values (see *Risks: Domestic macro-financial* (Chart 27)). Private residential rents are recording similar levels of double-digit growth.[21] Annual rents increased by 11.6 per cent in September 2022, and are approaching a point of being 50 per cent above their previous peak (2008) level (see *Risks: Domestic macro-financial* (Chart 27)), as the availability of rental properties remains at historical lows, due to the exit of many small-scale landlords from the market and efforts to house refugees fleeing the war in Ukraine.[22]

Near-term house price developments are subject to heightened uncertainty and will be determined by a range of factors. Rising construction costs, population growth and demographic changes, monetary policy normalisation, declining real disposable incomes, and recent changes to the Central Bank's mortgage measures (see *Policy: Mortgage measures*) are some of the factors likely to have most impact on the supply and demand of housing and ultimately residential property prices. There are signs, however, that the pace of house price growth is starting to moderate. The CSO's RPPI shows some easing in quarterly and monthly growth rates over the past year.[23] The trend is even more apparent from list price indices such as that produced by DAFT.ie, which shows that the annual growth in asking prices has eased by about 7 percentage points since April 2021, to around 8 per cent in September 2022. (Chart 34).

Supply shortages remain in the residential real estate market in Ireland, which could potentially be exacerbated by a slowdown in construction activity. Despite increasing residential building

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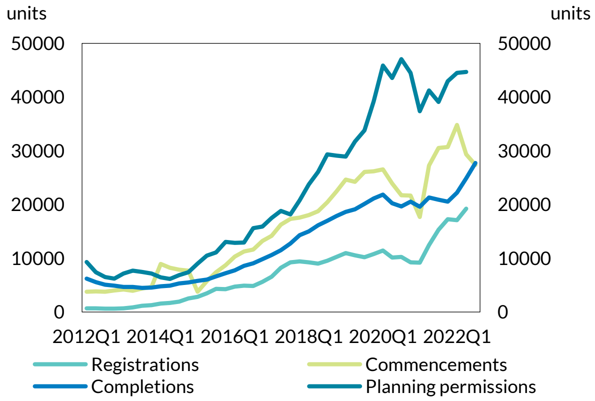
[21] See CSO Table CPM16 Consumer Price Index; Private Rents – sub index.
[22] According to Daft.ie data on August 1st 2022, there were fewer than 300 and 430 units available to rent in Dublin and in the "Rest of Ireland" on August 1st 2022, compared to equivalent average figures of approximately 1,450 and 2,100 homes respectively, on the same date between 2015 and 2019.
[23] For instance the average quarter-on-quarter growth rate over the past 6 months was 2.3 per cent versus an average of 4 per cent in the 6 months before that. The equivalent average month-on-month growth rates over the two periods were 0.8 and 1.1 per cent.

output, the level of delivery remains well below the volume required to meet the demand for housing, with signs of a slowdown in the pace of expansion beginning to emerge in forward-looking supply indicators. Annual housing completions approached 27,800 in 2022Q3, about thirty per cent above their pre-pandemic levels and the highest figures since 2009 (Chart 35). Looking ahead, in addition to the potential impact of rising interest rates and increased funding costs on investment decisions, higher construction costs and the limited availability of materials and labour risk further impairing housing delivery over the medium-term. Indeed, recent data suggest a notable decline in annual commencements recorded since 2022Q1 (Chart 35).

Chart 35: Slowing commencements suggest a possible weakening in housing supply

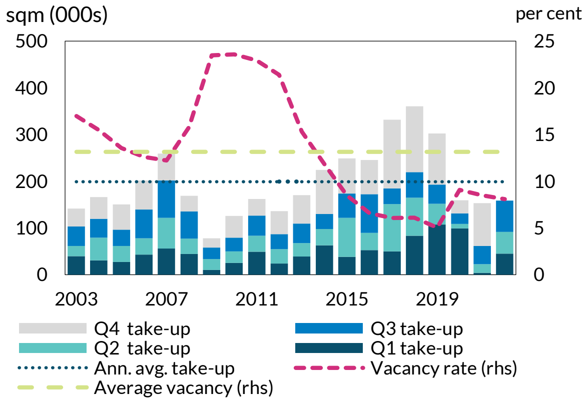
Indicators of residential construction activity: rolling annual totals



Source: CSO and Department of Housing. Local Government and Heritage.
Notes: Last commencement and completion observations 2022Q3, planning permission and registration data 2022Q2.

Chart 36: Take-up in the Dublin office market remains below pre-pandemic levels

Dublin office take-up and vacancy rate



Source: CBRE Ireland research.
Notes: Last observation 2022Q3.

The outlook for the CRE market in Ireland also remains uncertain amid more challenging macro-financial conditions. Letting activity in the Dublin office market continues to recover despite the economic uncertainty, but remains below pre-pandemic levels. The 67,000 square metres of space leased in Q3 brings the 2022 total so far to almost 160,000 square metres, in-line with the full year take-up during the pandemic years of 2020 and 2021 (Chart 36).[24] Notwithstanding this relatively solid performance in Q3, there are some signs that economic headwinds may be starting to weigh on sentiment.[25] In addition, the estimated outstanding demand requirements for office space in the capital, as measured by CBRE has fallen to 210,000 square metres in 2022Q3, from a figure of 285,000 square metres earlier in the year.[26]

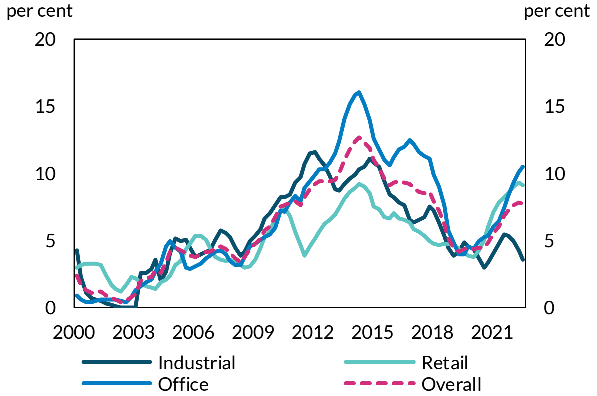
Ongoing structural change across the CRE sector, such as the increased popularity of online shopping and the adoption of remote working practices, have the potential to amplify existing cyclical vulnerabilities. Given the significant volume of new office space expected to come on stream over the next couple of years, any significant fall-off in the demand for office or retail space would likely see further increases in the vacancy rates in these sectors. This arises at a time when the level of retail and office vacancy rates have already risen notably since before the pandemic

[24] Similarly, according to CBRE data the Dublin industrial and logistics market experienced its strongest ever quarter of leasing activity in 2022Q3, with take-up of 187,000 sqm, while several notable lettings have also occurred in the Dublin retail market during the past 9 months. See CBRE Dublin Industrial and Logistics and Retail Market Overview Reports, 2022Q3.
[25] For more details see CBRE Ireland Investment and Funding Report 2022Q2.
[26] See CBRE Dublin Office Reports Q1 and Q3 2022.

(Chart 36 and Chart 37). As documented in previous *Reviews*, the CRE market in Ireland remains vulnerable to structural changes such as increased remote working and the rise of online shopping which may potentially impact office vacancy rates and retail footfall.

Chart 37: CRE vacancy rates have increased since the last *Review*

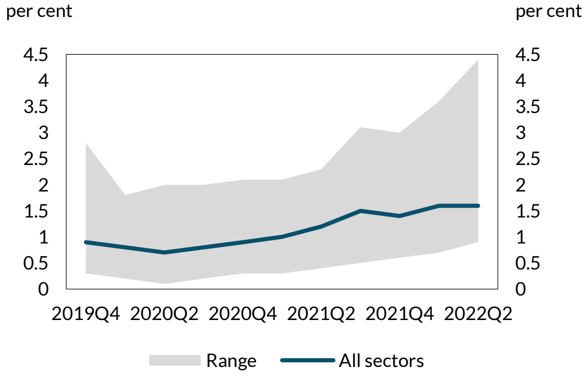
Irish CRE vacancy rate: overall and by sector



Source: MSCI.
Notes: Chart is based on a 4-quarter rolling average of the observations. Last observation 2022Q3.

Chart 38: The Irish labour market remains tight as reflected by the recent peak in the vacancy rate

Labour market vacancy rates



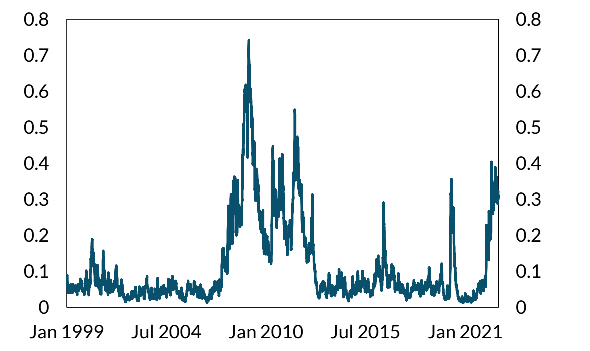
Source: CSO.
Notes: The "Range" includes the vacancy rates of all economic activities captured in the database according to the NACE classification. Last observation 2022Q2.

Labour market conditions, another important factor in the cyclical assessment, remain tight in the domestic economy. The unemployment rate remains low and Ireland has experienced significant employment growth compared to elsewhere in the EU in recent years (Chart 17). Moreover, the vacancy rate, i.e. the proportion of total job posts that are vacant, in the Irish labour market has also increased since the last *Review* and reached a new peak in 2022Q2 as labour demand remains high across all economic sectors (Chart 38). Looking ahead, the outlook for domestic growth over the coming quarters is more challenging than previously expected, against a background of higher inflation. Significantly higher consumer prices and business costs are acting as a drag on household spending and business investment in the near-term, leading to a weaker outlook for domestic activity.

Financial conditions in Ireland have tightened since the last *Review* while estimates of downside risks have increased. As noted above (see *Risks: Global repricing*), global financial conditions have tightened materially, with domestic measures of financial conditions continuing to weaken in recent months (Chart 39). Moreover, estimates of downside tail risk in the Irish economy over the medium-term, have also deteriorated since the last *Review* (Chart 40). These models do not account for structural changes occurring in the broader macro-financial environment.

Chart 39: Irish financial conditions have tightened in recent months

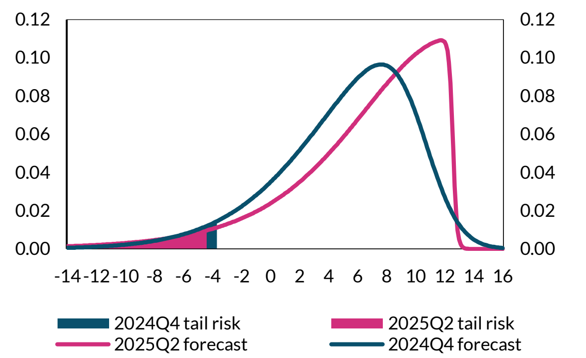
Irish Composite Stress Index



Source: Refinitiv Datastream and Central Bank of Ireland calculations.
Notes: The ICSI is a weighted composite of five market sub-indices (Banking, Bond, Equity, FX, Money) that is further adjusted to account for degree of correlation amongst sub-indices (Parla F., 2021). Weekly moving averages of daily observations. Last observation 4 November 2022.

Chart 40: Tail risk for GNI* growth has deteriorated since the last *Review*

Output growth tail risk and uncertainty



Source: Central Bank of Ireland.
Notes: T+12Q ahead output (GNI*) at risk. Latest forecast for 2025Q2. The estimated tail risk is affected by a large increase in investment which impacted modified domestic demand and GNI* in 2022Q2 (Quarterly Bulletin 2022 Q4, p.12.) This investment positively impacts the median growth forecast for 2025Q2 and negatively affects tail risk.

Structural Risk

Structural risks exist within the financial system independent of the financial and economic cycles. They stem from slow-moving features of the financial system such as market or exposure concentration, the degree of financial system interconnectedness and systemic importance, and the scope for structural macroeconomic shocks.

Structural features of the Irish economy

As a small, open, and highly-globalised economy Ireland is particularly sensitive to developments in the global financial cycle as well as being more prone to structural macroeconomic shocks than other economies. Irish macro-variables have exhibited greater variability compared with international peers since 1980 (Chart 41). If such volatility were maintained into the future, it would imply a wider distribution of possible outcomes, including the potential for more severe tail outcomes. Such factors increases forecast uncertainty relative to other countries. As noted in previous Reviews, as a small, open, and highly-globalised economy Ireland is particularly sensitive to developments in the global economy and financial system.

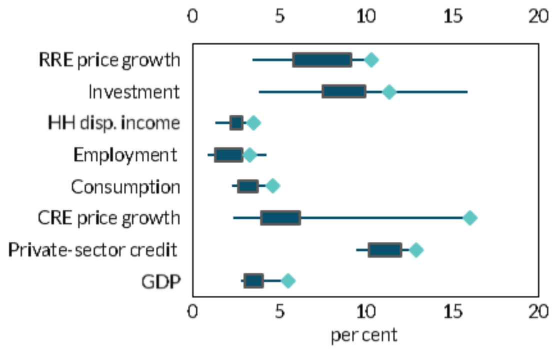
The Irish economy is reliant on a concentrated set of sectors for aggregate economic performance, in particular the pharmaceutical and ICT sector. The resilience of the Irish economy during the COVID-19 shock was supported by the combined output growth of the pharmaceutical and ICT sectors. However, an over-reliance on a small number of sectors may represent a sectoral-concentration risk and increase the reliance of the overall economy on the performance of these individual sectors. [27] The pharmaceutical and ICT sectors account for the largest share of Irish exports (Chart 42). The pharmaceutical sector accounted for 38 per cent of total goods exported in 2021 whereas the share of exported services accounted for by computer services stood at close

[27] In the build up to the Global Financial Crisis the Irish economy and financial system was heavily dependent on property-related lending and construction. The effects of the financial crisis on the Irish economy was compounded by a collapse in construction which saw an increase in unemployment and the loss in property-related tax revenue.

to 55 per cent in 2020. In addition, MNEs account for a sizable proportion of the total output of both sectors.

Chart 41: Since 1980, the Irish economy has been considerably more volatile than its peers

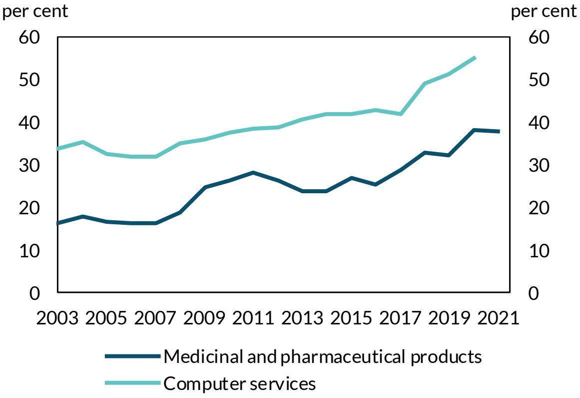
Standard deviation of a range of macro-financial variables



Source: Data derives from OECD, BIS and ECB statistical data warehouse. Central Bank of Ireland calculations.
Notes: Volatility is the standard deviation of annual growth rates in the series examined. Dataset examined covers relevant economic indicator growth rates across 27 advanced economies measured over the period 1980Q1 to 2022Q3. Shaded area represents interquartile range of growth volatility across these countries, with IE data shown in teal. "RRE" and "CRE" refers to residential and commercial real estate respectively. "HH disp. income" is household disposable income.

Chart 42: Irish exports are highly concentrated in the pharmaceutical and ICT sectors

The share of total goods and services exported from the Irish economy accounted for by pharmaceutical products and computer services

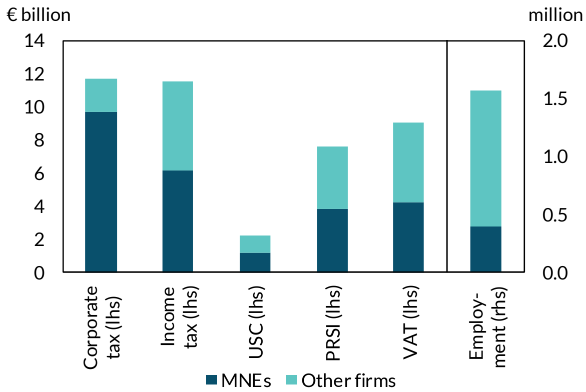


Source: CSO.
Notes: Medicinal and pharmaceutical products are expressed as a percentage of *total goods* exported. Computer services are expressed as a percentage of *total services* exported. Last observation for goods export is 2021 and for services exports is 2020.

An increasing reliance on MNEs also leaves Ireland susceptible to changes in FDI flows and acts as an additional channel through which changes to the international trading and tax environment may impact the domestic economy. The share of overall Irish taxation contributed by the corporate sector remained elevated at above 20 per cent of total tax revenues in 2021 while a significant proportion of this tax is provided by MNEs (Chart 43). The share of total Irish government revenue accounted for by corporate tax is now amongst the largest in the OECD (Chart 44), which makes Ireland particularly vulnerable to any shocks that might impact this important source of government funding (see *Resilience: Sovereign* for further analysis).

Chart 43: MNEs are important sources of tax revenue and employment for the Irish economy

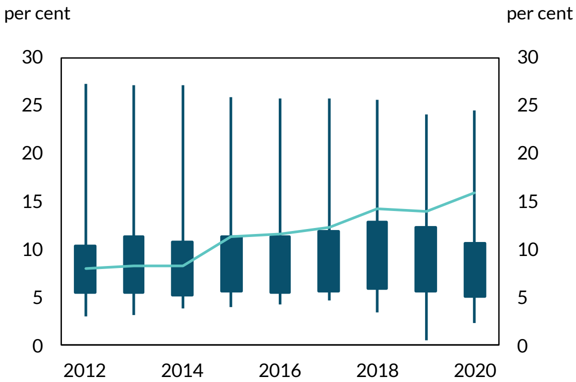
Breakdown of taxation and employment by firm type



Source: The Revenue Commissioners, CSO and Central Bank of Ireland calculations.
Notes: Taxation data are for 2020. Employment data are for 2018.

Chart 44: The reliance on corporation tax receipts in Ireland is among the highest in the OECD

International comparison of corporation tax share of total tax revenue



Source: OECD and Central Bank of Ireland calculations.
Notes: Sample of 37 OECD countries. Ireland denoted by teal line.

There is a growing concentration of corporate tax revenues amongst a small number of large firms. Overall, the top ten companies account for more than half of total corporate tax receipts. Foreign-owned MNEs account for 80 per cent of net corporate tax receipts as of 2021. Ongoing international corporate tax reforms may potentially impact the corporate tax revenue generated from these sectors although uncertainty exists as to when and by how much tax receipts may be impacted. Estimates suggest more than half of last year's receipts may not be explained by developments in the domestic economy, which points to risks as to the sustainability of some of these tax revenues in future periods.[28]

Structural features of the Irish financial system

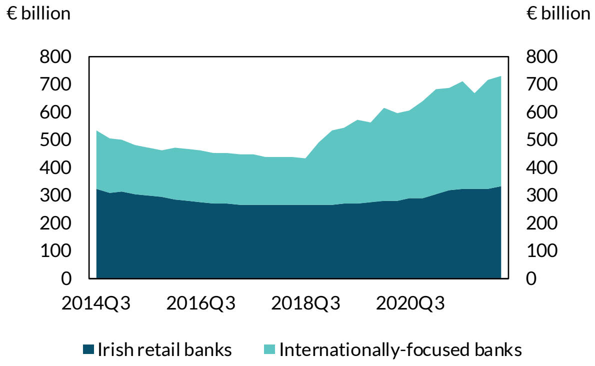
The domestic retail banking system remains heavily exposed to the Irish economy, but the complexity of the overall Irish banking sector has increased. Retail banks predominantly provide financial services to the domestic real economy and tend to be small in an international context. International (non-retail) banks by contrast, though located in Ireland, tend to have more limited interaction with the domestic real economy and mainly provide services into the rest of the EU. In recent years, and following the UK's departure from the EU, a number of institutions in this latter group have substantially grown in size (Chart 45). For the retail banks, Irish and UK assets account for 83 per cent of total exposures. Across all geographical exposures, loans and advances account for the majority of exposures with residential mortgage lending accounting for over 41 per cent of total exposures (Chart 46). The high degree of similarity across both asset classes and geography suggest a shock to one or more of these exposures could affect multiple retail banks. In contrast, international (non-retail) banks' geographical and asset class exposures are more diverse.

The structure of the Irish financial system has also changed significantly over the past decade with a continued consolidation in the Irish retail banking system and the growth of non-banks. The provision of banking services to the domestic economy is heavily concentrated in a small number of credit institutions with the level of concentration expected to increase in the coming years. Five banking groups account for over 92 per cent of lending to households and firms in Ireland. The withdrawal of two retail banks and the on-going transfer of assets within the Irish banking system will result in a greater level of concentration of assets among the remaining lenders. At the same time, non-bank lending has increased in recent years, especially in some key segments (see Box D for further analysis of the changing lending landscape in Ireland).

[28] For an estimate of the potential corporate tax at risk Conefrey et al (2022) "Managing the Public Finances in Uncertain Times", Central Bank of Ireland, Quarterly Bulletin 02, July, and Box G in Irish Fiscal Advisory Council (2022), "Fiscal Assessment Report", May

Chart 45: Total assets of the Irish banking system have increased, driven by internationally-focused banks

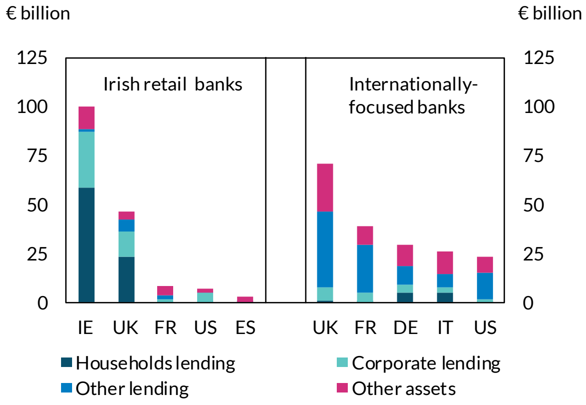
Total banking system assets



Source: Central Bank of Ireland.
Notes: Total assets of all supervised credit institutions. Last observation 2022Q2.

Chart 46: Retail banks are relatively more concentrated by lending and geography of exposures than internationally-focused banks

Geographical breakdown of exposures by residence of the counterparty



Source: Central Bank of Ireland.
Notes: Other assets include derivatives holdings and equity instruments. Data are for a sample of banks that submit geographical exposure data. Data as at 2022Q2.

Cyber and operational risks

Operational and cyber risks are increasing in the financial system as firms become more reliant on technology and third-party service providers to deliver their critical business services. Accelerated by the COVID-19 shock, digital technologies are now key elements of payments, lending, insurance and wealth management services. Technology facilitates the digitalisation of these financial services but it also brings with it wide-ranging operational risks. The increasingly interconnected financial system, coupled with the growing use of cloud technology and third party providers to deliver financial services, gives rise to increased security risks within the supply chain. The current energy supply concerns heightens such operational and cyber risks in the delivery of critical business services through expected or unexpected disruptions. The increased use of data for decision-making within organisations also increases the risks to firms if the data are not secure, accurate and ethically utilised. The amount of data being collected and utilised by financial market participants has grown exponentially in recent years and data is now a critical asset for most financial services firms. Protection of this asset is essential, as the financial sector becomes a target for malicious cyber actors, not only for financial gain but also increasingly for other purposes.

Climate risks

Risks related to climate change are also increasing with wider implications for the financial system, both in Ireland and internationally. Broadly, risks from climate can be categorised according to two categories. First, “physical risks” relate to risks from the increased incidence or severity of extreme weather events as well as gradual and structural shifts in the environment. While physical risks will continue to increase, the rate of change is highly uncertain and dependent on the level of emission reductions in the coming decades.[29] “Transition risks” also exist and stem from the possibility of, for example, abrupt changes in the relative price of carbon-intensive assets, especially if the necessary adjustment towards a less carbon-intensive economy is delayed and disorderly. These costs are associated with achieving net zero targets – the effects of government decarbonisation

[29] See IPCC (2022) “Climate Change 2022: Impacts, Adaptation and Vulnerability”

policies which will disproportionally affect emission-intensive businesses and households, and/or those with fewer cost-feasible decarbonisation options. The recent COP27 again highlighted the scale of the challenge in keeping global temperatures within or below 1.5 degrees by 2100. This will require unprecedented changes to energy supply and energy efficiency.[30]

Climate change will affect the financial system through several domestic and international channels. For example, the resilience of the banking system will depend on borrower capacity to decarbonise in the medium-to-long run with rising emission prices (through taxation or supply shocks), business costs will increase relative to the emission-intensity of inputs, technologies and processes, while revenues will decline relative to the emission-intensity of final goods. Any increase in current physical risk forecasts would also affect business costs (and property values) through insurance decisions. Such potential changes to long-run business profitability expectations have clear implications for credit and investment flows, particularly if there is improved environmental disclosures in relation to business and investment emissions and increased policy clarity across regions.

Internationally, data and modelling gaps are a considerable impediment to estimating the size of financial sector climate risks. The 2022 ECB Climate Risk Stress reveals data gaps and inconsistencies across euro area banks. The report also finds that most euro area institutions are at a very early stage of developing and integrating climate risk into their credit risk models and stress testing frameworks. The NGFS have also called for urgent action to improve the global climate data infrastructure through common disclosure standards and taxonomies, and the delivery of decision-useful metrics and methodological standards.

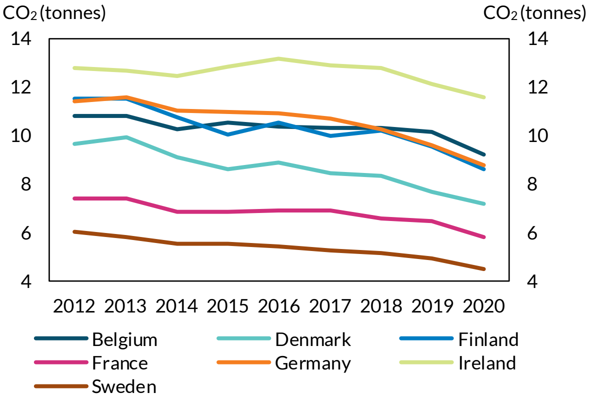
Decarbonisation in Ireland is particularly challenging given the current technology stock and sectoral composition. The Climate Action Plan 2021 outlines the policies for achieving a 51 per cent reduction in greenhouse gas (GHG) emissions by 2030, with highly ambitious targets for energy efficiency, electrification and renewable energy. In 2020, GHG emissions per capita in Ireland were the second highest in the EU and 57 per cent higher than the EU27 average (Chart 47). This high intensity is, however, primarily due to Ireland's exceptionally high emissions from agriculture (Chart 48).

Addressing climate related risks in Ireland will require significant investment from businesses and households. Achieving 2030 climate targets would dramatically reduce fossil fuel use and imports, as well as the emission intensity of production and consumption. In particular, Ireland has targets of almost one million electric vehicles (almost 40,000 registrations to date at time of writing), half a million household "B2" retrofits (currently 115,842 at "B2" or above), 650,000 heat pumps installations, and increased shares of renewable electricity to 80 per cent (currently approximately 40 per cent). While the speed and depth of national goals is unprecedented, the ambition is necessary for Ireland to play its role in global mitigation to reduce long run physical risks. However, given that the Climate Action Plan will primarily depend on private sector investment, it will depend on the decisions of technology adopters such as businesses and households.

[30] See IEA (2022) "World Energy Outlook 2022"

Chart 47: Relative to EU27, Ireland has a high greenhouse gas intensity

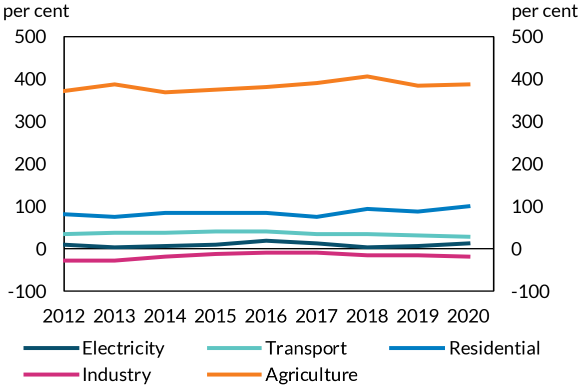
Greenhouse gases per capita, selected EU countries



Source: European Environmental Agency.
Notes: Greenhouse gases expressed in tonnes of CO_2 equivalent.

Chart 48: Ireland's high greenhouse gas intensity is driven by agriculture

Greenhouse gases per capita by sector: percentage difference between Ireland and EU27 (five main emitting sectors)



Source: European Environmental Agency.
Notes: Data are the percentage deviation of Irish greenhouse gas levels from EU27 averages. Sectoral emissions are calculated on a per capital basis with overall emissions expressed in C02 equivalent terms.

Box A: Economic risks for Ireland from developments in the United Kingdom

By Fergal McCann (Macro-Financial Division)

Recent economic developments in the UK raise a broad range of potential risks for Ireland. The Bank of England's November Monetary Policy Report highlights the extent of weakness in the UK economy, with negative growth forecast to persist into 2024, unemployment rising above 6 per cent, and Bank Rate remaining above 4 per cent into 2025. While developments in the UK are relevant for all economies with trade and financial linkages, the risks for Ireland are magnified by physical proximity and deep-rooted economic linkages, along with Brexit-related uncertainty around the future trading relationship between the economies.

High inflation, and the necessary monetary policy response, interlocked with fiscal policy announcements and pockets of vulnerability in the non-bank financial sector on September 23rd to produce a spike in yields on UK government debt (see Box C for a detailed analysis of the mechanisms underpinning the financial market shock that necessitated Bank of England intervention). This increase in UK yields had only been partially reversed by the start of November, with UK government borrowing costs remaining high relative to recent decades. The Autumn Statement of budgetary measures had, in the days after publication in mid-November, received no further negative market reaction.

The volatility in UK gilts has been having a range of knock-on effects on financial conditions for households and businesses. Yields on commercial paper issued by UK corporations, as well as Credit Default Swaps for UK banks and other businesses, and prices of equities, all moved sharply in response to the increase in gilt yields, with knock-on implications for investment and sentiment likely. This follows more than half a decade since the 2016 Brexit referendum in which UK investment has lagged behind that of other similar economies.

The housing and mortgage markets are another important area where the events of September 23rd were immediately felt, as mortgage credit supply responded instantaneously to increases in gilt yields. After the fiscal event, the number of 90 per cent and 95 per cent LTV products on the market fell by about one half[1], while an average 5-year fixed rate mortgage rose from 4.75 per cent to 6.5 per cent, decreasing only slightly to 6.4 per cent by late October. Early indicators suggest that the stock of homes for sale is now rising, new buyer enquiries are in sharp decline, house prices have reached an inflection point, and agent expectations are now firmly for price falls (Goodbody Analytics, "Siteworks" report, 7 November 2022; RICS Survey, 10 November 2022).

The centrality of housing in the UK economy means that there may be important amplification mechanisms from a weakened housing market to broader economic demand. Even by August 2022, UK consumer sentiment indices had fallen more than 10 per cent since mid-2021.

These developments in the UK will have implications for Ireland. In aggregate the importance of the UK in Irish trade and investment flows has fallen over time: 63 per cent of Ireland's total merchandise exports were to the UK at the point of Ireland's accession to the European Union in 1973, with this falling to 12 per cent in 2020 (Chart A). For exports in services, the fall has been from 25 to 14 per cent since 2003, and 20 to 10 per cent in the business services segment. However, despite falling aggregate trade connections, which relate primarily to substantial growth in the importance of globally active multinational enterprises in Ireland, there remain important spillover channels for the Irish economy:

Direct export linkages, with indigenous Irish export businesses in sectors such as agriculture and food particularly reliant on the UK as a destination. Chart B, from Lawless et al. (2017), shows the clear importance of the UK as *the* major destination for the exports of indigenous businesses, with the UK's dominance being similar among both food and non-food manufactured exports.

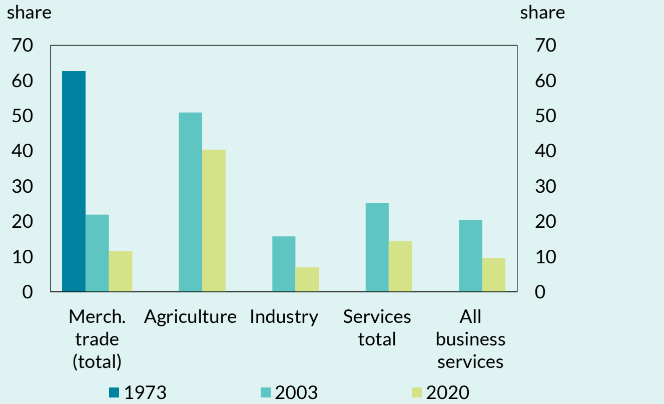
Imports for re-sale and as inputs to production, with the UK remaining a crucial part of the supply chain for Irish businesses. Lawless (2018) calculates that, while MNEs are not particularly reliant on the UK as an import source, over half of the imports of *Irish-owned* businesses come from the UK, and that more than half of these imports are intermediate inputs to production. The importance of the UK for production inputs highlights the potential for knock-on spillovers to productive capacity from disruption in the UK.

Inward Foreign Direct Investment, with UK-owned inward investment positions of €15bn as of 2020 (CSO, 2020). While this position is small relative to that of the United States, the UK is more important as a source of FDI-led employment: the 87,500 employees in UK-owned businesses in Ireland as of 2018 was second only to the United States in importance, at 132,300 (CSO). Close to one billion euro, or 8 per cent, of the equity in Irish-domiciled property funds also originates in the UK (Daly et al., 2021).

Direct financial exposures of Irish banks through their retail banking operations. UK exposures account for 26 per cent of total loans and advances of the three remaining domestic retail banks (see *Resilience: Domestic Retail Banks*). The UK mortgage book is a significant exposure given recent developments and risks of house price falls, at close to €20bn (12 per cent of total loans and advances). Of this, a large minority relates to BTL lending, which has traditionally been higher risk in economic stress events given the investment profile of borrowers and a reliance on interest-only lending.

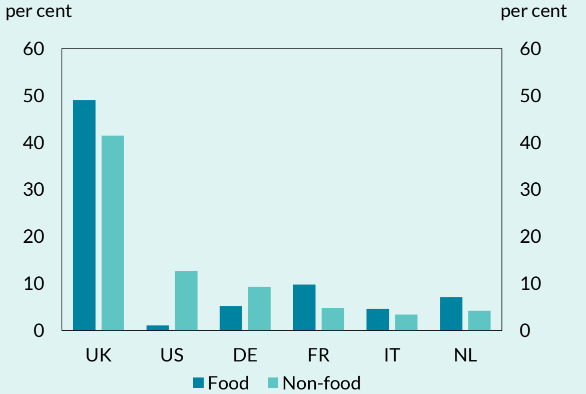
Given the above linkages, economic developments in the UK in recent months are particularly relevant for Irish financial stability, even if overall macroeconomic dependence has diminished in recent decades. Accounting for a range of spillover channels together, Central Bank of Ireland macroeconomic modelling suggests that a 1 per cent fall in UK GDP could contribute to a 0.2-0.3 per cent fall in Irish output, highlighting the potential importance of future deteriorations in the UK economic outlook for domestic financial stability.

Chart A: The UK's importance as an export destination has fallen in aggregate over time



Source: CSO, Central Bank of Ireland calculations.
Notes: Value of 60 implies, for example a 60 per cent share of the UK in Ireland's total merchandise exports in 1973. "Merch. trade" denotes merchandise trade.

Chart B: The UK is traditionally the dominant export market for indigenous Irish exporters



Source: Lawless et al. (2017).
Notes: Based on micro data on manufacturing exporters 2011-2014. More recent non-official information suggests this pattern continues to hold, e.g. Enterprise Ireland reports for 2021 that the UK accounts for 31 per cent of their clients' exports.

[1] Data from Moneyfacts public reporting, see for example here.

Box B: Energy market effects on Irish financial stability

By Caroline Mehigan & Paul Reddan (International Finance Division)[1]

The Russian invasion of Ukraine exacerbated the post-COVID trend of increased commodity prices and associated volatility, which has fed directly through to elevated energy prices and volatility. The sharp reduction in the current and expected supply of gas directly affects the prices of energy. Spot electricity prices are affected through established price setting methodologies. The spot prices are set based on the most expensive bid to fulfil electricity demand at each given time (marginal supply). Lower cost energy sources such as hydro, nuclear or wind provide supply first to meet the initial demand, while the marginal supply is then often met from sources like gas or oil.[2] Electricity in Ireland is met mainly by gas (39 per cent), wind (38 per cent) and coal (14 per cent).[3] As costs rise for marginal producers generating electricity from gas or oil, this increases the spot price of electricity. Gas prices have risen to historic highs and there has been heightened volatility in commodity prices. The related energy price increases have been severe. Chart A illustrates this for gas futures and spot electricity prices relevant for Ireland and Europe. The effects have been more severe in certain European jurisdictions, where there is a greater reliance on Russian gas.

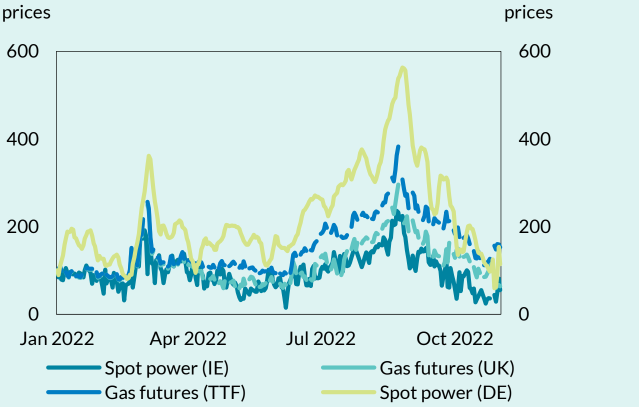
Energy firms make significant use of financial markets and products to hedge their exposures to fluctuations in the cost of commodities and generated electricity, with different approaches across countries. Energy companies typically rely on energy derivatives as part of normal risk management. The objective is to hedge against the adverse impact of future price movements. Energy producers routinely hedge the sales of energy on the futures markets. This is driven by price caps and controlled retail pricing policies in many countries. In the Irish case, there are currently no price caps on energy in the retail market and there is a relatively illiquid market for hedging the wholesale electricity market. This combination results in Irish energy companies typically taking a different hedging strategy, where they are mainly focused on hedging the price paid for energy inputs (gas).

Increased commodity prices and volatility can result in energy firms facing greater liquidity requirements to both take out derivative positions and to meet margin calls related to existing positions. For example, 'initial margin' is the initial amount of money a trader must place in an account to open a futures position. Increases in the price and the volatility of a commodity raises the amount of initial margin required. Similarly, 'variation margin' relates to the amount of cash that firms are required to receive or post to cover outstanding derivatives exposures. The amount of variation margin changes mechanically depending on changes in the daily market price. Variation margin can be received or posted, depending on the profit and loss of the exposure.[4] Overall, in line with the increase in the underlying assets, margin requirements have increased significantly over the past year (see Chart B).

Across Europe, energy companies have faced greater liquidity needs to meet margin requirements and other implications of high gas prices. In addition to liquidity needs to meet higher initial margin costs and variation margin calls, energy firms are also facing liquidity requirements to buy more gas in advance or for pre-payment requirements. Energy firms rely on the financial system, in particular the banking sector, to raise funding to meet these margin calls and their liquidity needs. The European Banking Authority has outlined that for the wider European market, banks across Europe are providing significant levels of support to energy companies by facilitating the posting of collateral.[5] While financial markets and the underlying infrastructure of these markets has operated as planned, the ongoing volatility in commodity markets is proving challenging for energy firms as they face liquidity but (in most cases) not solvency challenges. The effects on energy firms have not been uniform across

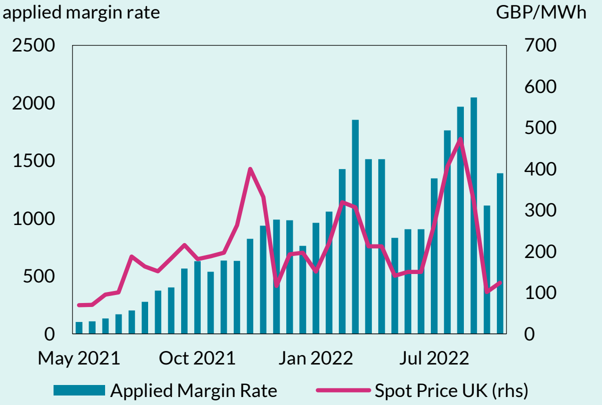
Europe, with firms in some European countries more severely affected than elsewhere. Government support has been provided in certain instances.[6]

Chart A: Electricity spot and gas futures prices are both increasing and volatile



Source: Bloomberg.
Notes: All series are indexed to 4 January 2022. Spot power prices are taken from Day-Ahead markets. The Irish Day-Ahead market operates on an all-island basis. Gas futures are 1 month ahead daily prices for UK Natural Gas and the Dutch Title Transfer Facility. Last observation 4 November 2022.

Chart B: Initial margin rates have increased significantly

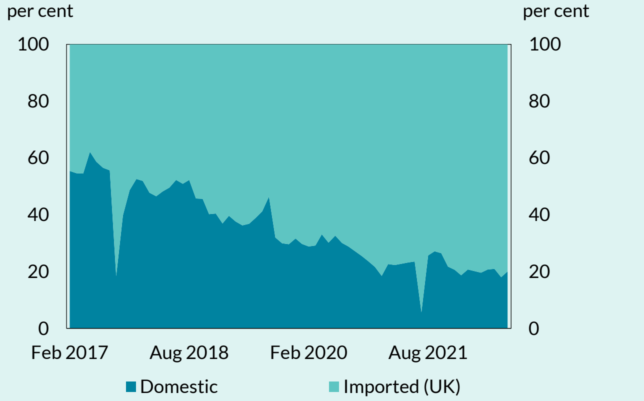


Source: ICE Clearing, Bloomberg.
Notes: Applied margin rate on UK month ahead natural gas futures. Last observation October 2022.

The Irish wholesale energy market operates on an all-island basis, and the UK gas market is more relevant for Ireland than the European market. The electricity transmission system (or grid) in Ireland and Northern Ireland is connected to the UK through two interconnectors, but is not currently directly linked to the European energy market.[7] There are three key markets for energy companies operating in Ireland: the commodity market for energy inputs, the all-island wholesale market, and the retail market. Gas is a key commodity for electricity generators in Ireland and therefore is particularly important as a *commodity market* for Irish energy. Approximately 80 per cent of gas supply in Ireland is imported from the UK (see Chart C). The *wholesale market* brings together electricity generators and electricity suppliers (suppliers provide energy to final customers such as households and businesses). Hedging activities in the Irish wholesale energy market are typically performed through Contracts for Differences (CfDs). This market is relatively illiquid. Several of the main electricity generators also have electricity supply businesses, so they sell directly to their supply arms and so supply less electricity on this market. For competition and market concentration reasons, the largest generator of electricity in Ireland, the Electricity Supply Board, has to sell a number of directed CfDs. These contracts, as well as any sold by other generation companies, are available for purchase by energy supply companies.

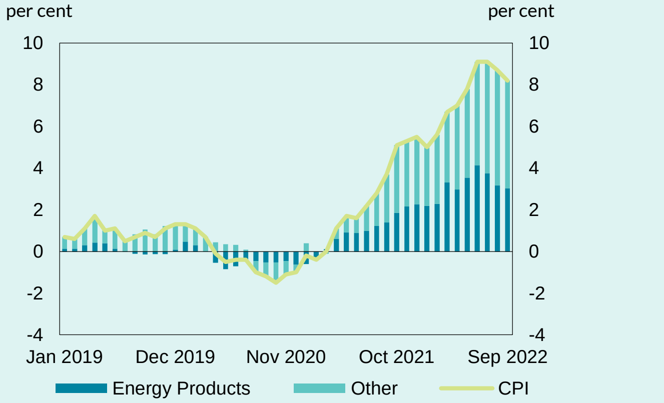
The lack of liquidity for hedging in the wholesale market and the importance of the UK gas market means that the most important market for hedging by Irish generators and suppliers is the UK gas futures market. Gas-fired generators (and electricity suppliers) hedge their exposures by trading UK Gas futures on the ICE Futures Exchange in the UK. European Market Infrastructure Regulation (EMIR) data indicates that Irish non-financial corporations are 'long' on gas, which means that existing hedges have provided protection against rising input costs. While energy firms in Ireland have not faced difficulties to the same degree as in other European countries, they could experience challenges if prices were to reduce rapidly due to retracement risk. Essentially, if prices were to reverse rapidly, variation margin would need to be repaid, risking a liquidity squeeze.

Chart C: Gas supplies in Ireland are reliant on UK imports



Source: Gas Networks Ireland.
Notes: Domestic includes supply from Inch and Bellnaboy (the Corrib gas field) while Imported includes supply from Moffat, Scotland. Last observation August 2022.

Chart D: Energy products are a significant component of inflation



Source: CSO.
Notes: Taken from CSO Table CPM11, Contributions to changes in the Consumer Price Index. Last observation September 2022.

The Irish banking system does not have high direct exposures to the Irish energy sector, but there are other potential channels of transmission. Central Bank analysis suggests the direct exposure of Irish retail banks to electricity generators and suppliers is relatively limited. These larger energy companies are multi-banked and Irish retail banks account for only a moderate share of their total credit facilities from European reporting banks.

Second round effects of high energy prices (or reduced energy quantity) on households, firms and lenders could lead to a further deterioration in the global macroeconomic outlook. As outlined in *Risks: Stagflation*, growth prospects have deteriorated, with stubbornly high inflation being influenced by volatility in energy and commodity markets. Energy products have played a significant role in overall inflation increases (see Chart D).

Further significant energy market volatility could transmit to the Irish financial system through triggering a wider dysfunction in financial markets. As outlined in *Risks: Global Repricing*, there has been a sustained build-up of financial market vulnerabilities in recent years, amid a prolonged period of relatively loose financial conditions and rising asset prices. Heightened liquidity strains could spill over from energy and commodity markets to other areas of the financial system.

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[1] With particular thanks to Giuseppe Insalaco and Patrick Haran for their comments.
[2] Discussions regarding potential changes to price setting for wholesale energy markets have taken place at a European level in response to recent increases in prices.
[3] SEM Committee Market Monitoring Unit Quarterly Report Q1 2022.
[4] Initial and variation margin requirements apply to centrally cleared derivatives trading. Energy firms can alternatively enter into an over-the-counter (OTC) agreement which can be negotiated directly between the relevant participants in the agreement. While margin requirements for these agreements can be less than on a central exchange, OTC agreements generate counterparty credit risk.
[5] EBA response to the European Commission on the current level of margins and of excessive volatility in energy derivatives markets, 29 September 2022.
[6] For further details on supports provided, see National fiscal policy responses to the energy crisis, Bruegel.
[7] The interconnectors originate in Scotland and Wales. The wider UK market has connections with the continental European energy market. However, Ireland does not currently have a direct connection with the wider European energy market. Connection to the EU energy market will be enhanced by the Celtic Interconnector from Ireland to France, which is due to be completed in 2026.

Box C: UK developments and the investment fund sector

By Stephen Doyle, Naoise Metadjer & Kitty Moloney (International Finance Division)

This Box seeks to explain the developments surrounding the announcement of the so-called 'mini-budget' in the UK, including the rise in gilt yields, falling market liquidity, Bank of England (BoE) intervention, the resilience of Liability Driven Investment Funds (LDIs) and the approach taken by central banks more generally in response to these events. While markets have calmed somewhat since 23rd September, a key take-away is that leverage and liquidity related vulnerabilities in the non-bank financial sector can amplify deteriorating market conditions. Improving systemic risk analyses of investment funds and introducing macroprudential tools for the sector can increase the sector's resilience so that it will absorb rather than amplify shocks to the financial system. This will reduce the need for reactive central bank interventions.

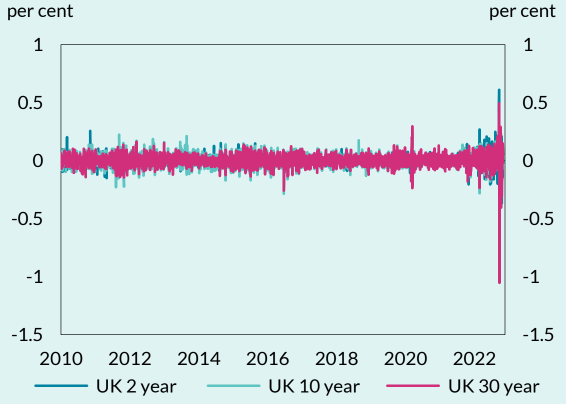
The UK 'mini-budget' of 23rd September included steep tax cuts with few details of funding plans. The market reaction to the announcement was strongly negative. 30-year gilt prices fell by more than 24 per cent in the period between the day before the 'mini-budget' announcement and early morning Wednesday, 28th September. The dislocation in the UK gilt market was amplified by the non-bank sector as leveraged entities - facing market liquidity strains, insufficient collateral and high leverage - were *forced to sell* gilts. When the BoE announced on Wednesday 28th September that it would buy gilts until October 14th, the price rallied by 24 per cent in a matter of hours.

The UK pension sector was a key seller of gilts via Liability Driven Investment Funds (LDIs). These are used by defined benefit pension funds to hedge the interest rate and inflation sensitivity of their liabilities, while trying to maximise the overall return on the fund. Due to the prevailing low interest rate environment over the previous decade, it has been challenging for these pension funds to meet their liabilities. LDIs use leverage to allow pension funds maintain their liability hedge without committing all of their assets to the LDI strategy, thereby freeing up funds to invest in "growth assets". Leverage includes derivative positions that are 'marked to market' which means losses (or gains) are paid on a daily basis. The daily call for cash is known as a (variation) margin call. But the movements in the gilt markets were far higher than expected or previously seen in recent history (Chart A and Chart B below). Volatility in daily changes (measured as standard deviation) in 30-year gilts yields since 23rd September was 7 times average volatility from 1998-2022 (this drops to 4 times if you remove the 28th September). Risk models hadn't forecast these *black swans* and this caused the LDI's cash buffers or *headroom* to be either significantly depleted or wiped out. [1] Margin calls - and other larger than expected calls for cash - *forced* the funds *to sell* gilt assets amplifying the already falling gilt markets. The BoE intervention gave UK Pension Funds and their LDIs time to recapitalise - that is increase equity in the fund - and/or reduce their exposures/leverage and increase their *headroom*.

A second cohort of funds affected by the stress in gilts was Money Market Funds (MMFs). These funds are used by pension funds – and other investors (including LDI funds) – as a source of liquidity as they are cash-like. Initially they saw large outflows as investors cashed in some of their MMF holdings to meet margin calls, although the outflows were not as large as during the onset of the COVID-19 pandemic in March 2020. Some of the low-volatility net asset value (LVNAV) MMFs approached regulatory limits (the so-called 'collar') - and then saw large inflows as LDI funds increased cash-like holdings to prepare for further volatility.

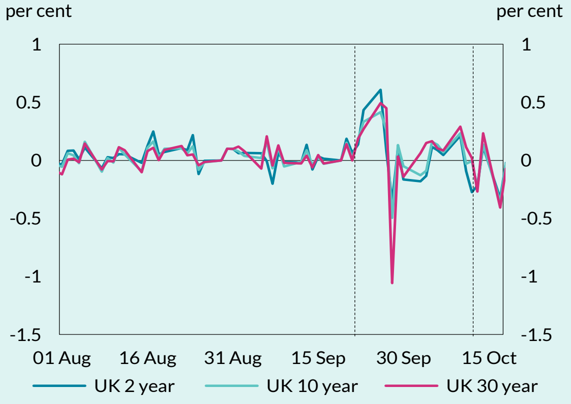
Several policy reversals of the mini-budget were announced on 17th October, just after the BoE intervention completed on the 14th October. Market functioning has been broadly restored, although there are still signs of pressure in the UK financial markets more broadly. Index-linked gilt yields remain elevated, despite falling from a recent peak in early October and exchange rate volatility remains high.

Chart A: Historical comparison shows recent *black swan*



Source: Bloomberg.
Notes: Data show the daily change in gilt yields. Last observation 4 November 2022.

Chart B: Zooming in on *black swan*



Source: Bloomberg.
Notes: The first broken line refers to the 23rd September and represents the date the UK 'mini-budget' was announced. The second broken line refers to 14th October and highlights the date the British prime minister reversed her plan for corporate tax rates and appointed Jeremy Hunt as chancellor. Last observation 4 November 2022.

Investment funds authorised by the Central Bank have significant exposure to the UK gilt market, with aggregate holdings in UK gilts of approximately £267bn as of 2022Q2, representing approximately 6 per cent of total Irish-domiciled investment fund AuM. Of that £267bn, LDI funds represent the largest sub-component of UK gilt holdings by Irish domiciled funds. In response to the market turmoil, the Central Bank engaged closely with both market participants and UK and other international authorities. Market participants took action to reduce leverage on the back of supervisory engagement and effective cross border regulation. These collective actions strengthen resilience in the LDI sector to future market shocks - a resilience that is important to maintain, given the uncertain macro-financial environment.

In this example, a more damaging crisis was averted through a mixture of central bank intervention, market participant actions and other central bank and regulator engagement with market participants - as well as regular cross-authority engagement. The impact on Ireland appears to be limited at this stage. This crisis stands as a warning to market participants and central bankers alike that holding highly leveraged positions (with buffers calibrated to recent historical volatility) can lead to *forced sales* and the need for market interventions by central banks. Having clear and well developed macroprudential policy in the non-bank sector and in investment funds in particular could mitigate the need for (costly) interventions. For example, funds may have had less leverage and/or higher liquidity buffers. If and when leveraged positions are taken, risk management practices should be conservative and take into account crises scenarios or *black swans*. The Central Bank is working with other agencies in Europe – through the ESRB and ESMA – and at a wider international level – through the FSB and IOSCO – to strengthen the resilience of the non-bank sector and to develop a macroprudential policy framework for the sector.

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[1] A black swan is an event or occurance that deviates beyond what is normally expected of a situation and is extremely difficult to predict.

Box D: The changing lending landscape in Ireland

By Paul Lyons & Joe Morell (Macro-Financial Division)

The provision of banking services in Ireland is currently undergoing significant change, driven by technology, regulation[1], bank exits and changing consumer preferences. While retail banks remain the dominant provider of credit to Irish households and businesses, this model is evolving to one where banks share the lending space with new, non-bank entities, including technology-focussed fintechs. In 2002, there were 51 banking licence holders operating in Ireland while in 2022, this had dropped to 20. In the same period, the number of credit unions has reduced from 437 to 222.[2] In contrast, the number of payment and electronic money institutions holders grew from 13 in July 2018 to 45 as at 1 November 2022.[3] This Box profiles the type of lending provided to households and businesses in Ireland. We provide an up-to-date picture on lending products as well as measures of concentration in a number of lending segments. The Box also compares Ireland to other jurisdictions based on a number of banking infrastructure metrics.

Based on data from the 600+ lenders reporting data to the Central Credit Register, as at June 2022, there were over 5.2 million active credit agreements to consumers and businesses in place in Ireland (Chart A). Credit cards, followed by personal loans, account for the most active credit agreements followed by mortgage contracts. The median outstanding balance for primary dwelling home mortgages at June 2022 was €114,000. The median personal loan borrower had an outstanding balance of €4,000 while the median business loan balance was €21,000.

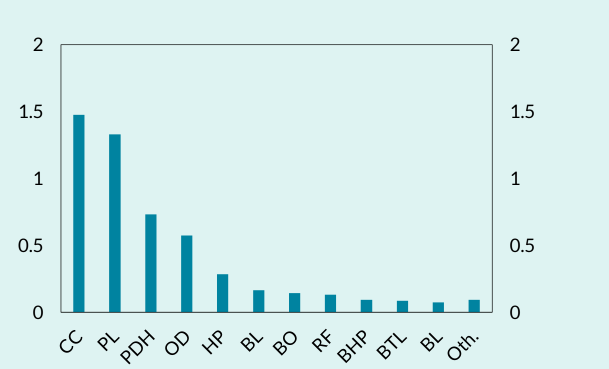
Chart B presents an assessment of how concentrated lending is across different lending segments by plotting the Herfindahl-Hirschmann Index (HHI), a commonly used measure of the level and trend in concentration of a market. According to this measure, both the PDH and BTL mortgage- lending markets in Ireland are concentrated, while the business loan market is more concentrated again. In contrast, the personal loan market is not concentrated by this measure. Following the exit of KBC and Ulster Bank, both the mortgage lending and business loan lending markets will become further concentrated. However, concentration and competition are not necessarily synonymous, and price competition is possible in relatively concentrated markets, particularly in homogenous product lines such as mortgage loans (Ryan et al, 2014). This was evident in the Irish mortgage market since 2018 where substantial price competition arose despite a relatively concentrated number of lenders, owing partly to the entry of non-bank mortgage lenders (Gaffney et al, 2022). More recently, we observe that the interest rate charged on new mortgages in Ireland has moved closer to the EU average despite the ongoing changes taking place and the recent ECB interest rate hikes (Retail Interest Rate Statistics – September 2022).

In addition to the impact of ongoing consolidation within the retail banking market, the manner in which banking services are provided to the Irish economy is also changing. In response to the challenge of structural inefficiencies and the changing preferences of customers, Irish lenders are increasingly providing credit through digital channels, a trend expedited by the pandemic. The number of physical bank branches (per 100,000 people) has been steadily declining in recent years across Europe (Chart C), with Ireland remaining close to European averages. Additionally, the share of the Irish population accessing banking services via the internet has steadily increased over the past decade, indicative of a structural change in the way in which many customers interact with their banks (Chart D).

Taken together, these two trends point to a wider adoption of digitalised banking services (see Chart 60, FSR 2021:II). While greater digitalisation does offer opportunities for Irish banks to improve their customer experience, expand customer reach and reduce expenses, it may also increase vulnerabilities to operational, technology-related risks (see page 52, FSR 2022:I). Moreover, the reduction in physical branch networks may limit access to crucial banking services among more vulnerable cohorts of the population.

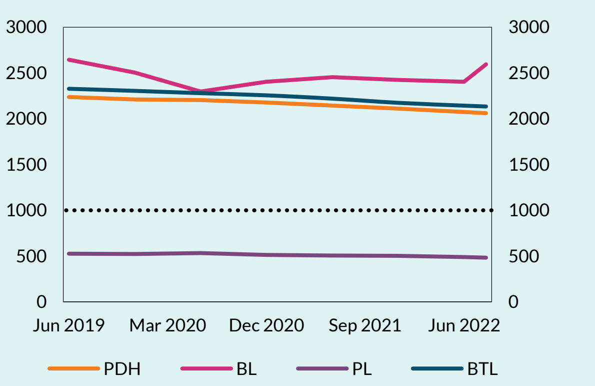
The changing nature of the provision of financial services will remain a crucial topic of focus for regulatory authorities in the coming years, from a financial stability, prudential regulation, and financial conduct perspective.

Chart A: Number of active credit agreements by product type as recorded by Central Credit Register – 30 June -2022



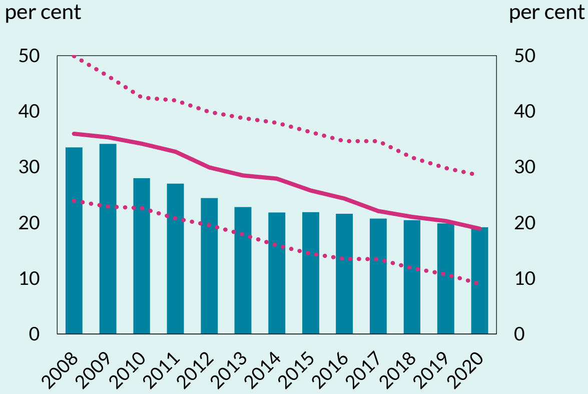
Source: Central bank of Ireland, Central Credit Register (CCR) Data.
Notes: Data as at 30 June 2022. "CC" denotes credit cards, "PL" denotes personal loans, "PDH" denotes PDH mortgages, "OD" denotes overdrafts, "HP" denotes hire purchases, "BL" denotes business loans, "BO" denotes business overdrafts, "RF" denotes revolving facilities, "BHP" denotes business hire purchases, "BTL" denotes buy to let mortgages, "BL" denotes business leasing and "Oth." denotes all other loan products.

Chart B: Lending concentration - Herfindahl-Hirschmann Index (HHI) by loan type



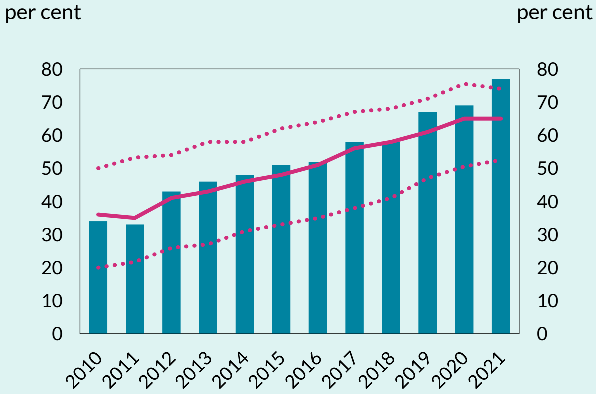
Source: Central Bank of Ireland, Central Credit Register (CCR) Data.
Notes: The Herfindahl-Hirschmann Index (HHI) is a measure of the level and trend of concentration in a particular market. The HHI is calculated by squaring each entity's market share (relative to the total market), and summing the values attained. A higher index represents a more concentrated, or less competitive lending market. A decrease indicates the opposite. "PDH" denotes principal-dwelling home mortgages, "BL" denotes business loans, "PL" denotes personal loans and "BTL" denotes buy-to-let mortgages. The dashed black line reflects a reference value in which a HHI score less than 1000 is indicative of a competitive market.

Chart C: Bank branches per 100k



Source: World Bank.
Notes: The blue bars reflect the number of commercial bank branches in Ireland (per 100k), while the solid pink line reflects the median value observed across a sample of European countries. The dashed pink lines reflect the interquartile range across the European sample of countries.

Chart D: Percentage of individuals using internet banking



Source: Eurostat.
Notes: The blue bars reflect the proportion of individual using the internet for internet banking in Ireland, while the solid pink line reflects the median value observed across a sample of European countries. The dashed pink lines reflect the interquartile range across the European sample of countries.

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[1] Being granted a banking licence authorisation in one Member State opens the possibility that a credit institution can passport throughout the rest of the European Union without the need to establish a subsidiary in another Member State.
[2] 2002 numbers sourced from Annual Reports e.g. Annual Report of the Financial Regulator, May'03|Dec'04 –Table 3.2, The 2022 numbers sourced from current Central Bank registers.
[3] For current figures, see here: payment and electronic money institutions holders (please see EMI, PI, AISP, Small EMI & BdeC registers).

Resilience

Non-financial corporations

The pandemic recovery was continuing strongly in the first half of the year, with SME turnover and profitability measures substantially improved in even the worst affected sectors. However, cost inflation is now likely weighing on business profitability across the economy and testing the resilience of financially weak firms. SME liquidity and leverage estimates remain relatively healthy for the majority of businesses, which will support their capacity to absorb this shock. The cash holdings of large corporate enterprises remain above pre-pandemic levels, while leverage is steady. Simulation analysis does show that some large corporates are vulnerable to higher financing costs. Forbearance and non-performing loan balances on bank loans are yet to rise, but the full effects of the inflationary shock may not be visible until 2023. Insolvencies are rising quickly following two years at unusually low levels and are expected to continue rising as the full effects of pandemic support withdrawal and repayment demands are felt by financially vulnerable businesses.

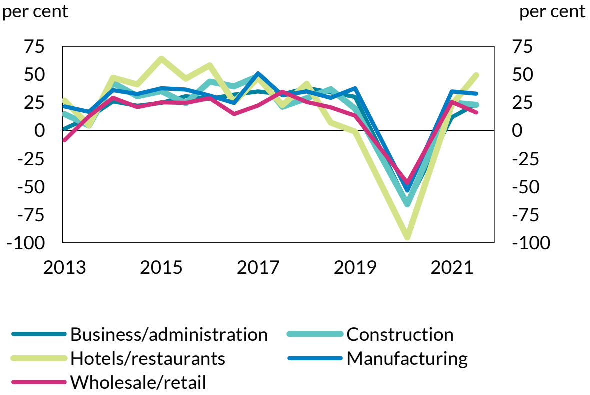
The pandemic recovery was continuing strongly in the first half of the year. The pandemic period saw an extreme deterioration in the trading performance of many small businesses, particularly those in sectors most sensitive to the effects of public health measures. The improved public health environment and strong broad-based economic recovery since then has supported a substantial improvement in turnover. Badly affected sectors – such as Accommodation & Food – reported very strong turnover growth figures up to March 2022, the last point at which such data were available (Chart 49). Profitability was also substantially improved by spring 2022 across all sectors. Accommodation & Food firms were badly affected by the pandemic, but their profitability was catching quickly to those in other sectors in data to March 2022. Aggregate indicators, including labour market and retail sales data, also point to buoyant trading conditions for firms in the first half of the year.

Inflation is now likely to be weighing on firm performance across the economy and testing the resilience of financially weak firms. Extraordinary cost rises and a significant tightening of financial conditions are creating challenging conditions (see *Risks: Global inflation*). Although energy accounted for only 10 per cent of SME operating expenses on average in March 2020 (Chart 50), the extraordinary price shock is large enough to have a material effect on profit margins and is also passing through to the broader cost base indirectly through increased wage demands and costs passed on from suppliers. Gas and electricity prices, in particular, are at very high levels and are likely negatively impacting firms through higher costs and weaker consumer demand. The ability of many firms to pass on these cost rises is limited and so profit margins are likely to fall. This will present challenges for firms with pre-existing vulnerabilities, including those badly impacted by the pandemic. A weaker international economic outlook is also likely to weigh on trading conditions, while there are particular concerns around smaller businesses reliant on the UK as their primary export market (see Box A).

Fiscal policy will partly ease the pressure of energy cost rises. The Temporary Business Energy Support Scheme (TBESS) provides grant support to businesses that have experienced increases in electricity and gas prices. Qualifying businesses can receive payments of up to a value of 40 per cent of the cost rise or €10,000 per month, whichever is lower. The scheme is scheduled to remain in place until February 2023.

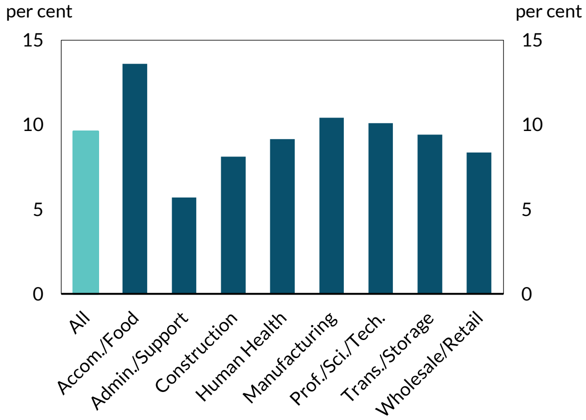
The deleveraging of Irish businesses since the Global Financial Crisis (GFC) will aid resilience to this shock. Small businesses have been deleveraging since the GFC, with slightly under half of SMEs now reporting no debt balances. Pandemic supports were primarily in the form of grants, meaning that Irish SMEs did not increase their leverage to the same extent as in other jurisdictions. Their relatively low leverage means that the risk of shock amplification due to repayment challenges through distressed SME balance sheets is weaker than in the past. Furthermore, fixed rate loans will provide additional short-term relief. Data presented in the *Review* for the first half of this year shows that about half of SME loans are insulated from rising interest rates in the short run due to having fixed interest rates.

Chart 49: SME turnover was improving into spring 2022
Net share of SMEs reporting increased turnover by sector



Source: Department of Finance Credit Demand Survey.
Notes: The share of SMEs reporting a rise in turnover in the previous six months minus the share of SMEs reporting a decline in turnover in the previous six months by sector.

Chart 50: Energy accounted for a tenth of SME operating costs in March 2022
The average share of operating costs made up by energy costs by sector



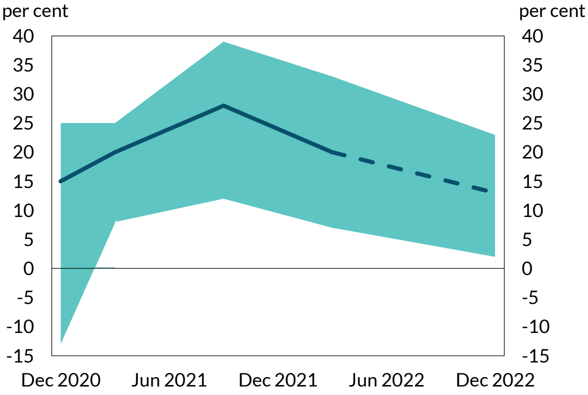
Source: Department of Finance Credit Demand Survey.
Notes: The average share of SME operating costs made up by energy costs by sector in March 2022.

SME profit margins are likely narrowing due to cost inflation (Chart 51). Taking observed energy cost rises since March 2022 and market expectations of price developments up to December 2022, it is possible to simulate the impact of cost inflation on profitability. Profit margins under this simulation fall from an average of 20 per cent in March 2022 to 13 per cent in December 2022. The largest proportional declines are in the Accommodation & Food, Administrative & Support Services, and Human Health sectors. These estimates incorporate the impact of government pandemic supports during 2020 and 2021 and the present energy cost subsidy scheme. If energy prices were to stay elevated in 2023 or if aggregate demand levels fell, then profit declines would likely be larger.

The share of firms making material losses has likely also risen (Chart 52). Under the same simulation scenario as above, the share of firms with profit margins at or below -5 per cent would be 12 per cent at December 2022. This is up 2 percentage points from 10 per cent in March 2022 and demonstrates the impact of cost pressures on profit margins. By way of comparison, the 2020 level of severe post-support loss-making was 16 per cent.

Chart 51: Profit margins are likely narrowing due to cost inflation

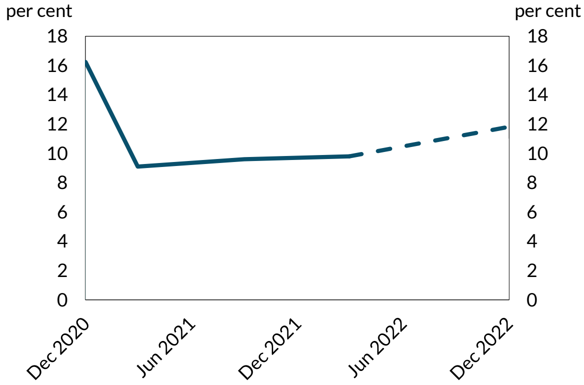
Average simulated gross profit margin



Source: Central Bank of Ireland; CSO; Department of Finance Credit Demand Survey.
Notes: Simulated profit margins with energy costs up 85 per cent in December 2022 relative to March 2022 levels, 3 per cent per annum rise in labour costs, 5 per cent per annum rise in Purchase costs, turnover growth of 5 per cent per annum, after accounting for aggregate inflation and sector-specific demand elasticities (with a mean of -0.6). The shaded area shows the range of average profit margins across sectors.

Chart 52: The share of firms making material losses has likely also risen

Share of firms with profit margins below -5 per cent



Source: Central Bank of Ireland; CSO; Department of Finance Credit Demand Survey.
Notes: The share of firms with profit margins below -5 per cent based on simulated profit margins with energy costs up 85 per cent in December 2022 relative to March 2022 levels, 3 per cent per annum rise in labour costs, 5 per cent per annum rise in Purchase costs, turnover growth of 5 per cent per annum, and sector-specific demand elasticities (with a mean of -0.6). Threshold of (-5) chosen given potential for noisy indicators when losses are defined at close to profit margins of zero.

Sectors most affected by the energy shock have a mix of high and low levels of cash holdings (Chart 53). The most vulnerable businesses will be those entering the current inflationary environment with weak liquidity and/or high leverage. The average cash to operating expenses ratio for all firms is 21 per cent. The simulated percentage changes in gross profit margins from March to December 2022 range from -15 to -80 per cent (where, for example, a profit margin falling from 10 per cent to 5 per cent would be presented as -50 per cent). Of the three worst affected sectors, only Human Health has a below average level of cash holdings at just 11 per cent of operating expenses. Accommodation & Food and Administrative & Support Services have ratios of 0.29 and 0.24, respectively.

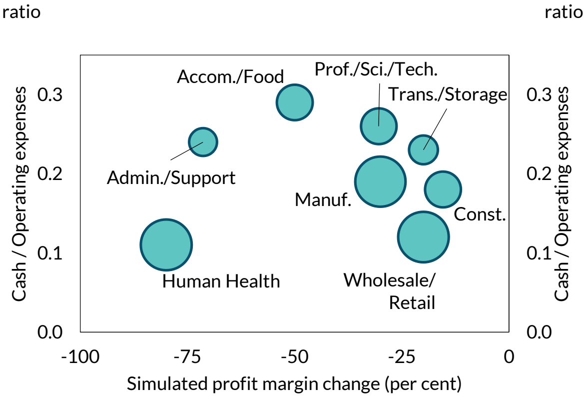
Sectors most impacted by the energy shock were also persistent claimants of wage subsidies during the pandemic (Chart 54). The three most affected sectors were also the three sectors with the highest share of active companies persistently claiming wage subsidies into spring 2022 (Lambert et al., 2022). This suggests that there is a cohort of businesses that are suffering from sequential and interlocking shocks since March 2020, and will be highly vulnerable as a result.

Large corporate leverage is broadly unchanged from pre-pandemic levels (Chart 55). This reflects quite resilient trading conditions and profitability for most firms during the pandemic. While a small number of heavily affected firms encountered significant losses, large corporates in general performed quite well. The average liabilities-to-assets ratios is unchanged from prior to the 0.57. However, there are pockets of vulnerability in the large corporate sector. Ten per cent of firms have leverage ratios in excess of 0.8. These firms are vulnerable to asset value corrections or significant increases in debt servicing costs, with international evidence showing that the average book leverage ratio at bankruptcy is approximately 0.8.[31]

[31] See Asis et al. (2021) and Campbell et al. (2008).

Chart 53: Sectors most affected by the energy shock have varied levels of cash holdings

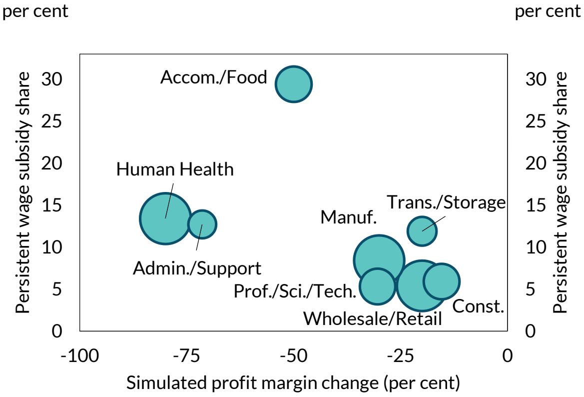
The simulated gross profit margin change in per cent against the median cash to operating expenses ratio by sector



Source: Department of Finance Credit Demand Survey.
Notes: The simulated gross profit margin change in per cent against the median cash to operating expenses ratio by sector. The size of each point is weighted by the sectoral share of aggregate employment.

Chart 54: Some sectors most affected by the energy shock were also persistent claimants of pandemic wage subsidies

The simulated gross profit margin change in per cent against the share of persistent wage subsidy claimants by sector

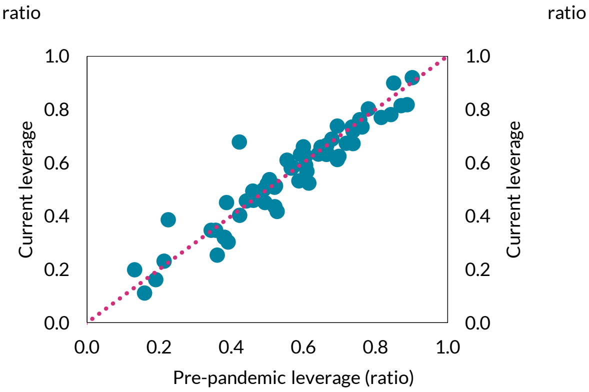


Source: CRO; CSO; Department of Finance Credit Demand Survey; Revenue Commissioners.
Notes: The simulated gross profit margin change in per cent against the share of active companies that were persistent wage subsidy claimants by sector. The size of each point is weighted by the sectoral share of aggregate employment. See Lambert et al. (2022).

Large corporate debt servicing capacity is strong, though some low profit firms are vulnerable to rising finance costs (Chart 56). The average operating profit margin – defined as operating profits over turnover – for large corporates is 5 per cent. This falls to 3 per cent if net finance costs double and 2 per cent if they triple. Companies with low operating profit margins are more sensitive to high finance costs, with the average profit margin declining to -7 per cent and -11 per cent in the two shocked scenarios for the 20 per cent of firms with the lowest profitability.

Chart 55: Large corporate leverage is broadly unchanged from pre-pandemic levels

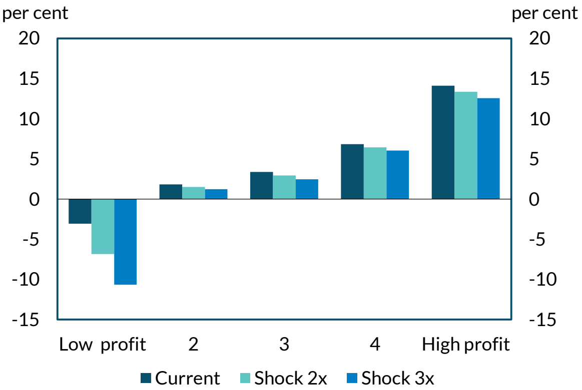
Liabilities-to-assets ratio



Source: CRO.
Notes: Pre-pandemic liabilities-to-assets ratio versus the most recent liabilities-to-assets ratio for the largest Irish-parent non-redomiciled non-financial corporations.

Chart 56: Large corporate debt servicing capacity is quite strong, though some low profit firms are vulnerable to rising finance costs

Operating profit minus net finance costs over turnover by finance cost scenario and current profitability quintile



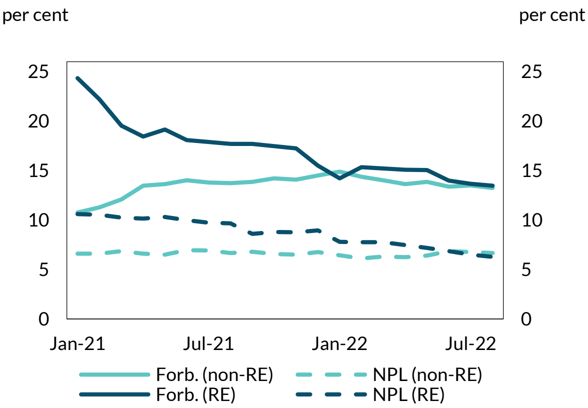
Source: CRO.
Notes: The average ratio of operating profit minus net finance costs over turnover using firms' current net finance costs, net finance costs times 2, and net finance costs times 3 by current profitability quintile.

The cash holdings of large corporates also remain above pre-pandemic levels. The median cash-to-current liabilities ratio is 13 per cent, up from 10 per cent pre-pandemic. The average is 17 per cent, up from 14 per cent prior to the pandemic. This higher cash buffer provides large corporates with some flexibility in the short-term in order to adjust to increases in input and finance costs.

Forbearance and NPL ratios of Irish business borrowers have been stable in 2022 (Chart 57). The forborne share of balances owed by Irish-resident non-financial corporate borrowers to Irish retail banks is 13 per cent. This share has fallen since 2021 among Real Estate borrowers and risen modestly for non-Real Estate borrowers. The NPL share for both groups is approximately 7 per cent, with the Real Estate sector recording a decline in this ratio from 10 per cent in early 2021.

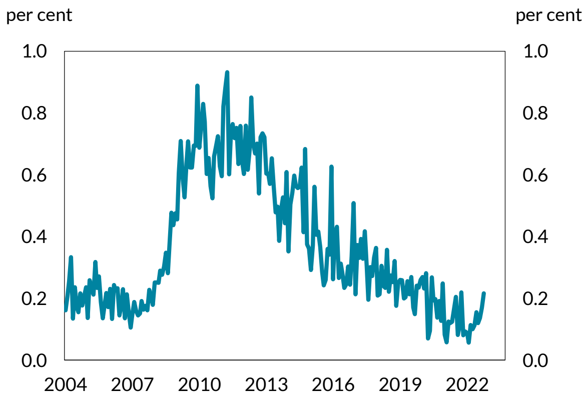
Corporate insolvencies have risen steadily over recent months, returning to pre-pandemic levels (Chart 58). Nonetheless, the insolvency rate is low relative to that observed in the post-financial crisis recession (2008-2013). This rate is likely to rise further as vulnerable firms that cannot adapt to a post-pandemic environment and those hit by the energy shock exhaust their liquidity. In addition, insolvency practitioners have substantially increased their projections for business insolvencies, citing rising enquiries by distressed firms.[32] The United Kingdom – a jurisdiction with a very similar insolvency regime to Ireland's – ended businesses supports to firms in September 2021 and saw insolvencies subsequently rise quickly to levels close to those seen in 2019.

Chart 57: Forbearance and NPL ratios of Irish business borrowers have been stable in 2022
Forbearance and NPL ratios of Irish-resident non-financial corporation loan balances of Irish retail banks



Source: Central Bank of Ireland.
Notes: Forbearance and non-performing loan (NPL) ratios of Irish-resident non-financial corporation loan balances of Irish retail banks. 'RE' refers to borrowers in the real estate sector.

Chart 58: Corporate insolvencies have risen steadily over recent months, returning to pre-pandemic levels
Annualised corporate liquidation rate



Source: CRIF Vision-Net; CRO.
Notes: The annualised rate of creditors' voluntary and court-ordered liquidations up to October 2022.

The unwinding of pandemic supports and the effects of cost inflation have the potential to expose latent distress among a cohort of Irish businesses. McCann and McGeever (2022) discuss the potential scale of latent firm distress and policy measures that can be taken to promote their efficient restructuring or liquidation. Lambert et al. (2022) further show that persistent claimants of the wage subsidy scheme into spring 2022 were less liquid and had higher leverage coming into the pandemic crisis. The removal of pandemic supports means that firms that remain financially weak despite the reopening of the economy are no longer able to maintain their liquidity through receipt of wage subsidies and government-supported access to finance. Payment demands on existing liabilities, for example the large amount of warehoused tax payments from the pandemic, combined with new difficulties stemming from cost inflation will place greater pressure on these vulnerable firms.

[32] https://www.businesspost.ie/news/hundreds-of-businesses-may-fail-before-end-of-year-experts-say/

Households

The combined inflation and interest rate shock will place pressure on households' debt service capacity. Up to this point, weak pass-through on Standard Variable Rate loans, combined with half the stock of mortgages being on fixed rates, means that the mortgage market has been relatively insulated from the effects of recent ECB rate increases. Prolonged high rates will nonetheless present challenges. Households' resilience to shocks has been bolstered by many forces in the last decade: nominal income growth, rapid growth in house prices and housing equity, increases in savings during the pandemic, falling aggregate indebtedness, and prudent new lending under the mortgage measures. These factors suggest that broad-based financial stability risks are contained for now, even under further increases in interest rates and weakness in the labour market.

Higher ECB policy rates have yet to translate into widespread increases in mortgage borrowing costs. The mortgage market has been moving towards greater usage of fixed interest rates in recent years as borrowers availed of low policy rates. Eighty to ninety per cent of new loans have been issued on fixed rates since 2020. In total, however, just under half of mortgage loans continue to be on SVR and Tracker rates, which dominated new lending before 2008. Due to a combination of fixation and slow pass-through on SVR mortgages, average mortgage interest rates across all outstanding loans increased from 2.5 to 2.7 from June to September, according to Central Bank statistics.[33]

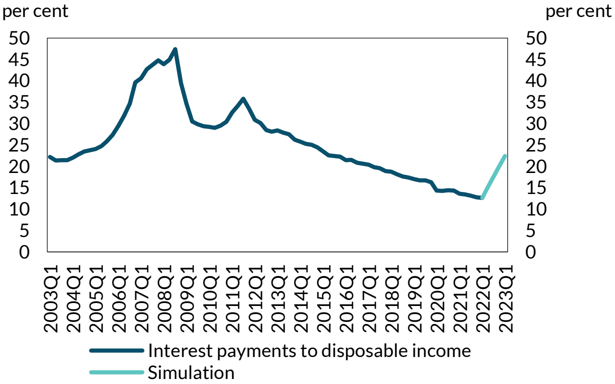
Large increases in mortgage interest rates would still leave interest bills small relative to household incomes on a historical basis. In aggregate, the interest burden relative to household income was at its lowest value in twenty years earlier this year, and is modelled to increase only to 2015 levels under a hypothetical 300bps increase in mortgage interest rates from the level at the middle of this year, remaining far below levels seen before 2008 (Chart 59). On new lending, Irish mortgage rates had moved to euro area average levels by September, after having been among the highest in Europe for much of the previous decade, suggesting pass-through of ECB policy to the mortgage market is proceeding at a faster pace in other European mortgage markets.

Borrowers' experience of repayment increases will vary widely, with many well insulated. Using loan level data, the median mortgage borrower is estimated to have experienced an increase of 6 per cent in their mortgage repayment as a result of the 200bps ECB increase that has occurred since June, rising to 12 per cent in the event of a further 200bps increase occurring (i.e. a total ECB increase of 400bps during this cycle, Chart 60). The top quarter of borrowers (in terms of exposure to rate rises) have experienced at least a 13 per cent increase so far, which would rise to 27 per cent if there were a further increase of 200bps. Due to fixation, the bottom quarter of borrowers are fully insulated from the ECB increases for now, but will ultimately need to refinance in a higher-rate environment in the coming years.

[33] Weighted average calculations using information on loans for house purchase from Retail Interest Rate statistics, Table B-1-2.

Chart 59: Mortgage interest burdens have been small relative to incomes recently, and would remain small in historical context under large rate increases

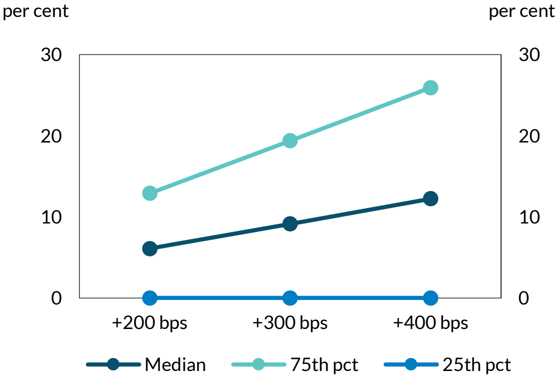
Interest payments to total household disposable income



Source: Central Bank of Ireland calculations.
Notes: Total household disposable income and mortgage debt balances sourced from Quarterly Financial Accounts; interest data from Money and Banking (Retail Interest Rate) Statistics. Interest burdens imputed by multiplying total stock of outstanding debt by average interest rate in each quarter. Mortgage interest relief not factored into calculations for historic data. 300bps added to the most recent data point of 2022Q1, accompanied by a 5 per cent increase in nominal income, used to create 1-year ahead simulated value in teal.

Chart 60: Interest rate increases have had a contained effect on repayments so far

Percentage increase in mortgage repayment relative to 2022 Q2

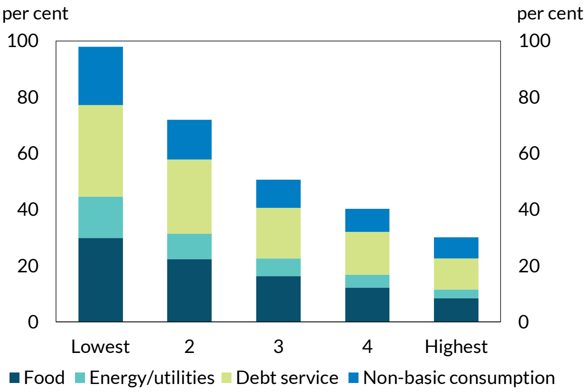


Source: Central Bank of Ireland loan level data.
Notes: Irish residential mortgages at the main retail banks. Scenarios assume 100 per cent pass-through of policy rate increases to tracker mortgage rates and 60 per cent pass-through to other variable mortgage rates. Fixed-rate mortgages scheduled to revert to variable rates within one year are assumed to move to the lender's variable rate for 80 per cent LTV mortgages, plus 60 per cent pass-through of the policy rate increase.

These repayment shocks will increase mortgage default risk, even in the absence of wider economic shocks. The isolated causal effect of interest rates on default risk is difficult to estimate but has been studied for Ireland during the post-2008 crisis. The median borrower could experience a 12 per cent increase in repayments relative to June 2022 if the ECB were to continue with an additional 200bps of interest rate increases beyond those announced by mid-November (400bps increase in total since June). According to the estimates of Byrne et al. (2021), this would lead to a default risk increase of around 60 per cent (e.g. from a default transition rate of 0.6 per cent in the last year, increasing to around 1 per cent). McCann (2017) estimates that 1.25 per cent of performing loans transitioned to default *per quarter* in 2011, highlighting the magnitude difference of this risk relative to the past.

Chart 61: Low income mortgage borrowers have little financial room to cushion the impact of rising inflation

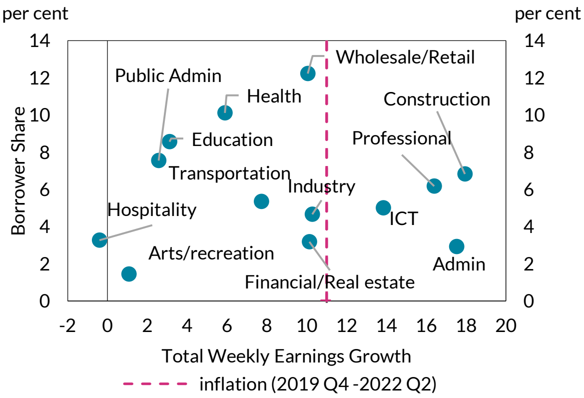
Share of net household income typically spent on monthly expenses in 2020



Source: HFCS 2020, Central Bank of Ireland.
Notes: The chart plots median spending as the percentage share of net income.

Chart 62: Mortgage borrowers' income growth in many sectors is lagging behind inflation

Mortgage book exposure and accumulative total weekly earnings growth between 2019Q4 and 2022Q2



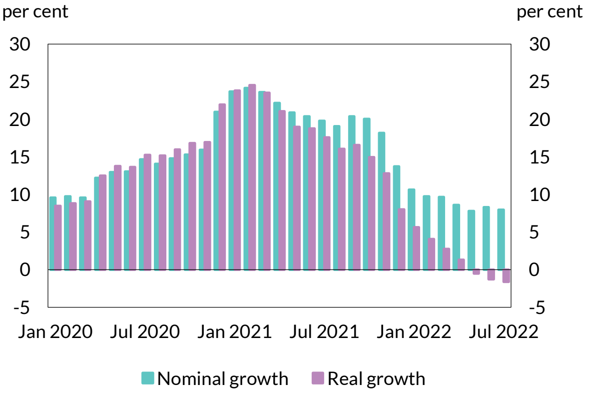
Source: CSO, Earnings and Labour Costs and Central Bank of Ireland.
Notes: Pink dash line at 11 per cent represents the cumulative HICP inflation rate between 2019Q4 and 2022Q2.

Inflationary pressures will also squeeze households' financial positions, interlocking with higher mortgage rates and imposing the greatest challenges on those on low incomes. Exposure to inflation varies substantially across households. At lower incomes, around 60 per cent of net income is spent on essentials, whereas around 40 per cent is spent at the highest income levels (Chart 61).[34] Inflation on essential goods will bring such mortgage customers closer to financial distress due to the erosion of financial buffers. Combined with lower levels of savings, the disproportionate effect of inflation on lower income mortgage borrowers could severely limit their ability to withstand shocks and continue to make repayments on debt. In the mortgage market, where higher-income households are dominant, previous research (Adhikari, 2022) suggests that the share of households at risk of missed mortgage payments through the expenditure channel alone could increase by over one quarter under a scenario of 9 per cent inflation and 3 per cent nominal income growth for 2022.

Since 2020 labour markets have performed strongly, partly absorbing the negative impact of inflation. However, recent persistent inflation has started to erode real incomes in most sectors. Real incomes are forecast to fall by 4.2 per cent by end-2022 (Quarterly Bulletin 2022 Q4). However, there are some sectors where positive real income growth is observed, including professional services, construction, ICT and business/admin services (Chart 62). Some sectors with important mortgage market shares are however experiencing negative real income growth. The worst-affected sectors by the pandemic, such as accommodation & food and arts, recreation services, have seen workers experience more than a 10 per cent erosion of real earnings, but these sectors account for less than 5 per cent of mortgage borrowers, limiting their aggregate importance to mortgage market resilience.

Chart 63: Nominal savings growth returned to the pre-pandemic level, while real savings growth has turned negative since the last *Review*

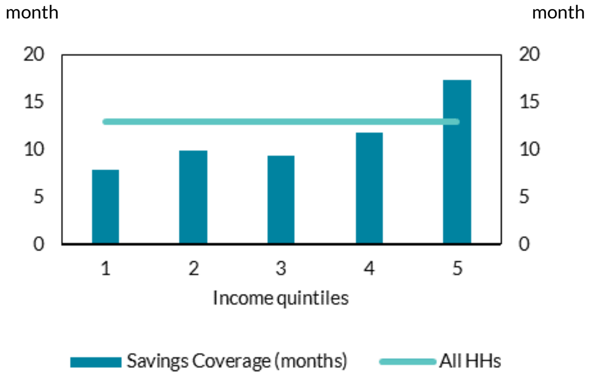
Annual growth rates of household savings



Source: Central Bank of Ireland.
Notes: Deposits are the sum of overnight deposits and redeemable at notice.

Chart 64: Higher income borrowers have far greater cash buffers to cover mortgage payments

Cash savings to mortgage payment ratio



Source: HFCS 2020 sourced from Arrigoni, Boyd and McIndeo-Calder (2022).
Notes: Cash savings to mortgage payment ratio is defined as the number of months of mortgage payment covered by savings. Mortgage payments is self-reported by owners of outstanding HMR mortgages. Income is defined as gross household non-equivalised income.

Savings buffers increased substantially during the pandemic, but the purchasing power of these savings is now declining. Following the normalisation of households' saving behaviour with the relaxation of the pandemic-related restrictions, nominal savings growth has returned to its pre-

[34] See also Lydon (2022) who documents that lower income, older and rural households experienced relatively larger cost of living increases from higher inflation in recent months.

pandemic level (Chart 63). However, as the result of exceptionally high inflation, the flow of new deposits is not enough to compensate for the loss of purchasing power of households' existing savings in aggregate. In addition, a proportion of households, particularly in lower-income groups, are likely to use their pandemic savings to cushion the impact from high costs of living, as they are most exposed to energy and food price shocks (Quarterly Bulletin 2022 Q4). This will further reduce the liquidity buffer available to them against future shocks. Nonetheless, the nominal value of savings will continue to act as an important line of defence in the face of shocks to repayment capacity on mortgages, which are also nominal in nature.

While cash savings are an important source of resilience, they are unevenly distributed among borrowers. When real income cannot cover living expenses, borrowers may have to rely on their liquid assets to service their debts or cover other shortfalls. Based on the most updated household survey data, average savings of mortgage borrowers in Ireland can cover up to 13 months of their monthly debt payments without other types of supports. However, this savings buffer differs across the income distribution. Higher-income mortgaged households have on average 17 months' worth of mortgage payments in their savings, as against 7 months for lower-income mortgaged households (Chart 64).

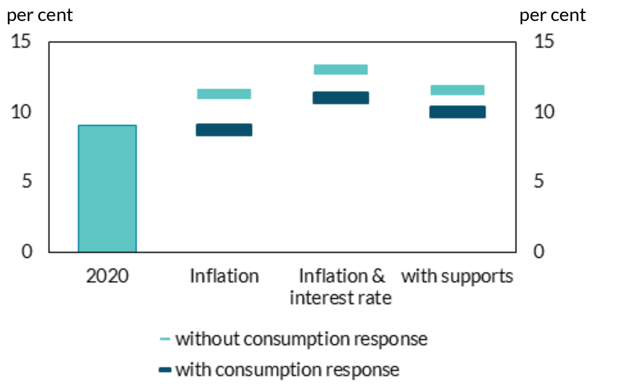
Substantial housing equity among mortgage borrowers, owing to strong nominal house price growth since 2013, reduces the risk of negative equity arising during the inflationary shock. Household net wealth rose by €19.6bn to reach just over €1trn in 2022Q1. The primary driver of growth in household net wealth was the increase in housing asset values. [35] Housing equity buffers mean that borrowers are less likely to fall into negative equity, which is typically an important contributing factor to mortgage defaults, exacerbating the effect of liquidity shocks. Lower negative equity risk has important economic benefits, given that negative equity can also impede borrowers' prospects for refinancing, moving home, and drawing equity from their homes for consumption.[36]

Taking account of borrowers' income and savings levels, interest rate and inflation shocks may increase financial distress rates by up to one third. Using a simulation based on household micro data, the Central Bank has modelled the effect of interest rate increases and inflation on essential expenditures on households' "financial margins" (income and savings less expenditure on housing and essentials). The exercise suggests the inflationary shock may increase the share of households with a negative financial margin (those most at risk of mortgage distress) from 9 to 11 per cent (Chart 65), in cases where the consumption basket is not adjusted, similar to estimates in Adhikari (2022). Adding the effect of a 200 bps increase in mortgage interest rates leads to a heightened distress rate of 13 per cent, reducing to 12 per cent once the announced energy supports of Budget 2022 modelled. On the other hand, consumption responses by households, where quantities consumed may fall in response to price increases, could have mitigating effects in cushioning the shock to household finances, highlighting the overall uncertainty in outcomes and ultimate pass-through to mortgage distress.

[35] See Box E for long-run climate-related housing risks.
[36] Central Bank analysis also suggests that housing assets outperformed other financial assets on average in historical high-inflation episodes, acting as a hedge against inflation. This suggests that, despite rising interest rates, there is some uncertainty over the path for *nominal* house prices during this high-inflation period.

Chart 65: Financial distress is likely to increase, with a larger impact from interest rate than inflationary shocks

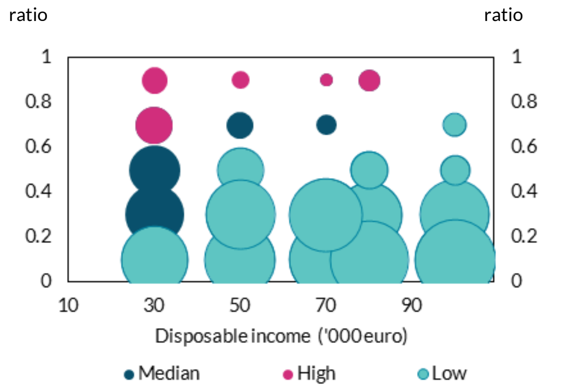
Share of mortgage borrowers with negative "financial margins"



Source: HFCS, mortgaged households only, Central Bank of Ireland calculation.
Notes: Scenario imposed: Inflation rate of 11.8 per cent, in line with that experienced from start of 2020 to 2022Q4 (expected); interest rate increase of 200bps on all outstanding debts; nominal income growth in line with sector level growth experienced from start 2020 to 2022Q2 (CSO). Households are defined as having a negative financial margin when income and liquid assets cannot cover annual expenditure and debt payments under different macro scenarios. Models "without consumption response" refers to models where households respond to higher prices by passing through only 80% of the inflation-implied increase in total expenditure on non essential goods through reducing their real consumption. This is motivated by estimates from Baker (2018).

Chart 66: Financial distress rates are likely to rise most among groups with fewer mortgagors

Distress distribution across debt service ratio and income levels of mortgage borrowers



Source: HFCS, mortgaged households only, Central Bank of Ireland calculation.
Notes: Outcome of results of simulation described in Chart 65. The size of the bubbles represents number of households with corresponding disposable income and DSR levels in population. The colour of the bubbles is categorised into high, median and low categories, based on share of households in each cell that are have a negative financial margin after the shock is imposed. Low distress bubbles are determined by the fact that less than 10 per cent of borrowers in those cells are in financial distress, while high distress bubble means more than 50 per cent of borrowers in those cells are in distress.

Those most at risk from the combined shock are lower-income, higher-debt households, who account for a small share of total mortgage lending. The largest cohorts in the mortgage market comprise borrowers with relatively high income, and debt service ratios below 30 per cent. Cohorts in which high borrower shares have negative financial margins after the simulation (outlined in Chart 66) typically have low income and extremely high DSRs. In total, these groups account for less than 5 per cent of outstanding mortgage debt, suggesting limited wider amplification risks in the broader financial system from severe mortgage distress experienced by the most vulnerable households due to increased interest rates and higher inflation.

Box E: Medium Term Transition Risk Heterogeneity in the Household Sector

By Tamanna Adhikari, Derek Lambert (Macro-Financial Division) and James Carroll (Climate Change Unit)

The necessary government policies to minimise long run impacts from climate change could affect the financial health of households over the medium term, with implications for credit risk in the banking sector.[1] This Box explores how future energy price increases could affect the financial resilience of households. Quantifying the share and magnitude of households most affected by climate change is clearly important for overall financial stability as households account for approximately two thirds of outstanding loans (August 2022).[2]

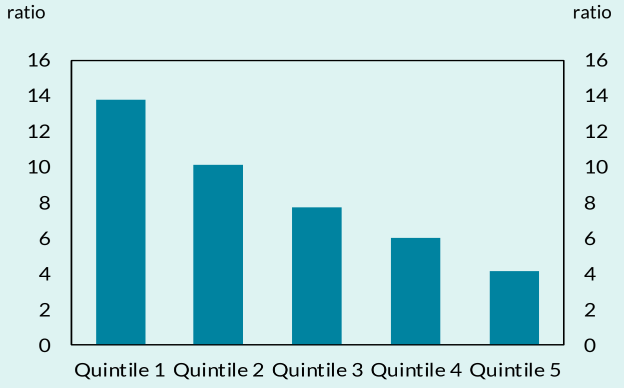
Long run energy price expectations would increase through climate policy (for example, new/increased carbon (CO_2) taxation announcements) and/or supply reductions (for example, long run international disinvestment in fossil fuel infrastructure). In Ireland, there are currently fiscal commitments until 2030: the CO_2 tax rate of €41 per tonne (2022) will increase to €100 by 2030. While there are no additional domestic policy commitments beyond 2030, long-run macroeconomic forecasts (NGFS) suggest that global CO_2 shadow prices would need to increase to about €250 per tonne by 2030 and €750 per tonne by 2050 if global net zero emissions are to be achieved.[3] Household energy prices would also be indirectly affected through the EU *Emissions Trading System* (cap and trade system for large emitters), to which Irish non-renewable electricity generators are a part.

Household energy demand depends on property and occupant characteristics. For example, within the latest Central Statistics Office *Household Budget Survey* (HBS) (2015/2016), energy expenditure increases with the number of occupants, number of room, and income[4]. Energy expenditure in rural locations is also 40 per cent higher, which is largely explained by higher outlays on vehicle fuels (66 per cent higher). Such characteristics explain a household's vulnerability to energy price increases, which we measure as the proportion of income spent on energy (income-to-energy ratios). For the national HBS sample (Chart A and B), those with lower income and larger properties are disproportionally impacted.

Our ability to monitor this potential source of vulnerability is currently inhibited by data gaps – loan-level datasets available to central banks generally do not contain energy or environmental information. Our methodology fills this gap by estimating total energy costs (property and transport costs) for new mortgage loans using loan-level borrower/property characteristics which are correlated with energy consumption (correlations estimated using CSO HBS data).[5] Our analysis then inflates current prices (base month May 2022) with a number of long run carbon price scenarios which underpin the NGFS net zero pathway to 2050. Consistent with the national findings, the results for the mortgage sample show that low income households (Chart C) and those residing in larger properties (Chart D) are more vulnerable to future energy price increases. Although not shown below, this is also the case for rural households. While our analysis incorporates behavioural response (through elasticity of demand), it is possible that, over such long time periods, major structural changes in energy efficiency and/or energy could reduce estimates of impact to a greater degree than what we account for.

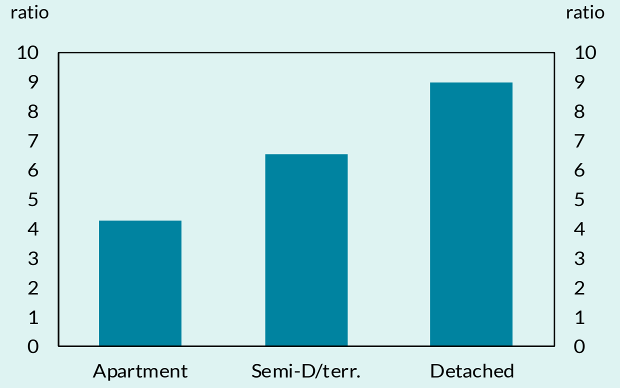
This box considers changes in household energy expenditure due to changes in climate policy. It attempts to fill data gaps through several estimation techniques. While not a substitute for collecting energy and emissions information directly, these new estimates nevertheless demonstrate that future energy policies will affect households very differently, with potential credit risk implications. Further work by the Central Bank of Ireland will quantify the distribution of this potential credit risk by including factors such as household adaptation, general non-energy inflation, and trends observed in other European countries.

Chart A: Energy-to-income ratio (median) by income quintiles – national sample (all households)



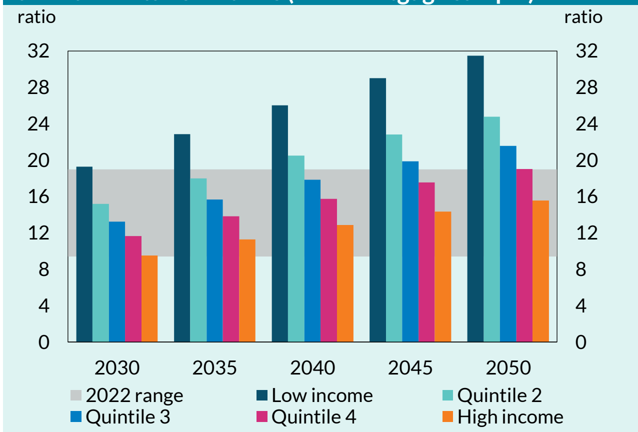
Source: Authors' analysis using CSO HBS data (2015/2016).
Notes: Energy expenditure includes all property and transport fuel expenditures. Income is pre tax.

Chart B: Energy-to-income ratio (median) by property type – national sample (all households)



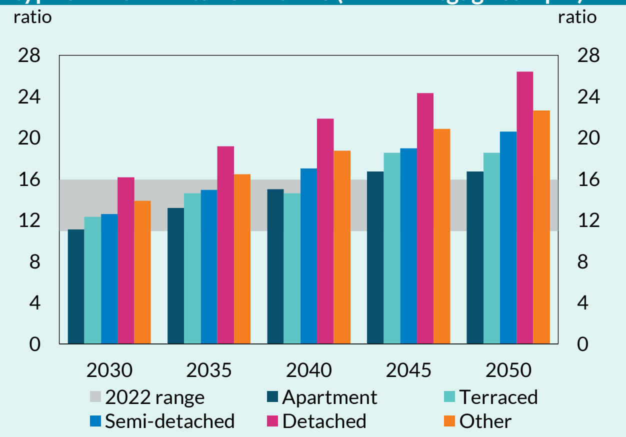
Source: Authors' analysis using CSO HBS data (2015/2016).
Notes: Energy expenditure includes all property and transport fuel expenditures. Income is pre tax.

Chart C: Energy-to-income ratio (mean) by income quintiles and carbon tax scenarios (new mortgage sample)



Source: Authors' analysis using Central Bank of Ireland monitoring template data.
Notes: Energy expenditure includes all property and transport fuel expenditures. Income is pre-tax. Future energy price is based on approximate NGFS net zero modelling output. Base month is May 2022. Estimates are based on 1 per cent increase in income per year and a price elasticity of 0.22.

Chart D: Energy-to-income ratio (mean) by property type and carbon tax scenarios (new mortgage sample)



Source: Authors' analysis using Central Bank of Ireland monitoring template data.
Notes: Energy expenditure includes all property and transport fuel expenditures. Income is pre-tax. Future energy price is based on approximate NGFS net zero modelling output. Base month is May 2022. Estimates are based on 1 per cent increase in income per year and a price elasticity of 0.22.

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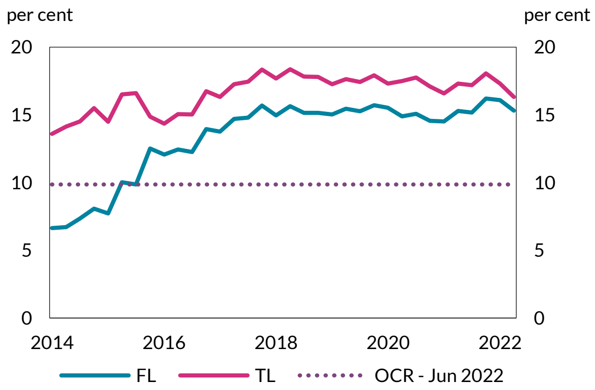
[1] This Box presents insights from forthcoming Central Bank of Ireland research on household vulnerability to energy price increases.
[2] Central Bank of Ireland Credit and Banking Statistics available here
[3] NGFS scenarios available here
[4] Each additional occupant, room, and €10,000 increase in income, increases energy expenditure by 34 per cent, 20 per cent and 5.2 per cent, respectively.
[5] CSO HBS data accessed through the Irish Statistical Services Data Archive (here)

Domestic retail banks

Higher interest rates are expected under the central economic outlook to lead to increased interest margins and profitability for retail banks. Capital headroom remains above regulatory requirements, providing substantial capacity to absorb shocks, and will be boosted further in the event that higher rates translate into increased profitability. Headroom has declined in recent quarters due to the ongoing impact of portfolio transfers and the phasing out of transitional regulatory arrangements. While asset quality has continued to improve, prevailing inflationary pressures, lingering effects from the pandemic and a slowdown in the UK economy all pose challenges to borrowers' repayment capacity, which may lead to increased provisions. These challenges will be amplified if downside economic risks materialise.

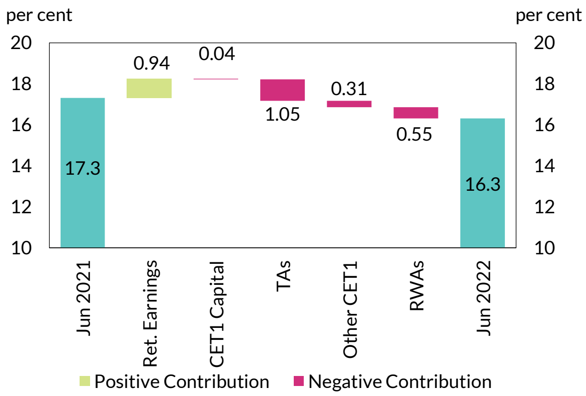
CET1 capital ratios have declined slightly in recent quarters, but remain above minimum regulatory requirements. In recent quarters, the CET1 ratio, measured on a transitional basis, has declined, standing at 16.3 per cent as at June 2022 (Chart 67). The ongoing phasing out of transitional arrangements[37] was a large contributing factor behind the year-on-year decrease in transitional capital in the year to June, contributing just over 1 percentage point (Chart 68). Additionally, ongoing acquisitions in the retail banking market are starting to feed through to reductions in capital via the expansion of risk weighted assets. The sector does, however, continue to maintain capital above minimum requirements, part of which will be required solely to absorb portfolio transfers relating to the exit of KBC Ireland and Ulster Bank.

Chart 67: CET1 capital ratios have declined slightly in recent quarters, but remain well above minimum requirements
CET1 Ratios



Source: Central Bank of Ireland.
Notes: The chart shows system-wide CET1 ratios for AIB, BOI and PTSB in addition to the overall capital requirements to be made up of CET1 capital as June-22 (OCR – Jun 22). "FL" denotes the CET1 capital ratio on a fully-loaded basis, while "TL" denotes the CET1 capital ratio on a transitional basis. Last observation at Jun-22. OCR refers to all capital requirements at the system level at June 2022, excluding Pillar II Guidance.

Chart 68: The phasing out of transitional arrangements and portfolio acquisitions have contributed to the recent decline in capital
Decomposition of CET1 change June 2021 – June 2022



Source: Central Bank of Ireland.
Notes: "Ret. Earnings" denotes the contribution from retained earnings, "TAs" denotes the contribution from changes in the transitional arrangements, "Other CET1" denotes the contribution from all other components of CET1 capital and "RWAs" denotes the contribution from risk weighted assets.

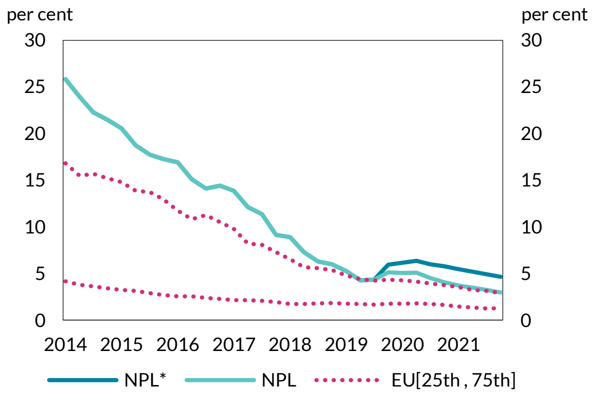
Non-performing loan ratios have fallen to a decade-long low, largely on account of portfolio sales, repayments, reclassifications and balance sheet expansion. Although having increased during the pandemic, the aggregate NPL ratio has continued to trend downwards, falling from 4.3 per cent in Dec-2019 to 3 per cent in Jun-22 (Chart 69). In spite of continued reductions in NPLs, the Irish

[37] The majority of the impact was due to the transitional arrangements on deferred tax assets.

ratio remains in the top quartile among a sample of representative European banks. The large expansion in holdings of central bank reserves has contributed significantly to the fall in the NPL ratio by expanding the stock of performing assets within the banking sector. If the increase in this pandemic-driven change in asset composition is filtered out, the NPL ratio would hypothetically be 4.7 per cent as at Jun-22. Portfolio sales, redemptions and reclassifications have all contributed to the decline in the NPL ratio. However, their exact contributions in reducing NPLs has differed across the sector's two main lending portfolios – households and NFCs (Chart 70). For households, loan sales and loans transitioning to "performing" status accounted for the majority of outflows in recent years. For NFCs, repayments were the largest contributory factor driving outflows.

Chart 69: The non-performing loan ratio continues to decline

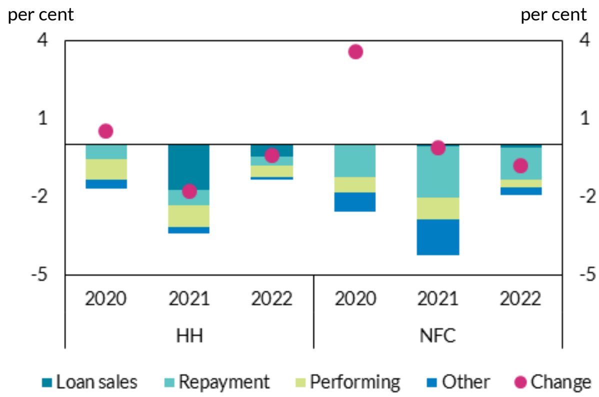
Non-performing loan ratios



Source: Central Bank of Ireland and EBA Risk Dashboard.
Notes: "NPL" denotes the weighted average NPL ratio for AIB, BOI and PTSB, "NPL*" removes central bank reserves from the denominator. "EU [25th, 75th]" denotes the interquartile range for the NPL ratio among a sample of representative European banks.

Chart 70: Varying factors are driving the decline in the non-performing loans across portfolios

NPL outflow decomposition



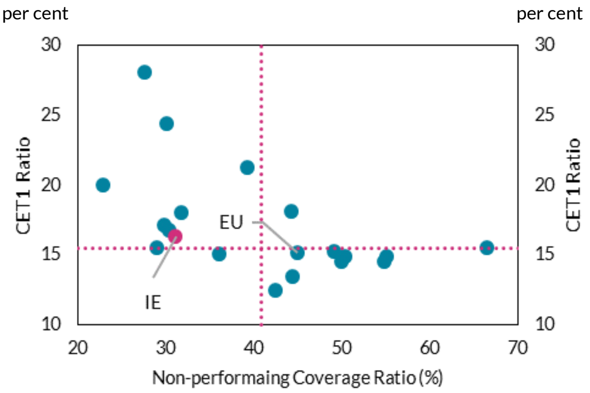
Source: Central Bank of Ireland.
Notes: The pink dots ("Change") denote that absolute year-on-year change in the NPL ratio. The stacked bars show the contribution of outflows for a given year. For example, in 2021, the NPL outflows in the NFC portfolio would have decreased the NFC NPL ratio by 4 percentage points, but this was offset by a similar increase in inflows (not reported) resulting in a small increase in the NFC NPL ratio in 2021 (pink dot). "Loan sales" reflect the contribution of loan sales, "repayment" reflects the contribution of repayments (amortisation), "performing" denotes the contribution of exposures no longer meeting the criteria for non-performing classification and "Other" denotes the contribution of all other factors driving outflows. Last observation as at June-22.

While Irish banks are posting below-average provision coverage ratios on non-performing assets, part of this is explained by compositional effects. In anticipation of expected losses, banks set a level of loss coverage against loans. These provisions act as a buffer, since they may be used to absorb expected losses without impairing capital. In a European context, Irish banks, on aggregate, are reporting below median coverage ratios on their non-performing loans, despite posting a CET1 ratio marginally above the sample average (Chart 71). These lower coverage ratios for Irish banks are partly explained by the importance of mortgages as non-performing exposures[38], which typically have lower coverage as they are backed by collateral, for Irish banks. While there is uncertainty around the adequacy of provision cover to future losses, any under-provisioning as risks materialise will result in a negative shock to bank capital.

[38] The share of collateralised non-performing loans (mortgages and commercial real estate) in total non-performing loans equalled 69.7 per cent for the three retail banks on aggregate as at Jun-22. The comparable figure for the European average was 32.9 per cent.

Chart 71: Irish banks are reporting lower than average provisioning coverage on non-performing loans

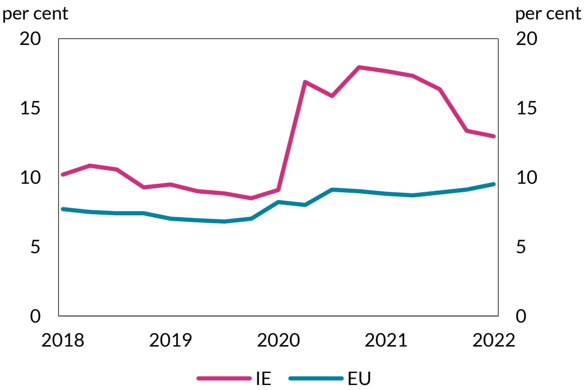
Non-performing PCRs V CET1 ratio



Source: Central Bank of Ireland and EBA Risk Dashboard.
Notes: "IE" is constructed as a weighted average of AIB, BOI and PTSB. Pink dashed lines reflect median values. Data as at June-22.

Chart 72: The IFRS 9 Stage 2 ratio on Irish exposures has continued to decline toward the European average

IFRS 9 Stage 2 ratio



Source: Central Bank of Ireland and EBA Risk Dashboard.
Notes: The chart plots the IFRS 9 Stage 2 ratio, defined as the share of loans classified as IFRS 9 Stage 2 to all loans and advances subject to impairment.

Despite a worsening macroeconomic outlook, Irish banks' IFRS 9 Stage 2 ratio has continued to fall in recent quarters. The proportion of Irish exposures classified as IFRS9 Stage 2 has fallen from a pandemic high of 17.9 per cent in Dec-2020 to 13 per cent in Jun-22 (Chart 72). Recent Irish trends stand in contrast to the average experience across the euro area, although likely reflect the more prudent approach to provisioning and classification by Irish banks during the pandemic. Euro area banks' IFRS 9 Stage 2 ratio has been increasing in recent quarters, and has since surpassed the peak value recorded throughout the pandemic. As the IFRS 9 Stage 2 ratio tends to be a more forward-looking measure of asset quality, recent increases observed for the euro area average likely reflect the deterioration in the macroeconomic outlook for the euro area.

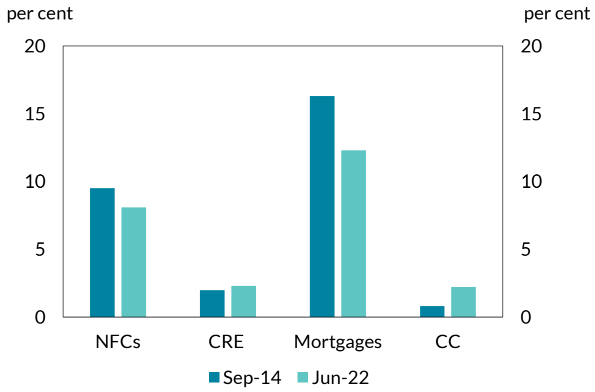
Improvements in credit risk in recent quarters are likely to be reduced amid inflationary pressures. The ongoing energy crisis has led to downward revisions in the outlook for Irish economic activity as proxied through Modified Domestic Demand (see *Risks: Domestic Macro-Financial*, and the Central Bank's Quarterly Bulletin, 2022 Q4). The concomitant risk of higher energy prices and higher interest rates will challenge the financial position of borrowers by squeezing real incomes and increasing the cost of servicing debt (see *Resilience: Households* and *Resilience: Non-Financial Corporations)*. Weakened borrower resilience will act as a headwind to the expected boost to profitability arising in an environment of higher interest rates, particularly if an adverse macroeconomic scenario were to materialise. However, as reported in the ECB's *Financial Stability Review, 2022 II*, Irish banks' commercial exposure to interest rate and energy price changes is towards the lower-end of the distribution of euro area economies.

Irish banks have significant holdings of loans to UK counterparties. These exposures would pose challenges in the event that substantial loan losses emerge due to a slowdown in the UK economy. The economic outlook in the UK has deteriorated rapidly in recent months (see Box A). A slowdown in the UK economy will have ramifications for the credit quality of Irish bank exposures. Firstly, domestic corporate lending that is exposed via trade links with the UK will be negatively affected.[39] Secondly, loans originated to counterparties located in the UK will be directly affected

[39] See Box G, Financial Stability Review 2020 II.

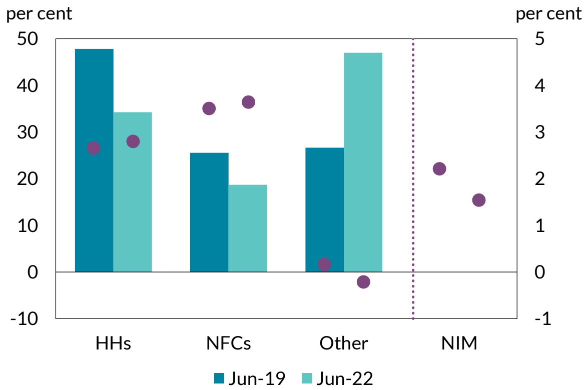
by UK economic conditions. These lending exposures to UK counterparties, have been declining in recent years, falling from €62.5bn in Sep-14 to €41.9bn in Jun-22, but remain sizable as a proportion of total assets. The UK mortgage portfolio of the Irish banks, for example, is currently 12.3 per cent of total loans and advances on a weighted average basis (Chart 73). Recent increases in UK lending rates[40] will eventually weaken the resilience of borrowers despite substantial use of fixed rates in recent years. Particularly important for close monitoring are exposures of Irish banks to UK Buy to Let mortgages, Interest-Only loans, and the CRE market.

Chart 73: Irish banks are exposed to a slowdown in the UK economy
Share of UK exposures to total loans and advances



Source: Central Bank of Ireland.
Notes: The charts shows the share of UK exposures originated to counterparties located in the UK as a proportion of total loans and advances. "NFCs" denotes exposures to non-financial corporations, "CC" denotes household credit for consumption exposures and "CRE" denotes exposures to NFCs, of which are collateralised by commercial immovable property. Exposures are presented on a weighted average basis for AIB, BOI and PTSB.

Chart 74: Large shares of lower yielding assets continue to exert pressure on NIMs
Net interest margin by counterparty



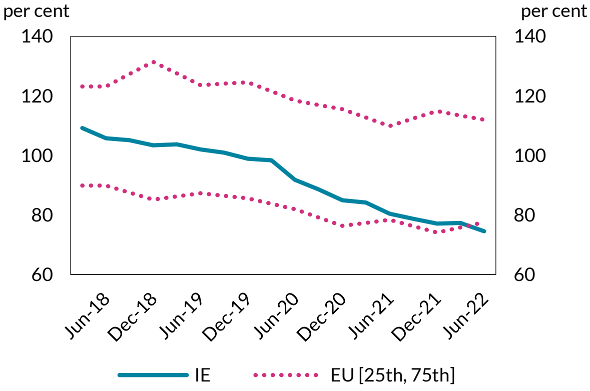
Source: Central Bank of Ireland.
Note: The bars reflects the share of lending to respective counterparties as a percentage of total interest earning assets (left axis). The purple dots reflect the respective net interest margins across counterparty (right axis). "HHs" denotes lending to households, "NFCs" denotes lending to non-financial corporations and "Other" denotes lending to all other counterparties. Central bank reserves are included in the latter category. Figures are presented on a weighted average basis for AIB, BOI and PTSB.

Changes in portfolio composition in recent years continue to exert downward pressure on net interest margins and the loan-to-deposit ratio. Throughout the pandemic, Irish banks have experienced declines in their net interest margins, largely on account of changes in portfolio composition. The share of total assets accounted for by lower-yielding securities such as government bonds and central banks reserves has increased, at the expense of lending to households and businesses, with the lending share in total assets declining from 73.4 per cent to 44.3 per cent between June 2019 and June 2022 (Chart 74). The smaller share of lending to households and businesses has, in conjunction with the expansion of retail deposits, resulted in a sharp decline in the loan-to-deposit ratio, which is now within the bottom quartile among a sample of European banks as at June 2022 (Chart 75). These changes are unlikely to persist, and if the composition of Irish loan books were to resemble lending shares observed prior the pandemic, Irish net interest margins would be boosted even in the absence of any further interest rate rises.

[40] August effective interest rates publication.

Chart 75: Excess liquidity has led to a decline in the Irish loan-to-deposit ratio, which now ranks among the lowest in Europe

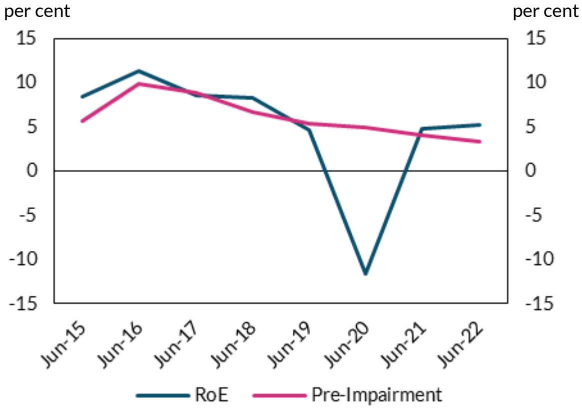
Loan-to-deposit ratio



Source: Central Bank of Ireland and BankFocus.
Notes: The chart shows the weighted average loan-to-deposit ratio for AIB, BOI and PTSB. The pink dotted lines reflect the interquartile range of the loan-to-deposit ratio among a sample of representative European banks.

Chart 76: Profitability has returned to pre-pandemic levels, supported by writebacks in 2022

Return on equity and pre-impairment profit scaled by total equity



Source: Central Bank of Ireland.
Notes: "RoE" denotes the weighted average return on equity for AIB, BOI and PTSB. "Pre-Impairment" denotes pre-impairment profit scaled by total equity (weighted average).

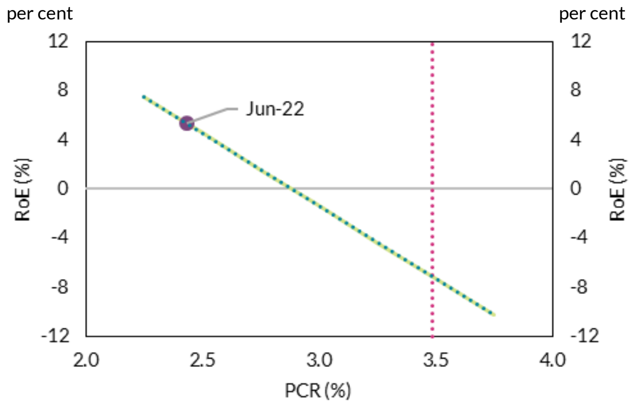
Profitability has returned to pre-pandemic levels, but at current profit levels a relatively small increase in provision coverage would lead to losses. Throughout the pandemic, large swings in impairment have generated volatility in Irish bank profitability as measured by the return on equity (RoE). Over the past year, profitability has increased, but largely on account of the writing back of provisions built up over the pandemic (Chart 76). After stripping out the impact of impairment, profitability has continued to trend downwards, pointing to structural weaknesses in the capacity of the sector to generate profits. Weak profit generation reduces bank resilience and leaves underlying profit margins vulnerable to increases in provisioning that may be required under any further adverse macroeconomic shocks. At current levels of profitability, banks would be able to withstand increase in provisioning coverage levels from 2.5 to 3 per cent before RoE would turn negative (Chart 77). This level of increase could arise from relatively modest increases in default rates by historical standards, but is likely to be offset by increase in interest margins.

A rising interest rate environment should be supportive of bank profitability in the baseline scenario, absenting a broader increase in credit risk. A relatively high reliance on net interest income leaves Irish banks well placed to benefit from increases in interest rates through higher net interest margins.[41] Similarly, improved borrower resilience (outlined in *Resilience: Households* and *Non-Financial Corporations*), and a relatively small exposure to short-maturity corporate loans, mean that certain risks associated with rising interest rates are less pertinent for Irish than other banks (Morell et al., 2022). Due to market power in both deposit-taking and lending, as well as to the existence of the zero lower bound, banks typically earn greater interest margins during periods of rising interest rates (Borio et al., 2017). If policy rates were to increase by the same magnitude as forecasted for the 3M Euribor, then, assuming a static balance sheet, the aggregate net interest margin would increase to approximately 2.1 and 2.3 per cent by 2024, based on the ECB's June and September macroeconomic projections respectively (Chart 78).

[41] See Chart 49, *Financial Stability Review 2020 II*.

Chart 77: At current levels of profitability, a modest increase in provisioning coverage would result in negative returns

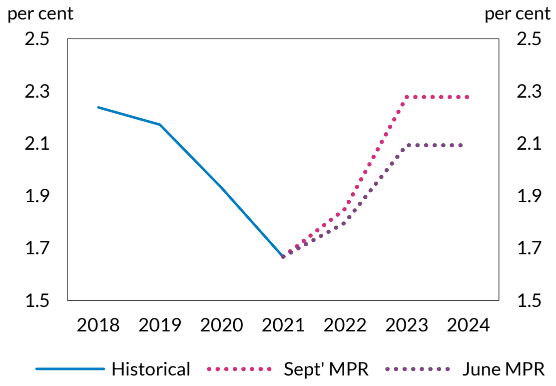
Return on equity and provisioning coverage



Source: Central Bank of Ireland.
Notes: The charts shows different combinations of provisioning coverage on all loans and advances (PCR) and the implied return on equity (RoE). The vertical dashed line reflects the provisioning coverage ratio at the height of the COVID-19 pandemic (Dec-20) as a reference point. All items contributing to RoE other than provisions, for example interest margins, are held constant in this calculation.

Chart 78: Rising rates should raise net interest margins

Net interest margins under different policy rate scenarios



Source: Central Bank of Ireland.
Notes: The chart shows the impact on the weighted average net interest margin under different interest rate projections. The "June MPR" projection assumes that policy rates change by the same magnitude as forecasted for the 3M Euribor as forecasted in the ECB's June macroeconomic projections. The "Sept' MPR" projection assumes that policy rates change by the same magnitude as forecasted for the 3M Euribor as forecasted in the ECB's September macroeconomic projections. Under both projections, a static balance sheet is assumed.

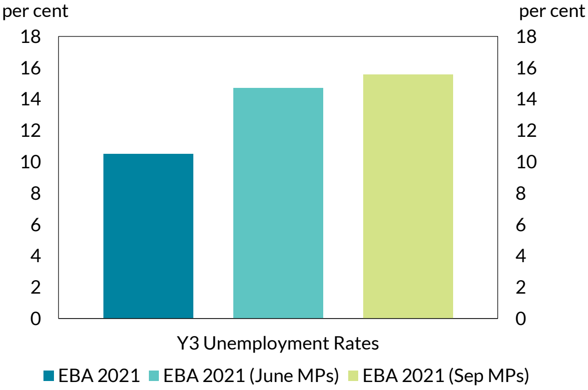
Higher margins and profits will increase the capacity of banks to withstand adverse macroeconomic shocks. Additional profits owing to higher interest rates will strengthen bank resilience by raising banks' capacity to absorb losses that may materialise. The Central Bank has estimated, for illustrative purposes using an internal model, the outcomes that would arise if the EBA 2021 adverse scenario was altered to feature the same macro paths for unemployment and real estate, combined with the type of rate rises projected in the ECB's current macroeconomic projections.[42] The associated additional net interest income arising from higher rates allows the sector to absorb higher unemployment rates of 3-4 percentage points without depleting capital, when compared to the 2021 scenario tailored for the previous "low for long" interest rate environment (Chart 79). However, modelling caveats do apply around the weaker role of debt servicing burdens in driving defaults in the absence of unemployment shocks in models based on post-financial-crisis data.

Unemployment is typically a key driver of provisions, but this shock may be different. Historically, provision coverage has tracked unemployment (Chart 80), since a borrower's employment prospects are an important determinant in the ability to service debt. However, banks' own risk modelling may struggle to measure forward-looking credit risks that are specific to the nature of the current high-inflation, high-rate shock, which has not been experienced by lenders for four decades. Analysis in *Resilience: Households* has shown that mortgage borrowers in distress could increase by up to one third due to the budgetary effects of goods and services inflation combined with a 200bps increase in mortgage rates, highlighting the need for prudence when assessing risks in this macro environment.

[42] As opposed to the "low for long" environment modelled at the time of the 2021 EBA exercise.

Chart 79: For a given macro shock, a higher interest rate environment will help banks to absorb losses

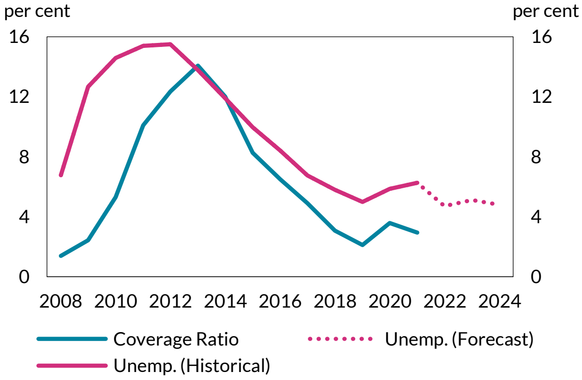
Level of unemployment below which CET1 would remain unchanged; illustrative Central Bank calculation



Source: Central Bank of Ireland.
Notes: The chart shows the impact on the weighted average net interest margin under different interest rate projections. The "June MPR" projection assumes that policy rates change by the same magnitude as forecasted for the 3M Euribor in the ECB's June macroeconomic projections. The "Sept' MPR" projection assumes that policy rates change by the same magnitude as forecasted for the 3M Euribor in the ECB's September macroeconomic projections. Under both projections, a static balance sheet is assumed.

Chart 80: Historically, provisioning coverage has tracked the unemployment rate very tightly

Unemployment and the provisioning coverage ratio



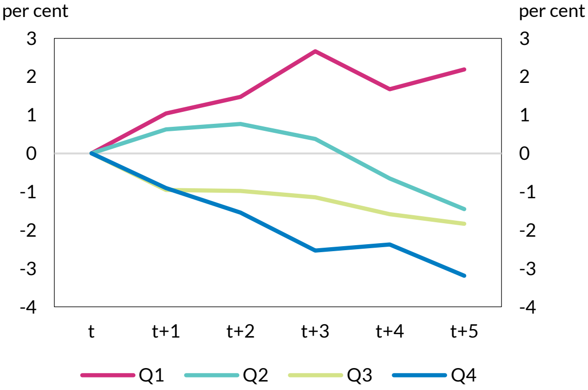
Source: Central Bank of Ireland, BankFocus and CSO.
Notes: The forecast for unemployment (dashed line) is obtained from the Bank's Q4 Quarterly Bulletin.

Historically, banking equity returns have tended to decline in periods of high inflation. Given how low inflation has been over the previous four decades, conclusive analysis on the likely outcomes for the banking sector in the coming years is particularly challenging. Turning to longer historical data can provide insights. Bank equity returns, a proxy for banks' performance and ultimately their resilience, are typically negatively affected by increases in inflation (Chart 81). When inflation is initially low i.e. in the first quartile, a 1 percentage point increase in inflation leads to a 2.2 percentage point increase in real equity returns cumulatively over 5 years. The relationship is non-linear however: in the top quarter of cases studied, real equity returns are cumulatively three percentage points lower after five years following a one percentage point increase in inflation.[43].

[43] The finding that the initial rate of inflation is an important determinant in the relationship between inflation and financial intermediation has also been found in Boyd et al (2001) and Khan et al (2006). The analysis also suggests that banks are more exposed than other corporates to prolonged high inflation: in repeating this exercise for real non-financial equity returns, these stocks were found to be less negatively affected by inflation over a 5 year period on a cumulative basis.

Chart 81: Financial sector equity returns have tended to perform worse under higher inflation

5-year cumulative changes in financial equities to a 1 percentage point increase in inflation



Source: Central Bank of Ireland.
Notes: Central Bank of Ireland estimates based on the Baron et al. (2020) historical dataset. The data cover 44 countries from 1946 to 2016 at annual frequency. The chart reports the cumulative Impulse Response Functions (IRFs) of real financial equity returns, over a 5-year period, to a 1 percentage point increase in the inflation rate at different points in the inflation distribution. Quartiles of inflation are calculated over all countries by decade. A categorical inflation variable is defined based on these quartiles and interacted with the (continuous) inflation variable. Q1, Q2, Q3 and Q4 denote the cumulative IRFs in the first, second, third and fourth inflation quartiles, respectively. The IRFs are estimated via Local Projections (Jorda, 2005) with four lags each of a country's inflation and real GDP growth rate. The x-axis denotes years while the y-axis shows the cumulative response of real equity returns (percentage points).

Sovereign

The public finances have improved significantly since 2020, but long-term spending pressures and potentially unreliable revenue growth create a more uncertain outlook. The reliance on Corporation Tax continues to grow, but the transfer to the National Reserve Fund is an important step in improving the resilience of the public finances. Budget 2023 announced a significant increase in spending, including a large, temporary cost of living package. This was supported by very strong tax revenue over the last twelve months. Government borrowing costs have risen since the beginning of 2022, but remain contained in an international and historic context. The total stock of debt relative to national income is projected to continue to decline in the coming years. Short term spending demands must be balanced against long-run pressures such as those from ageing and funding the green transition.

The improvement in the public finances since the COVID-19 pandemic has surpassed expectations. The Department of Finance's 2022 Stability Program Update (released in April) projected a deficit of 0.8 per cent of GNI* this year. In Budget 2023, this was revised to a surplus of 0.4 per cent (Chart 82). The improvement in the fiscal outlook is primarily due to revenue coming in ahead of projections for the main tax categories. The temporary pandemic-related spending has been largely phased out with the main income support measures (PUP and EWSS) ending in the first half of the year. The growth in temporary measures related to the rising cost of living supports partially offset this improvement, but recent revenue growth outweighs the impact of the energy measures announced in Budget 2023 and earlier in 2022.

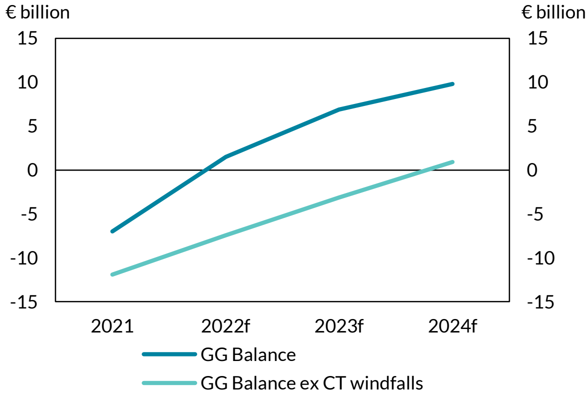
The reliance on corporation tax receipts continues to grow. Exchequer returns for the year to end-September shows that Exchequer tax revenue increased by 26 per cent compared to the same period last year (Chart 83). While year-on-year comparisons are affected by the removal of pandemic restrictions, revenues are also almost 10 per cent (€5.1bn) ahead of Government expectations for 2022 as set out in the Budget in October 2021. This revenue performance has been driven by Corporation Tax.Revenue from this source for the 10 months to October are 70 per cent above the same period last year and 30 per cent ahead of Department of Finance expectations. CT will likely become the State's second largest source of revenue this year, surpassing VAT. There are significant risks to the sustainability of current corporation tax revenue owing to the concentration of CT payments among a small number of large multinational firms (10 firms account for over half of CT revenue , see *Risks: Structural*). To support resilience in the public finances over the medium term, Budget 2023 announced two once-off payments to the National Reserve Fund - €2bn will be transferred in 2022 and €4 billion in 2023. The continuation of payments into this fund over the medium term would ensure some excess corporate tax revenues are saved, reducing the risk that this revenue is used to fund permanent expenditure. The other major taxes have also performed strongly, with Income Tax and VAT 16 per cent and 23 per cent higher respectively than the same period last year.

Budget 2023 included a substantial cost of living package. Budget 2023 announced a package of €6.9bn in core spending, €4.4bn in temporary cost of living measures, and €2.5bn in a contingency for Ukraine and the remaining COVID-19 spending. This nominal package is much larger than Budgets announced in the years leading up to the pandemic. Although the Government previously announced a 5 per cent expenditure growth rule, core spending is projected to increase by 6.3 per cent in 2023 before returning to 5 per cent in 2024. Revenue growth is projected to moderate over the next two years and the impact of international corporate tax reform is still uncertain. It is therefore important that expenditure growth is returned to a sustainable level as set out in the Government's expenditure rule.

Chart 82: The public finances have improved significantly since 2020
Irish General Government Balance (per cent of GNI*)

Source: Central Bank of Ireland projections.

Chart 83: Excess receipts have supported the reduction in the budget deficit by corporation tax
Government Balance without excess CT



Source: Central Bank of Ireland projections.
Notes: Estimate of windfall corporation tax receipts is taken from Budget 2023 documentation. The amounts are €5bn in 2021, €9bn in 2022, €10bn in 2023 and €9bn in 2024.

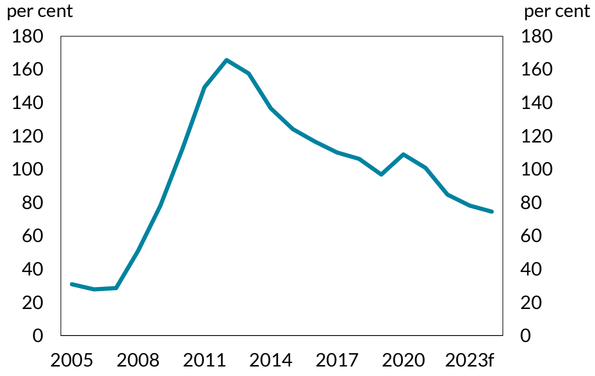
The cost of living measures introduced by Government represent a significant increase in temporary spending. The temporary cost of living measures announced in Budget 2023 are more targeted than those introduced earlier this year. The majority of the temporary cost of living package in Budget 2023 is comprised of expenditure measures (€2.7bn) with tax measures of (€1.7bn) making up the remainder. Targeted measures include additional welfare and fuel allowance payments to households, while measures like the electricity credits (deductions from households' bills totalling €1.2bn) and additional child benefit payments are untargeted. Overall, it is estimated that 40 per cent of the cost of living package in Budget 2023 is targeted with the remainder available more generally to all relevant households and businesses.[44] For humanitarian support for Ukrainian refugees, an unallocated contingency of €2bn has been set aside for 2023.

Borrowing costs have increased throughout 2022 but the debt ratio remains on a downward trajectory. The debt to GNI* ratio will fall below its pre-pandemic level by the end of this year (Chart 84). The projected decline in the ratio is largely driven by strong economic growth, with the nominal level of debt projected to be €23bn higher in 2024 than in 2019. While Ireland's bond yields have increased since late last year, sovereign funding conditions remain broadly favourable. The bonds maturing over the next three years all have an interest rate in excess of the current yield on Irish 10 year debt (Chart 85). This implies that refinancing this debt at current rates would lead to a reduction in the effective interest rate paid by Government – however the Department of Finance, as part of their Budget 2023 projections, foresees a moderate increase in interest payments in 2023 and 2024. This reflects recent increases in sovereign borrowing costs and the heightened degree of uncertainty surrounding the economic outlook in the euro area and internationally. The NTMA's funding operations provide some flexibility – cash balances as of end-October are €27bn (11 per cent of GNI*). This is in excess of bond maturations over the next three

[44] 11 per cent of the measures announced earlier in 2022 are estimated to have been targeted. See Central Bank of Ireland Quarterly Bulletin 4 2022, pg79, Table 5.

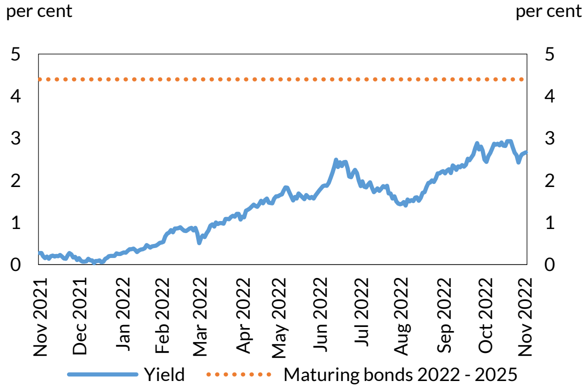
years. In September 2022, the NTMA announced it would not need to issue new bonds in 2022Q4, as was previously planned.[45]

Chart 84: The debt ratio remains on a downward trajectory
Irish Gross Government Debt as a per cent of GNI*



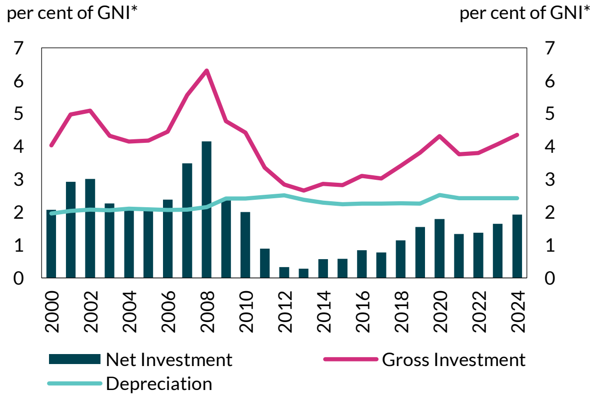
Source: CSO, Central Bank of Ireland projections.

Chart 85: Marginal borrowing costs are rising but so far remain below the rate on maturing debt
Irish 10 year bond yield



Source: Refinitiv and NTMA.
Notes: Dotted line based on simple weighted average of maturing bonds as of 1 November 2022.

Chart 86: Government investment is projected to increase steadily
Government Investment and depreciation



Source: Central Bank of Ireland projections.

While the fiscal position has improved since the release of the last *Review*, the potential impact of key short and long term spending pressures has increased. In the short term, cost of living measures should be as targeted as possible, especially given the risk that energy prices could remain elevated for longer than expected. Any permanent increases in expenditure need to be matched by sustainable revenue sources over the medium term to avoid the emergence of structural imbalances in the public finances. Significant capital spending is projected over the next three years to support housing delivery and a range of long run priorities such as ageing and the green transition (Chart 86:). Balancing these short and long-term spending pressures is particularly important in an environment of rising interest rates. Measures to ensure budgetary resilience, such as managing aggregate expenditure growth in line with the Government's spending rule, improving the sustainability of the tax base, and making continued payments into the National Reserve Fund, are of primary importance for the coming years.

[45] NTMA statement on debt issuance over the remainder of 2022, September 2022

Non-bank financial sector

Investment funds and non-bank lenders

Investment funds and non-bank lenders represent an important source of financing for certain sectors of the domestic economy. They provide diversification and competition in financing for NFCs and households. Property funds have the most significant linkages to the domestic economy, holding approximately 35 per cent of the investable commercial real estate (CRE) market. While a decline in indebtedness of property funds due to equity issuance has been observed in recent years, the high leverage and low liquidity of a subset of property funds makes them more vulnerable to adverse shocks. Beyond the property fund sector, non-bank lenders are playing a growing role in the financing of the domestic economy. These entities were responsible for an estimated 35 per cent of the value of total new lending to SMEs in 2021. However, the first six months of 2022 saw a significant decrease in new lending volumes compared to the last six months of 2021. While these entities provide important diversification, competition and innovation benefits to the economy, their lending may be more pro-cyclical than banks, with negative implications for the resilience of credit flows in an era of higher interest rates.

Irish-domiciled property funds are key investors in the domestic commercial real estate market in Ireland. As of 2022Q2, Irish property funds have €22.1 billion in total assets (which is equivalent to approximately 35 per cent of the estimated 'investable' Irish CRE market).[46] Leverage is a key source of vulnerability among these investment funds. For instance, falls in CRE valuations or losses in rental payments could cause a breach of property funds' loan-to-value (LTV) - or debt servicing – covenants. These covenants are normally present in the funds' loan agreements. Breaching loan agreement covenants may trigger *forced sales* of property assets into falling markets.

Relatively high leverage is currently present in a subset of Irish-resident property funds, which increases their vulnerability to adverse market conditions. Leverage is measured as the ratio of total non-equity liabilities to total assets. The property fund sector as a whole has aggregate leverage of 46 per cent, (Chart 87). While leverage saw a steady decline over the last five years, the current aggregate level is significantly higher than the European average (i.e. 17 per cent in 2022Q2). The Central Bank has just introduced macroprudential policy measures for Irish property funds to address the vulnerabilities arising from excessive leverage and liquidity mismatch.[47] More details on the policy are provided below in *Policy: Non banks.*

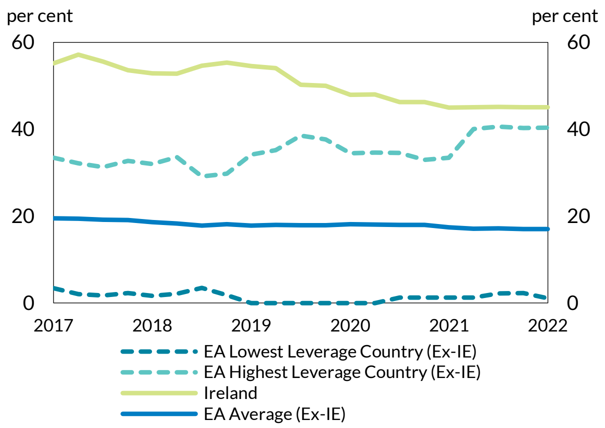
The share of assets held in highly leveraged property funds continues to decline, although the share of funds in negative equity is stable. For example, 31 per cent of assets in the sector are held by funds with leverage of more than 60 per cent (Chart 88). This share has decreased from a level of 41 per cent in 2021 and 57 per cent in 2017. The last *Review* reported the presence of funds with negative equity, which was partially explained by the decline in CRE prices since the onset of the COVID-19 pandemic. The share of negative equity funds remains relatively constant since the last *Review* at approximately 5.8 per cent of property fund assets.

[46] The current share has fallen from 44 per cent in FSR2022:I primarily due to an update in the benchmark CRE market estimate, which now uses data as of 2021. A second, less significant reason behind the decrease is linked to changes in the definition of "Irish Property Funds" to better align with the definition used in CP145.
[47] The proposal is outlined in detail in "Consultation 145: Macroprudential measures for the property fund sector."

In the last two years, a cohort of funds actively deleveraged through additional subscriptions from fund investors, which were partially linked to conversions of shareholder loans. In general, deleveraging can come from asset appreciations or loan repayments through additional subscriptions from fund investors, retained earnings or asset sales etc. Among highly leveraged funds (i.e., leverage above 60 per cent), there is a strong negative correlation between investor subscriptions and changes in leverage. Specifically, a net subscription of 1 per cent (relative to fund assets) is associated with a leverage reduction of approximately 0.6 per cent (Chart 89). In particular funds that transitioned to lower leverage classes below 60 per cent tended to have larger equity issuances. This indicates that the deleveraging may be - at least partially - explained by funds' actively paying off loans via equity issuance. Recent actions by the Government (Budget 2020 Financial Resolution No. 7) and by the Central Bank (AIFMD Q&A) have made shareholder loans less attractive and may explain some of the deleveraging we have seen.

Chart 87: Irish property funds are more highly-levered than their European peers

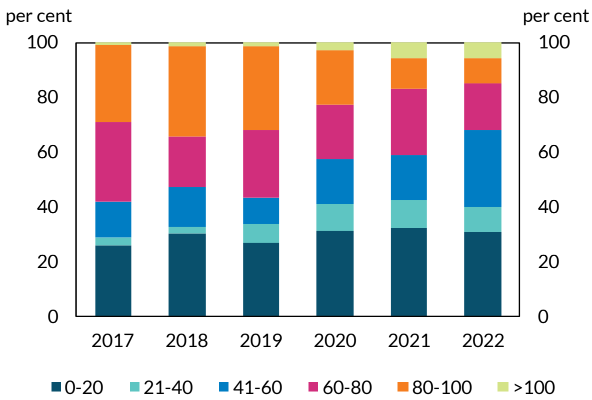
Distribution of leverage (defined as debt/assets) of property funds across European countries



Source: Central Bank MMIF returns and European Central Bank.
Notes: Financial leverage ratio is non-equity liabilities divided by total assets under management. The solid line labelled as 'Ireland' is the value-weighted average of all Irish property funds. 'EU average' describes the value weighted leverage of all European property funds. 'EU lowest leverage country' and 'EU highest leverage country' describe the leverage of property funds in the European country with the lowest and highest leverage, respectively. Irish real estate funds are those investment funds resident in Ireland which hold Irish real estate. Real estate funds in other countries are those that self-identify as real estate funds. The financial leverage is measured as total non-equity liabilities scaled by total assets. Last observation 2022Q2.

Chart 88: The decrease in leverage is concentrated among funds with high leverage

Distribution of Irish property funds total assets across leverage classes.



Source: Central Bank MMIF returns.
Notes: The vertical axis describes the share of six classes of property funds grouped in terms of their financial leverage. The share is the ratio between the AUM of each class and the total property fund AUM, in each single year. Last observation 2022Q2.

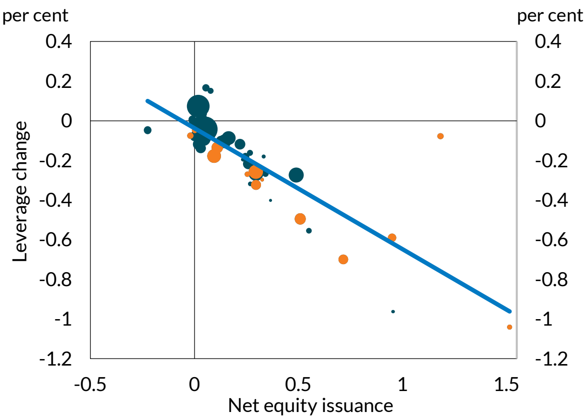
The majority of property funds' assets remain in the non-residential real estate sectors. Asset composition is relevant for the resilience of property funds because CRE prices tend to fall by more than residential prices during stresses, although the two markets are highly correlated (Lyons et al., 2019). Since the last *Review*, the asset structure has not significantly changed, with three-quarters of the sector's assets (i.e., €16.8 billion) being managed by funds whose 'Principal Strategy' is to invest in 'Non-Residential' real estate (including 'Commercial', 'Industrial', 'Multi-Strategy' and 'Other' real estate, see Chart 90).[48] Funds whose 'Principal Strategy' is to invest in

[48] The classification of real estate funds into 'Residential' and 'Non-Residential' is based on the reporting of 'Principal Strategy' by Irish real estate funds under Article 24(1) of the Alternative Investment Fund Managers Directive 2011/61/EU (AIFMD). This directive requires AIFMs to report the investment strategy of the real estate AIFs they manage using the following list of strategies; Residential-RE, Commercial-RE, Industrial-RE, Multi-Strategy-RE and Other RE-Strategy. The guidance on principal investment strategy from ESMA states that, "AIFMs should first select one

'Residential' assets represent 15 per cent of the sector, and 10 per cent of assets are managed by the residual category of funds that do not disclose any specific 'Principal Strategy'.

Chart 89: Some funds actively deleveraged through equity issuances, in the last two years

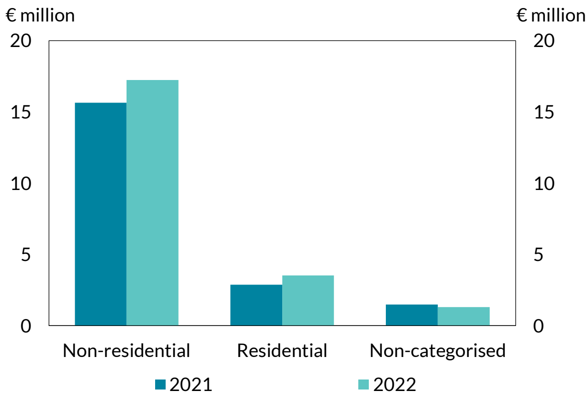
Monthly change in leverage vs net equity issuances



Source: Central Bank MMIF return.
Notes: The chart excludes funds with total gross assets lower than €1 million. Moreover, it includes only observations with non-zero net issuances, and with leverage above 60 per cent (at the start of the issuance month). The orange bubbles indicate cases where leverage changes lead to a leverage level below 60 per cent, while the dark teal bubbles describe any other observation (i.e., where leverage changes do not lead to a leverage below 60 per cent). The vertical axis describes the change in leverage for each fund-month observation. The horizontal axis describes the net equity issuance for each fund-month observation. Last observation 2022Q2.

Chart 90: Non-residential investment represents the typical 'principal strategy' of property funds.

Total assets of Irish property funds across three types of principal strategies.



Source: Central Bank MMIF return and Alternative Investment Fund Managers Directive (AIFMD) data.
Notes: The vertical axis describes the AUM of each fund category. The horizontal axis identifies three categories of funds based on AIFMD's 'Principal Strategy'. The classification into 'Residential' and 'Non-residential' is based on the reporting of 'Principal Strategy' by Irish real estate funds under Article 24(1) of the Alternative Investment Fund Managers Directive 2011/61/EU (AIFMD). This directive requires AIFMs to report the investment strategy of the real estate AIFs they manage using the following list of strategies; Residential-RE, Commercial-RE, Industrial-RE, Multi-Strategy-RE and Other RE-Strategy. The categorisation aggregate all the non-residential strategies into a single category. Last observation 2022Q2.

Non-bank lenders (NBLs) play an important role in the provision of credit to Irish SMEs but may be more likely to transmit global shocks to domestic lending than banks. Non-bank lenders are financial entities that extend credit to domestic borrowers but do not take deposits. In 2022Q2, Irish SMEs owed non-bank lenders an estimated €4 billion, compared to €18.4 billion owed to banks.[49] This represents 17.8 per cent of the total outstanding stock of lending to SMEs, slightly down from 18.0 per cent at 2021Q4. Non-bank lending provides diversification in terms of improved credit market competition, innovative financing models and options for firms in market segments underserved by other lenders. Moreover, non-bank lenders also facilitate broader risk-sharing across the domestic and international financial system via the use of different funding sources than traditional banks. However, since part of their financing originates from international markets/lenders, non-bank lenders could potentially be a channel for transmitting global shocks into domestic credit intermediation. International research has found that non-bank lending was more sensitive to financing conditions than bank lending during the GFC and the pandemic crisis (Fleckenstein et al., 2021). Gaffney and McGeever (2022) provide additional insights on the nature of lending relationships between Irish businesses and their bank and non-bank credit providers.[50]

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primary strategy of the AIF. This primary strategy should be the strategy that best describes the reporting fund's strategies." The categorisation aggregates all the non-residential strategies into a single category. This categorisation may differ slightly from that used in previous FSRs based on the 2019 Deep Dive survey.

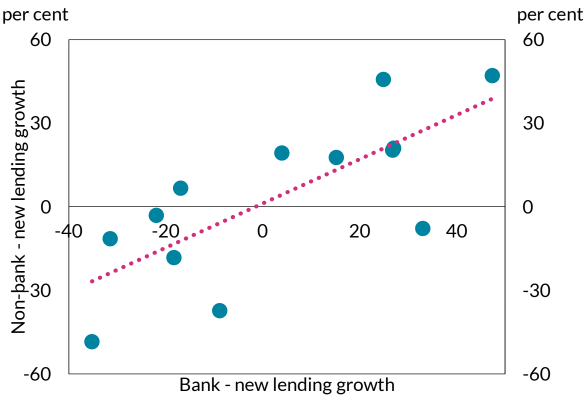
[49] The value of outstanding non-bank lending to Irish SMEs is sourced from the CCR, while the value of outstanding bank lending to Irish SMEs is sourced from the CBI Money and Banking statistics.

[50] See Gaffney, E. and McGeever, N. (2022), "The SME-lender relationship network in Ireland", Central Bank of Ireland, Financial Stability Notes, Vol. 2022, No. 14.

While new lending by banks and non-banks both grew in the years preceding 2022, the share of new non-bank lending has significantly declined in 2022 so far. There has been strong co-movement in the volume of quarterly new lending offered by bank and non-bank lenders in recent years (Chart 91), i.e., when banks increase new lending so do non-banks and the same holds for falls in new lending. This implies that rather than purely taking market share from banks, both bank and non-bank lenders' supply of new credit has been synchronised. Yet, in the first half of 2022 the volume of new non-bank lending fell by more than bank lending, with the share of non-bank lending declining to 28 per cent in 2022Q2 from a peak of 36 per cent in 2021Q2 (Chart 92). The reduction is driven by the volatile credit dynamics of non-bank new lending to real estate SMEs, which fell to 30 per cent of lending in 2022Q2, from a peak of 54 per cent in 2021Q3.

Chart 91: Non-bank lending to SMEs has had stronger growth when banks' growth has also been stronger

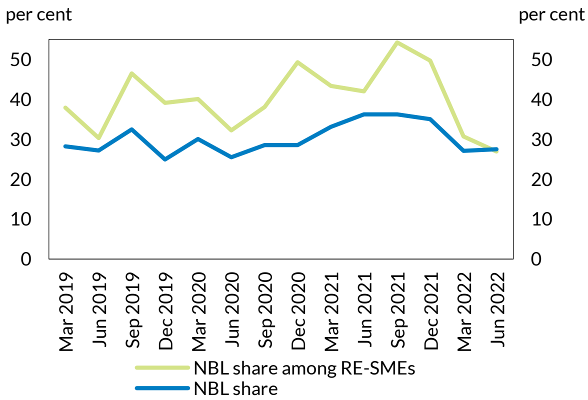
Quarterly growth rate of new SME lending by banks and non-banks.



Source: Central Credit Register, CRO, Register of Affiliates and Assets Database and Central Bank of Ireland calculations.
Notes: The vertical axis describes the growth rate of quarterly aggregate new lending of non-bank lenders. The horizontal axis describes the growth rate of quarterly aggregate new lending of banks. Timeframe: 2019Q1-2022Q2.

Chart 92: Non-bank credit declined relative to bank lending in the first half of 2022, particularly among real estate SMEs

Quarterly new lending by non-banks.

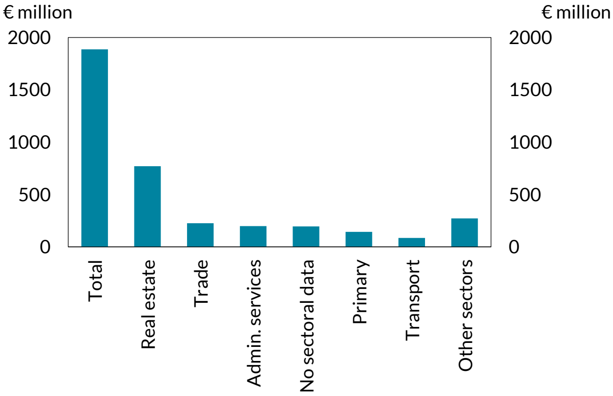


Source: Central Credit Register, CRO, Register of Affiliates and Assets Database and Central Bank of Ireland calculations.
Notes: The vertical axis describes the share of new lending from non-bank lenders relative to the sum of NBL and bank new lending. The vertical axis also include the share of new lending to real estate SMEs from non-bank lenders relative to the sum of NBL and bank new lending to real estate SMEs. The Real estate-SMEs include SMEs in Real Estate Activities and Construction.

Real estate is both the largest and the most cyclical sector for non-bank lenders. In the last four quarters to 2022Q2, NBLs offered €1.9bn in new loan agreements across all non-financial sectors (Chart 93). Real estate SMEs continue to be the main borrowers with a total of €0.8bn in loan agreements, which is larger than the sum of new lending to the second and third largest sectors (i.e., trade and administrative services). Historically, new lending to real estate SMEs has dropped the most during periods of unfavourable financial conditions, as well as being the sector with the greatest expansion during favourable conditions, suggesting heightened volatility in new lending to the real estate sector relative to other sectors (Chart 94). This sector therefore is not only the biggest sector but appears to be the most cyclical in terms of credit supply.

Chart 93: Non-bank new lending to SMEs is concentrated in the real estate sector

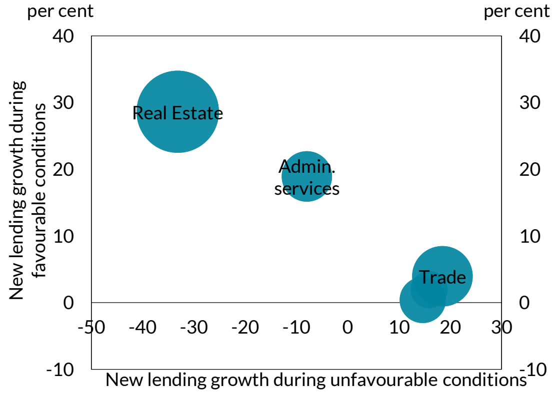
Non-bank new lending from by borrower sector.



Source: Central Credit Register, CRO, RIAD and Central Bank of Ireland calculations.
Notes: NBFI lending based on NACE sectoral classification of SMEs is depicted in millions of euro as columns against the left axis. Timeframe: 2021Q3-2022Q2.

Chart 94: Non-bank lending to real estate SMEs exhibits large fluctuations over time

Size and time-variation of NBL sectors.



Source: IMF, Central Credit Register, CRO, RIAD and Central Bank of Ireland calculations.
Notes: The horizontal axis describes the average growth rates of new lending during unfavourable financial conditions. The vertical axis describes the average growth rates of new lending during favourable financial conditions. Financial conditions are defined as unfavourable when the IMF indicator of financial conditions is worse than its own average. Such conditions are present in four quarters: 2020Q1, 2020Q2, 2021Q4 and 2022Q1. SMEs in real estate, administrative services, trade, primary and transport sectors are included. Timeframe: 2019Q1-2022Q2.

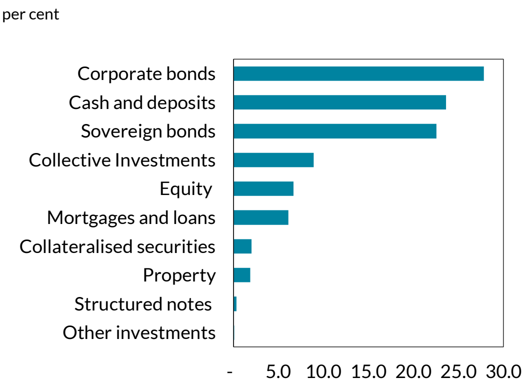
Insurance firms

Despite the challenging economic and financial market backdrop, the solvency position of insurers and reinsurers based in Ireland was broadly stable over the first half of this year, with overall solvency coverage remaining well above regulatory requirements. High inflation can have a material impact on the profitability and balance sheets of some insurers due to the impact on claims costs and operational expenses. Non-life insurers are generally seen as more exposed than life insurers as a result of the impact of rising prices on non-life claims settlement costs, while most life insurance protection and annuity benefits are fixed in monetary terms. Insurers are considered to be resilient from a liquidity perspective due to the sector's underlying business model whereby premiums are received in advance of claims being paid and large holdings of liquid assets, although it is always possible that an unanticipated confluence of events could leave individual firms more exposed. The fact that insurers and reinsurers, in general, remain strongly capitalised means that the sector is well placed to absorb shocks amid a deteriorating macro-economic environment.

Insurers and reinsurers are exposed to volatility and risks in financial markets through their securities holdings. Exposure to market risk varies across the insurance sector and depends on an individual firm's asset mix, which will reflect the duration, nature and currency profile of its liabilities as well as its risk appetite. Fixed interest securities comprise the majority of (re)insurers' investments, accounting for just over 50 per cent of non-linked investments in 2022H1, with a spread of country of issue and currency denominations arising. Insurers' holdings of corporate bonds exceed those of sovereign bonds (Chart 95). Exposure to Irish sovereign and corporate debt remains low and accounted for only 4 per cent of bond holdings at 2022H1. UK gilts represent less than 3 per cent of (re)insurers' investments. Across the industry there was a slight improvement over 2022H1 in the credit quality of the bond holdings (excluding those held to back unit-linked business), with the weighted average broadly equating to a Standard & Poor's AA-/A+ rating at 2022Q2, although the credit quality is down a little on 2019 (Chart 96).

Chart 95: Insurers' investments are predominantly sovereign and corporate bonds with limited exposure to riskier asset types

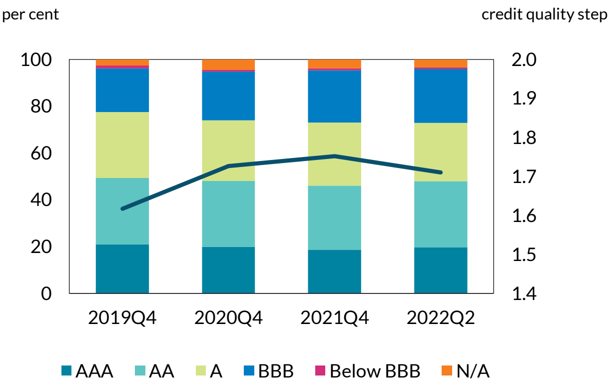
Insurers' non-linked investment allocation



Source: Central Bank of Ireland.
Notes: Last observation 2022Q2. Non-linked investments which exclude those which life insurers hold to back their unit-linked policies.

Chart 96: The credit rating of insurers' corporate and sovereign bond holdings improved slightly in 2022H1

Credit quality of non-linked corporate and sovereign bond holdings



Source: Central Bank of Ireland.
Notes: The credit quality scale (rhs) shows the average credit quality using the credit quality steps specified in Solvency II reporting, which map the ratings for each rating agency to a scale from 0 (AAA) to 6 (CCC and below). A higher score means a lower credit quality.

Non-life (re)insurers (including health insurers) are affected by inflation-driven increases in claims costs, as well as by rising operating expenses, which may be materially above expected levels, affecting both reserve and pricing adequacy. The effective rates of inflation faced by non-life (re)insurers may not equate to that measured by the CPI and will vary by class of business, region and currency, and are subject to complex and varied determinants. For example, the key inflation drivers for property claims, such as labour and raw material costs, will differ from those for liability or motor claims where medical costs and court awards will be an important element. Given that non-life insurance policies are generally written on an annual basis, companies may seek to increase premium rates at renewal date as a (partial) counter to inflation, subject to competitive conditions. Life (re)insurers are mostly impacted via increased operating expenses which may outpace growth in unit linked management fee income and other product margins, particularly where falls in unit linked fund values are being seen. Most life insurance protection and annuity benefits are fixed in monetary terms and so do not increase in line with inflation. The second round effects that accompany a sustained period of higher inflation, including higher interest rates and a slowdown in economic activity, may adversely affect the demand for insurance products and policy retention levels, which could affect firms' operating capital generation potential and capital resources over time.

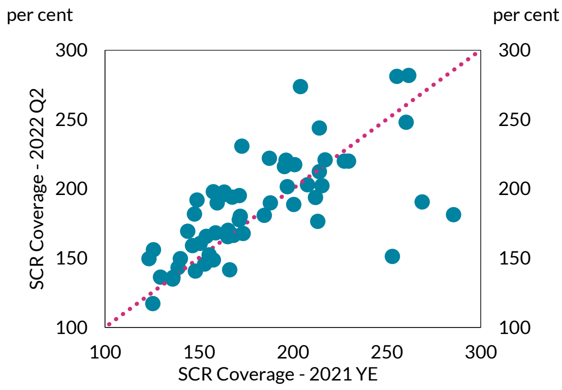
The majority of (re)insurers have minimal direct business or investment exposure to the continuing war in Ukraine, although some non-life firms that underwrite more specialist lines of business still face uncertainty over the extent of their ultimate claims cost exposure. From an insurance risk perspective, exposure to Russia, Ukraine or Belarus typically relates to specialist lines of business (for example, marine, aviation and transport, and credit and suretyship insurance) written in material volumes by only a small number of Irish firms. The ultimate cost of claims attributable to the war has yet to emerge. For example, the validity of some claims made by aircraft leasing companies in respect of planes seized by their Russian operators are subject to legal proceedings in the High Court in London and in Dublin. The eventual outcome of the proceedings, which are likely to be lengthy, will be one determinant of the obligations of Irish (re)insurers that participate in this segment of the market.

Despite the backdrop of economic and financial market volatility, the solvency position of insurers and reinsurers based in Ireland was broadly stable in the first half of this year. Solvency coverage ratios are well in excess of regulatory requirements.[51] Solvency movements continue to be widely dispersed, reflecting the diverse nature of the more than 180 life and non-life insurers and reinsurers that comprise the industry, their individual asset and liability profiles, financial performance over the period, and risk appetites (Chart 97). At an industry level, solvency coverage rose at 51 per cent of firms over 2022H1, while it fell at the remainder. The median SCR coverage ratio of the subset of insurers that are active in the Irish domestic market[52] rose in 2022H1 at life insurers while it fell slightly at non-life insurers, with available capital continuing to exceed firms' SCRs (Chart 98).

[51] Solvency coverage is measured as a firm's available capital (known as "own funds" under Solvency II) as a percentage of its Solvency Capital Requirement (SCR).
[52] This relates to firms that are prudentially regulated by the Central Bank of Ireland. More than 200 insurers authorised in EEA members states other than Ireland write business in Ireland. The solvency of these firms is monitored by their home member state competent authority and are not included in the chart.

Chart 97: Solvency coverage movements over 2022H1 were widely dispersed

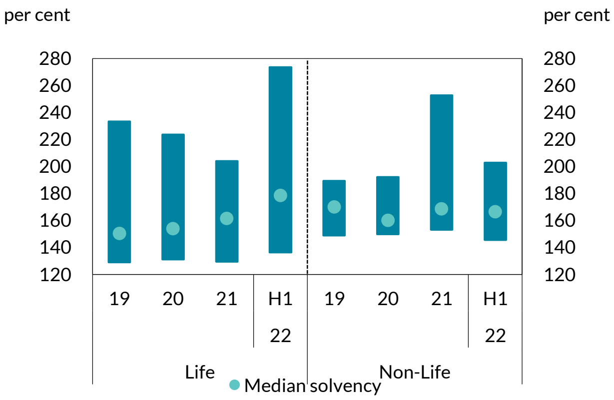
Plot of solvency coverage of insurers and reinsurers 2021YE and 2022Q2



Source: Central Bank of Ireland.
Notes: The scatter chart shows the solvency coverage of individual firms at 2021YE (x-axis) versus their coverage at 2022Q2 (y-axis). A position below the diagonal line means a fall in coverage over the period. Only firms with PRISM impact rating[53] of Medium Low and above are shown. Firms with solvency coverage of greater than 300 per cent are not shown.

Chart 98: Domestic insurers' solvency positions remain robust and are above regulatory requirements

Solvency coverage of domestic life and non-life insurers



Source: Central Bank of Ireland.
Notes: The box at each point shows the maximum and minimum range. Sample is time varying comprising the largest domestic life and non-life insurance firms. Last observation 2022H1.

Insurers are generally considered to be resilient from a liquidity perspective due to the sector's underlying business model ("inverted production cycle") whereby premiums are received in advance of claims being paid, their large holdings of liquid assets and the reasonable predictability of inflows and outflows. Insurers generally have substantial holdings of deposits and other liquid assets to meet cashflow shortfalls. However, an unanticipated confluence of events could result in short term unplanned cash demands facing an individual insurer. This could arise, for example, from a greater than expected immediate requirement to post collateral to the counterparties under a derivative arrangement, or a significant spike in claims outflows together with a drop in premium income. A reminder that circumstances can change very quickly and unexpectedly was the requirement for the Bank of England to step in to act as long-term gilt buyer of last resort in September 2022 to support UK pensions schemes adopting liability–driven investment ("LDI") strategies who needed to raise cash quickly (as described in Box C in the context of investment funds). Although UK pension schemes and LDI strategies were at the centre of this particular situation, other sectors could face such challenges in extreme situations and in different circumstances.

[53] Further information on PRISM can be found at: https://www.centralbank.ie/regulation/how-we-regulate/supervision/prism.

Macroprudential policy

The aim of macroprudential policy is to safeguard financial stability. The Central Bank's macroprudential policies aim to ensure the domestic financial system can absorb, rather than amplify, adverse shocks. Policies look to build resilience – proportionate to the risks faced – when times are good so that this resilience can be used in the face of adverse shocks. A resilient financial system is one that is able to provide services to Irish households and businesses, both in good times and in bad. In making macroprudential policy interventions, the Central Bank seeks to balance the benefits and costs of its policies.

The Central Bank's macroprudential policy framework has three broad pillars: policies relating to banks (macroprudential capital buffers), policies relating to borrowers (the mortgage measures), and policies relating to non-banks (currently focused on property funds). The Central Bank has carried out a review of each pillar of the framework over the course of 2021 and 2022. In June, the Central Bank published its updated framework for macroprudential capital. In October, it announced the outcome of its mortgage measures framework review. Relating to property funds, the announcement of measures to limit leverage and liquidity mismatches, as set out in this *Review*, is the culmination of a significant body of work that aims to ensure the macroprudential framework evolves in line with the financial system. Table 1 provides an overview of the Central Bank's policy stance across the three pillars, with the remainder of the chapter discussing them in further detail.

Macroprudential authorities across Europe are alert to the implications of the worsening economic outlook. The ESRB recently issued a warning on vulnerabilities in the European financial system. Reflecting the increase in systemic risks, the ESRB noted the need for policy to preserve or enhance the resilience of the Union's financial sector to ensure its capacity to support the real economy if and when financial stability risks materialise. In terms of macroprudential policy, the ESRB noted the role that capital buffers can play in supporting credit institutions' resilience and enabling authorities to release buffers, if and when risks materialise and negatively impact credit institutions' balance sheets. The ESRB also note the need for financial stability risks beyond the banking sector to be addressed – including through increasing the resilience of non-bank financial institutions and market-based finance. The need for authorities to tailor policy action to individual Member State circumstance is emphasised by the ESRB in order to limit the risk of pro-cyclicality.

Table 1 | Summary of macroprudential policies

	O-SII	CCyB	Mortgage Measures	Property funds
Objective	Safeguard resilience of systemically important banks, defined as those institutions whose failure would have a large impact on the financial system.	Safeguard banking system resilience to cyclical risks to facilitate a sustainable flow of credit to the economy in good times and bad.	Ensure sustainable lending standards in the mortgage market.	Increase the resilience of this growing form of financial intermediation, reducing the risk that financial vulnerabilities might amplify adverse shocks in future periods of stress.
Rate	0.5% - 1.5% depending on the institution	1%	LTV: 70% - 90% depending on borrower type LTI: 3.5 - 4 times depending on borrower type A proportion of new lending above the limits is allowed *See Table 4 for details*	Leverage limit - sixty per cent (total debt to total assets) and Central Bank Guidance that generally property funds should provide for a liquidity timeframe of at least 12 months, taking into account the nature of the assets held.
Exposures in scope	All exposures	Irish exposures	Proportion of newly originated mortgage exposures	Funds domiciled in Ireland, authorised under domestic legislation, and investing over 50 per cent of their portfolio in either directly or indirectly held Irish property assets.
Effective from	July 2019 on a phased basis	November 2023	February 2015	24 November 2022 to any newly authorised property funds. November 2027 for the leverage limits and May 2024 for the Guidance on liquidity timeframes.

Macroprudential capital buffers

Countercyclical capital buffer

The Central Bank is increasing the CCyB rate from 0.5 per cent to 1 per cent effective from November 2023. This is in line with the gradual build-up of the CCyB announced in June. Continuing on this path by increasing the CCyB to 1 per cent is consistent with the Central Bank's objective for the CCyB – promoting resilience in the banking sector, proportionate to the risk environment, with a view to facilitating a sustainable flow of credit to the economy through the cycle. Given the existing capital headroom in the banking sector and the outlook for profitability, it is not expected that the increased CCyB rate would have a material impact on credit supply and economic activity.

The Central Bank's primary objective for the CCyB is to promote resilience in the banking sector – proportionate to the risk environment - with a view to facilitating a sustainable flow of credit to the economy through the macro-financial cycle. By increasing regulatory capital requirements when times are good, in line with the cyclical systemic risk environment, the CCyB looks to ensure additional capital is in place to absorb losses when risks materialise. In that way, the banking system is better able to withstand adverse shocks, without restricting the supply of credit to the economy. The Central Bank announced a refreshed strategy for the CCyB in June 2022 and the different phases of the strategy are illustrated in Chart 99.[54] Building the CCyB to 1.5 per cent when risks are deemed to be neither elevated nor subdued acknowledges the inherent uncertainty in assessing the degree of risk facing the banking system and the time lags in implementing the CCyB. Recent communication from the Basel Committee on Banking Supervision expressed the Committee's support for authorities setting a positive cycle-neutral CCyB rate.[55]

The Central Bank continues to see the gradual build-up of the CCyB as being appropriate for current macro-financial conditions and is increasing the CCyB rate from 0.5 per cent to 1 per cent (effective from November 2023). Risks to the global economic outlook have increased since the last review of the CCyB and global growth prospects have deteriorated (see *Risks*). Overall, aggregate credit growth has continued to recover from pandemic lows, although credit developments vary across sectors. Bank credit growth has increased modestly since the last *Review*, with NFC and consumer credit continuing to grow, while bank credit for house purchases continued to decline (See *Risks: Cyclical*). As of 2022 Q2, the alternative credit gap was close to zero. Growth remains positive in the domestic economy, supported by strong labour market performance. Looking forward, although the central outlook for the Irish economy has been negatively affected by recent inflationary dynamics, growth of 2.3 per cent is forecast for 2023, while unemployment is predicted to remain in the region of 5 per cent through the forecast horizon.[56]

As risks to the global outlook have increased and global growth prospects have deteriorated, it is important to continue to safeguard resilience to future adverse shocks by ensuring the presence of releasable buffers. These growing risks were highlighted in the ESRB's Warning in September 2022 on vulnerabilities in the Union's financial system.[57] The Warning emphasised that further building up macroprudential buffers would support credit institutions' resilience, enabling authorities to release these buffers, if and when risks materialise and negatively impact credit institutions' balance sheets. In a similar vein, on 2 November, the Governing Council of the ECB released a statement on macroprudential policies. The statement emphasised the importance of building macroprudential capital buffers to help preserve and strengthen resilience in the banking sector in the current challenging macro-financial environment.[58]

The Irish banks have headroom above regulatory capital requirements. The profitability outlook is improved by rising interest rates, leaving the banks well positioned to absorb the increase in the buffer rate. Capital ratios remain above minimum requirements, meaning that Irish banks are well positioned to absorb this increase in the CCyB rate. Additionally, the higher interest rate environment should be supportive of banking profitability. Given the outlook for the banking

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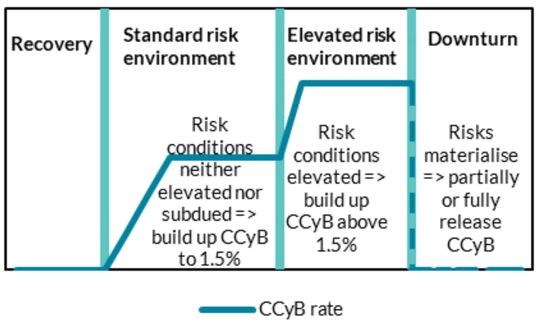
54 The Central Bank's framework for macroprudential capital
55 Newsletter on positive cycle-neutral countercyclical capital buffer rates
56 Forecasts from the Central Banks latest Quarterly Bulletin.
57 Warning of the European Systemic Risk Board of 22 September 2022
58 Governing Council statement on macroprudential policies

sector under the central forecast for the Irish economy, it is considered unlikely that the increased CCyB rate would have a material impact on credit supply and economic activity.[59]

Chart 99: Stylised representation of the Central Bank's strategy for the CCyB

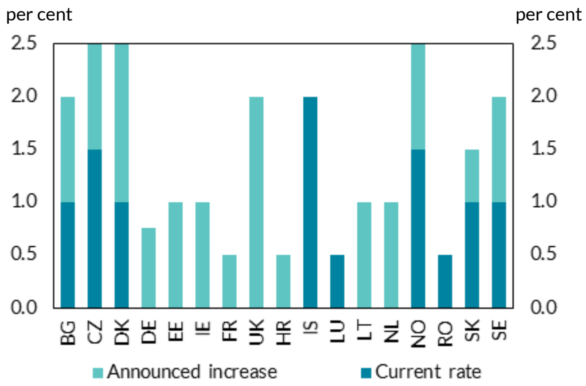
The Central Bank's high-level strategy for the CCyB



Source: A framework for macroprudential capital.
Notes: Stylised representation, does not refer to specific figures.

Chart 100: National authorities in Europe are rebuilding buffers

Current and announced CCyB rates in Europe where a non-zero rate has been set



Source: ESRB.
Notes: As of 19 October 2022.

National authorities around Europe have, where deemed appropriate, been building buffers in order to strengthen banking sector resilience against future shocks (Chart 100). In the period since the previous FSR, a number of authorities including the Bank of England, Bank of Lithuania and Bulgarian National Bank have announced increases to their respective CCyB rates.[60] Recurring themes in these announcements have been accelerating house prices, uncertainty stemming from global conditions, and a need to build resilience.

The path of the CCyB will remain state dependent. The Central Bank previously communicated the intention to build the CCyB rate to 1.5 per cent by mid-2023, and this guidance remains in place. However, this is dependent on the evolution of macro-financial conditions in the intervening period. As always, if risks were to materialise, in line with its objective the Central Bank stands ready to release or reduce the CCyB with immediate effect.

[59] Central Bank research from Lozej & O'Brien (2018) shows that macroeconomic impact of an increase in capital requirements is smaller the further above banks' actual capital ratios are from their regulatory minimum requirement.
[60] For more on these announcements see Bank of England, Lietuvos Bankas, Bulgarian National Bank.

Buffers for systemically important institutions

Arising from the Central Bank's 2022 Other Systemically Important Institution (O-SII) review, six institutions are identified as systemically important and are required to maintain an associated supplementary capital buffer. This corresponds to no policy change relative to last year's assessment. The announced withdrawal of two retail banks from the domestic market coupled with the publically announced transfer of loans and deposits will result in changes in the size and scale of some of the remaining institutions. These developments will result in changes in the Irish banking system. In turn, they will feed through to the O-SII assessments carried out by the Central Bank in the future.

The objective of the O-SII framework is to reduce the probability of failure of a systemically important institution, given the potentially greater impact of failure of those institutions. Institutions that are systemically important to the domestic economy or to the economy of the EU are referred to as O-SIIs.[61] The failure of one of these systemically important institutions would have a greater impact on the financial system and economy than the failure of a non-O-SII. Higher capital requirements for these institutions, in the form of O-SII buffers, aim to reduce the probability of their (potential) failure.

The Central Bank's approach to the application of the O-SII buffer acknowledges the specificities of the Irish banking system.[62] The Irish banking system is composed of two distinct groups, one serving the domestic economy and the other serving mainly European or global economies. This heterogeneous make-up of the banking sector has implications for the distribution of risk across the banking system as the channels through which these different types of institutions can affect systemic risk vary. Some institutions are more relevant from the perspective of the domestic economy, while others are more relevant from the perspective of their interconnectedness with the broader financial system and/or the overall European economy. As such, the Central Bank considers measures of systemic importance relating to institutions' linkages with the domestic economy as well as broader measures that would be relevant from the perspective of European financial stability.

The Central Bank's 2022 O-SII assessment has identified six credit institutions as systemically important. The identification process, which follows EBA guidelines, consists of a mandatory scoring methodology based on quantitative indicators relating to an institution's size, importance, complexity and interconnectedness and use of supervisory overlay for the designation of additional institutions as O-SIIs, if deemed appropriate based on (prescribed) additional qualitative and quantitative indicators. Based on end 2021 data, five institutions were identified as part of the mandatory EBA scoring methodology.[63] One additional institution, UBI, was designated as an O-SII on the basis of supervisory overlay given its importance in terms of financial intermediation with the domestic non-financial private sector.[64] The list of O-SIIs and their associated scores arising from the mandatory EBA methodology are laid out in (Table 2).

[61] Differentiating these institutions from institutions that are systemically important at a global level, referred to as G-SIIs.
[62] Further detail on the approach is set out in The Central Bank's framework for macroprudential capital.
[63] The standard 350 basis point threshold was applied. For more on the EBA scoring methodology see the EBA O-SII guidelines.
[64] The ongoing actions taken by UBI in withdrawing from the Irish banking market were noted during the O-SII assessment. However, at the time of assessment, the majority of assets identified by UBI for sale and transfer remained on the institutions balance sheet.

Table 2 | 2022 O-SII identification and EBA score

O-SII	Category scores				Overall institution score
	Size	Importance	Complexity	Interconnectedness	
AIB Group PLC (AIB)	1611	2046	198	743	1150
Bank of America Europe DAC (BAE)	750	485	858	826	730
Bank of Ireland Group PLC (BOI)	1676	1808	741	947	1293
Barclays Bank Ireland PLC (BBI)	1477	890	3678	2178	2055
Citibank Holdings Ireland Ltd (Citi)	1006	2608	1598	599	1453
Ulster Bank Ireland DAC (UBI)*	352	431	53	142	245

Notes: Tables shows scores as calculated under the methodology outlined in EBA guidelines. Overall institution score is the average of the category scores. Data as at 2021Q4. * Identified on the basis of supervisory overlay.

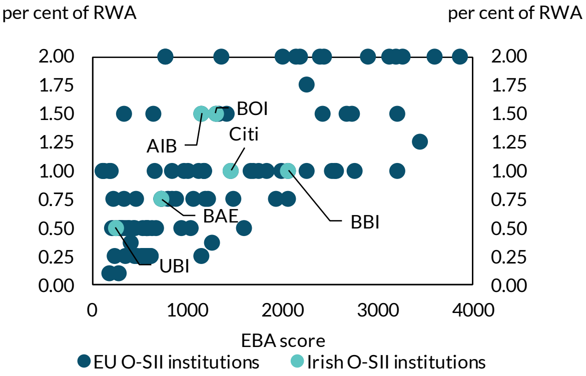
O-SII buffers ranging from 0.5 per cent to 1.5 per cent are being applied to the identified O-SIIs. This year's assessment did not result in any change to buffer rates, as laid out in Table 3, for the six O-SIIs. For all six institutions, buffer rates are fully-phased in. Reflecting the Central Bank's approach, buffer setting is informed by the institutions' linkages with the domestic economy as well as broader measures that would be relevant from the perspective of European financial stability. All buffer rates comply with the buffer floor methodology developed by the ECB.[65] The floor methodology was designed to ensure a minimum level of harmonisation in O-SII buffer setting within the SSM. Under the methodology, minimum buffers rates are based directly on their EBA score. Chart 101 presents the O-SII buffer rates and EBA score applicable to Irish O-SIIs in a wider European context.

Table 3 | 2022 O-SII buffers

O-SII	Level of consolidation	O-SII Buffer Rate (%)
AIB Group PLC (AIB)	Consolidated	1.50
Bank of America Europe DAC (BAE)	Individual	0.75
Bank of Ireland Group PLC (BOI)	Consolidated	1.50
Barclays Bank Ireland PLC (BBI)	Individual	1.00
Citibank Holdings Ireland Ltd (Citi)	Consolidated	1.00
Ulster Bank Ireland DAC (UBI)	Individual	0.50

[65] See ECB Macroprudential Bulletin, June 2017.

Chart 101: Irish O-SII buffers are broadly in line with European peers based on EBA score
European O-SII rates by EBA score



Source: EBA and Central Bank of Ireland calculations.

The Central Bank conducts an O-SII assessment on an annual basis. This ensures the Central Bank's policy in the area can respond appropriately to observed changes in the make-up and composition of the banking sector. Over the last number of years, a number of non-retail banks have applied for the revocation of their banking licences. In contrast, other non-retail banks have significantly expanded the size of their balance sheets that are reported in Ireland. The announced withdrawal of two retail banks from the domestic market coupled with the publically announced transfer of loans and deposits is resulting in changes in the size and scale of some of the remaining institutions. These developments have led to – and will continue to lead to – changes in the Irish banking system. In turn, they will feed through to the O-SII assessments carried out by the Central Bank.

Macroprudential mortgage measures

Mortgage measures

The mortgage measures aim to ensure sustainable lending standards in the mortgage market. The Central Bank views the measures as a permanent feature of the housing and mortgage market. As such it is important that they remain fit for purpose. The Central Bank recently concluded its mortgage measures framework review with the announcement of a refreshed framework, including targeted changes to the calibration of the measures. The refreshed framework will come into effect on 1 January 2023.

The Central Bank recently concluded its mortgage measures framework review with the announcement of a refreshed framework for the measures. The review took place over the course of 2021 and 2022. The purpose of the review was to ensure that the mortgage measures remained fit for purpose, in light of the evolution of the financial system, housing market and the broader economy since the measures were first introduced in 2015. The conclusions of the review were informed by the Central Bank's analysis based on a wide range of evidence, lessons from international experience and the feedback received through engagement with the public and other stakeholders.

The mortgage measures, like all policy interventions, entail both benefits and costs to society. In considering the design and calibration of the measures, the Central Bank seeks to balance these benefits and costs. Since 2015 the mortgage measures have worked as intended, strengthening resilience of borrowers and lenders and guarding against the emergence of an unsustainable self-reinforcing "feedback loop" between house prices and credit. At the same time, underlying structural challenges in the housing market remain and have intensified. At the heart of these challenges is an ongoing imbalance between the demand for, and supply of, housing. These housing supply challenges, leading to persistently higher house prices relative to incomes, imply higher economic costs of the measures, relative to when they were introduced.

A targeted recalibration of the measures could relieve some of the costs of the measures, without unduly reducing their benefits. Under the refreshed framework, the FTB LTI limit will be 4, while for SSBs the LTI limit will remain at 3.5 (Table 4). Both types of borrower will face a LTV limit of 90 per cent. For both borrower types, lenders will be able to issue up to 15 per cent of lending above the limits. Everything else equal, there could be modest increases in macro-financial risks as a result of these changes, with the changes to the proportionate allowances partially offsetting the recalibration of the limits. However, broader developments over the past decade, including the strengthening of the resilience of the banking sector and continued deleveraging of the household sector as a whole, reduce the magnitude of such risks. On the other hand, the changes should support an alleviation of the costs of the measures, in particular for FTBs looking to access home ownership. Taking these together, the targeted recalibration announced is of a level that will deliver *net benefits* to the Irish economy and society.

Changes to the definition of FTB are also being introduced as part of the refreshed framework. These changes are consistent with supporting the principle of a fresh start for certain borrowers and facilitating FTBs in releasing equity in their homes. These changes acknowledge the feedback received by the Central Bank during the framework.

Table 4 | Details of the LTV and LTI Regulations

Borrower type	FTBs		SSBs		BTL	
	Current	*From Jan 1 2023*	*Current*	*From Jan 1 2023*	*Current*	*From Jan 1 2023*
Limits under the mortgage measures	LTI: 3.5x LTV: 90%	LTI: 4x LTV: 90%	LTI: 3.5x LTV: 80%	LTI: 3.5x LTV: 90%	LTV: 70%	LTV: 70%
Allowance share above the limits	LTI: 20% LTV: 5%	15%	LTI: 10% LTV: 20%	15%	10%	10%
Exemptions	Switcher loans are exempt from the mortgage measures. The LTI limit does not apply to lifetime mortgages. The LTV limit does not apply to negative equity mortgages.					

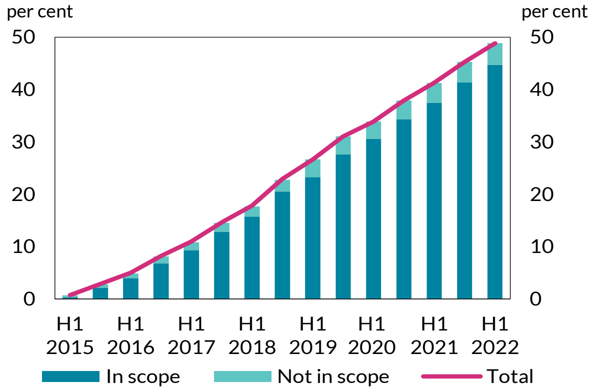
Overview of new mortgage lending in H1 2022

As of 2022 H1, 49 per cent of outstanding mortgage lending at the main retail banks had been issued since the introduction of the mortgage measures, of which 45 per cent was in scope of the measures and 4 per cent out of scope (Chart 102).

In 2022 H1, 21,855 new mortgage loans, amounting to €5.7bn, were originated by the eight lenders reporting data to the Central Bank in accordance with the mortgage measures.[66] This equates to an increase of 18 per cent on the number of loans and 27 per cent in value terms relative to the same period in 2021. FTB lending continues to represent the largest share, accounting for about half of new lending in 2022 H1 (Chart 103). The share of lending exempt from the regulations was higher in the first half of 2021 relative to previous years, driven by an increase in the volume of refinances (without an increase in principal).

Chart 102: The mortgage measures have been incrementally increasing resilience since their introduction in 2015

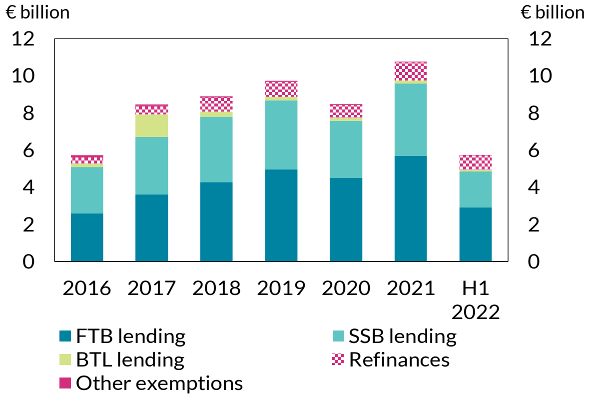
Share of Irish retail bank mortgage lending issued under the mortgage measures framework



Source: Central Bank of Ireland calculations using loan level data and monitoring templates data.
Notes: Mortgages issued under the mortgage measures framework are those mortgage loans approved and drawn down since 9 February 2015. Data are a join of the loan-level data and monitoring template data. Last observation 2022 H1.

Chart 103: FTB lending continues to represent the largest share of new lending

Volume of new lending by borrower type



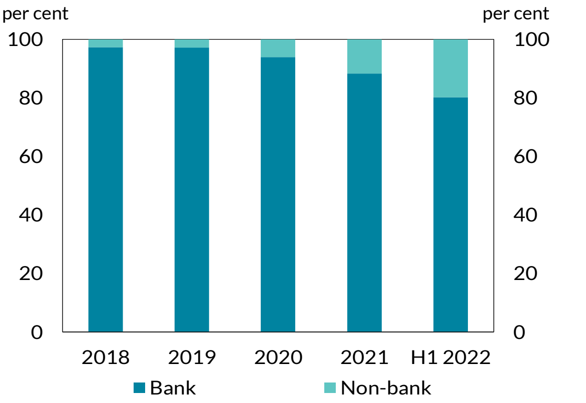
Source: Central Bank of Ireland calculations using monitoring templates data.
Notes: The data refer to all mortgage loans in-scope of the mortgage measures. Other exemptions includes negative equity. Last observation 2022 H1.

The share of new lending provided by non-bank lenders increased in 2022 H1, continuing the trend seen in recent years. This increase in non-bank lending is consistent with the increase in refinancing activity. While non-banks have grown in importance across all segments of the market and reached 19.7 per cent share of new mortgage lending in 2022 H1 (Chart 104), they are most prominent in the refinance segment where they accounted for more than half of new lending activity in 2022 H1 (Chart 105). This corresponds to €609 million out of the €1.4 billion of the total new lending provided by the non-bank sector in 2022 H1. These developments are likely reflective of wider market dynamics such as the ongoing withdrawal of two retail banks from the market and the changing interest rate environment. This wider backdrop is likely to continue to impact on the mortgage lending market, where a number of lenders have made changes to their interest rates and lending criteria in response to the changed macro-financial environment.

[66] A more detailed overview of new mortgage lending data can be found on the Central Bank website here.

Chart 104: Non-bank financial intermediaries have increased their share of new mortgage lending

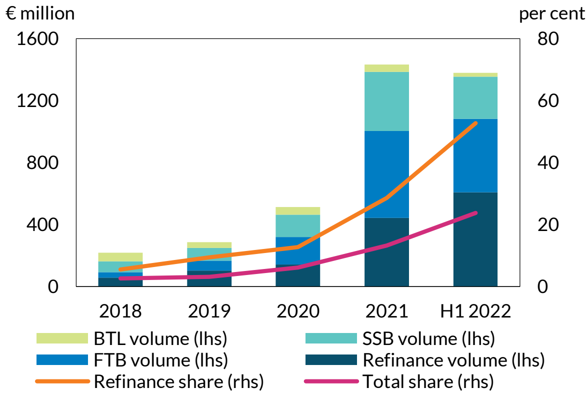
Percentage of lending by bank and non-bank 2018-2022 H1



Source: Central Bank of Ireland calculations using monitoring templates data.
Notes: The data refer to all mortgage loans in-scope of the mortgage measures. Last observation 2022 H1.

Chart 105: Non bank financial intermediation has grown, particularly in the refinance segment

Share and volume of non-banks in new mortgage lending by market segment



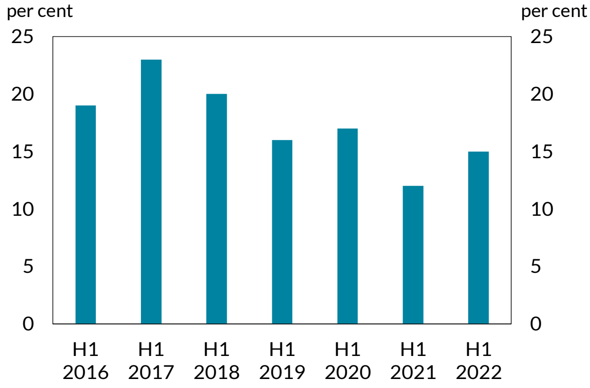
Source: Central Bank of Ireland calculations using monitoring templates data.
Notes: Data are weighted by number of mortgage accounts issued each year per segment. Refinance captures borrowers switching lenders without moving home, both with and without increases in loan balances. Last observation 2022 H1.

The Central Bank introduced a carry-over system for allowance lending as part of the 2021 annual review of the mortgage measures, in order to support lenders in their management of allowance lending. Under the carry-over system and within the limits set out by the mortgage measures, lenders can utilise the allowance lending which has not been allocated in a given year, in the first half of the following year (under the condition that such lending was fully approved in a given year). New lending data for 2022 H1 show that overall lenders issued €250 million worth of loans which were allocated as carryover from 2021, €147 million of this related to the FTB LTI category. Given the requirement for carryover loans to have been approved in the previous year it is not surprising that the majority of carryover lending took place in the first quarter of the year.[67] Carryover will continue to be provided for within the refreshed framework for the mortgage measures.

The carry-over system has likely resulted in a higher level of allowance lending occurring in H1 2022 than would otherwise have been the case, as allowance lending is returning to pre-pandemic levels. Overall, the share of PDH lending with an allowance in H1 2022 increased from 12 to 15 per cent, a level similar to that seen in 2019 (Chart 106). Looking at the composition of the share of PDH lending above the limits, 30 per cent related to carryover and 70 per cent relating to lending which would count towards 2022 compliance. Consistent with the increase in the overall allowance lending in H1 2022 with respect to the same period of the previous year, the share of FTB loans above the LTI limits also increased from 13 per cent in H1 2021 to 18 per cent in H1 2022 (Chart 107). This also at least partially reflects the fact that lenders made ample usage of carry-over in the first quarter of the year.

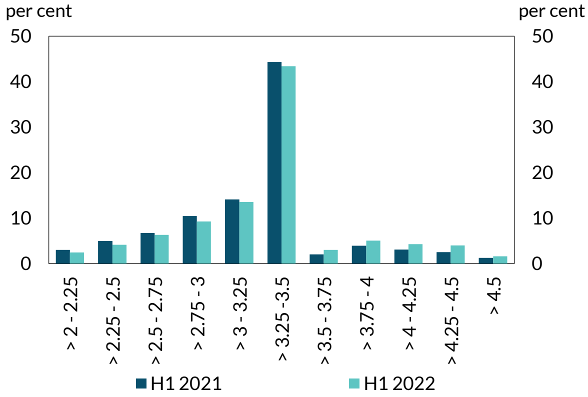
[67] The average time between approval and drawdown is in the region of 2 months, with the majority (approximately 80 per cent) of all loans drawing down within three months of approval.

Chart 106: Allowance lending is returning to pre-pandemic levels
Share of PDH lending with an allowance by value, 2016 H1 – 2022 H1



Source: Central Bank of Ireland calculations using monitoring templates data.
Notes: Sample used is PDH loans. The figure comprises both allowance lending and carry-over. Last observation 2022 H1.

Chart 107: Lending above the LTI limits increased, partially reflecting the usage of carry-over by lenders
Share of loans in 2021 H1 and 2022 H1by value



Source: Central Bank of Ireland calculations using monitoring templates data.
Notes: Sample used is new property purchase/self-build loans. The figure is based on values of loans and comprises carry-over. Last observation 2022 H1.

Macroprudential policy for non-banks

Reflective of the scale of the sector in Ireland and particular connections to the domestic economy; developing macroprudential policy for non-banks is a key priority for the Central Bank.

The non-bank sector is broad and diverse with numerous heterogeneous business models. As such it is necessary to prioritise those segments of the non-bank sector that represent the largest systemic risk. Consistent with that, the Central Bank's initial focus is on the investment fund sector, due to its size, growth in the past decade and its interconnectedness, which taken together, generate the potential for systemic risk through collective action in fund cohorts. This ability to generate systemic risk was evident in the March 2020 "dash for cash", and the more recent UK gilt market stress (see Box C: UK Developments & the Investment Funds Sector). Tackling this systemic risk requires a macroprudential perspective that enhances the understanding of the investment fund sector vulnerabilities and interconnectedness. It should target the collective action of fund cohorts, not idiosyncratic risk management issues at individual level. It also requires global and European coordination, reflecting the global nature of the funds industry.

While international efforts are underway in this regard, the lack of a complete and operational macro-prudential toolkit remains a key gap. The Central Bank is working with peer institutions in the EU and internationally to advance work in this area. As part of that effort, the Central Bank is announcing macroprudential policy measures for a cohort of funds, Irish property funds.

Macroprudential measures for property funds

Property funds have become a key participant in the Irish CRE market, holding approximately 35 per cent of the estimated stock of 'investable' CRE in Ireland. This entails potential benefits for macroeconomic and financial stability, allowing for diversification of financing channels for CRE and reducing reliance on domestic sources of capital. However, this changing nature of financial intermediation also raises the potential that new macro-financial vulnerabilities could emerge, so it is important that the macroprudential framework adapts accordingly. The Central Bank has identified excessive leverage and liquidity mismatch as potential sources of financial vulnerability for property funds which could lead to amplification of future shocks and CRE market dislocation.

In order to make this growing form of financial intermediation more resilient to shocks, the Central Bank is introducing new macroprudential measures for Irish property funds. These are the first policy measures to be introduced under the third pillar of the Central Bank's macroprudential framework in relation to non-banks. In particular, the Central Bank is introducing a limit on the ratio of property funds' total debt to their total assets (hereafter referred to as the "leverage limit") and; Central Bank Guidance to limit liquidity mismatch in the sector. The Central Bank will provide a five year implementation period for the leverage limits for existing Irish property funds and 18 months for existing property funds to take appropriate action in response to the Guidance. The measures will apply immediately for any funds authorised after the 24th November 2022.

Property funds have become a key participant in the Irish CRE market, holding a total of €22.1bn in Irish property, or approximately 35 per cent of investible CRE. Often established and funded by overseas investors, property funds provide an alternative channel of financing for investment in the Irish CRE market. They reduce the reliance of funding on domestic channels, diversifying the investor base. This is in stark contrast to the situation prior to the Global Financial Crisis (GFC), when the CRE market was almost entirely funded by domestic investors.

The Central Bank judges that the CRE market is systemically important to the broader Irish economy and that dislocation in this market has the potential to entail adverse macro-economic consequences. Central Bank analysis outlined in Daly et al (2021) and the *Resilience* section of the current and previous *Financial Stability Reviews*, illustrates that there is a cohort of property funds that have high levels of leverage and, to a lesser extent, liquidity mismatches.[68] In the event of an exogenous shock, the presence of these vulnerabilities could lead to widespread forced sales in the commercial property market, amplifying the impact of the shock on the CRE market and the economy more broadly.

Irish property funds are, on average, more highly leveraged than their European peers. Part of the reason for the higher observed leverage is due to borrowing from shareholders – but even accounting for that there is a cohort of property funds with elevated levels of leverage (See Chart A in Box F).

[68] Central Bank analysis for Irish property funds is largely based on a bespoke survey of Irish property funds carried out in 2020 referring to data as of Q4 2019 (i.e. the Deep Dive Survey) together with regulatory and statistical data collected regularly by the Central Bank. The results of the Deep Dive Survey are outlined in Daly, P., Moloney, K., & S. Myers, S. (2021) "Property funds and the Irish commercial real estate market", Central Bank of Ireland Financial Stability Note Vol 2021. No. 1.

Funds with high leverage are particularly vulnerable to fluctuations in property prices. This is because in a downturn, funds may breach their loan covenants and /or enter negative equity. Unless property funds can successfully take actions in response to potential covenant breaches (e.g. renegotiate with lenders or raise more equity), they may be forced to sell property assets, and cause further price falls. Thus, high levels of leverage can *amplify* an adverse shock in the market.

Although Irish property funds have a low redemption frequency, Central Bank analysis indicates that liquidity mismatch is also evident for a subset of property funds. Survey results based on fund managers' own assessments of time to sell property also indicate that the liquidity timeframe of a subset of property funds is shorter than the expected time to sell property assets (see Box F).[69] Were widespread redemptions and consequent sales to occur, the new flows of asset sales onto the market could substantially exceed the volume it normally supports leading to market dislocation.

Following extensive analysis and engagement, the Central Bank is introducing macroprudential limits on leverage and Guidance on liquidity timeframes for Irish property funds. The calibration of the measures was informed by significant Central Bank analysis, as outlined in the *Macroprudential Policy Framework for Irish Property Funds*. The macroprudential measures were also informed by feedback to the Consultation Paper (CP145) and that received through engagement with key stakeholders (including other NCAs). The objective of the leverage limits is to build resilience ex-ante so that funds could better withstand a downturn in the CRE market, reducing the risk of forced asset sales in a shock. The liquidity timeframe will assist in ensuring that the redemption terms of property funds align with the liquidity of the assets held in both normal and exceptional circumstances, and in a manner consistent with the fair treatment of investors.

Measures to address leverage

To guard against excessive levels of leverage across the property fund sector, the Central Bank is introducing a sixty per cent leverage limit. The sixty per cent limit will be calculated as total debt to total assets, subject to some technical adjustments in certain instances. The limit will be imposed using Article 25 of the Alternative Investment Fund Managers Directive (AIFMD).[70] The goal of the leverage limit is to prevent a shock to the CRE market being magnified via investment funds' use of high levels of leverage and thereby being transmitted to other parts of the economy. The limit will apply to Irish funds with direct or indirect investment in Irish property assets, subject to a materiality threshold of fifty per cent.[71] Box F: *Leverage and Liquidity mismatch in Irish property funds* illustrates the current leverage of property funds, and the extent of leverage adjustments that would be required at an aggregate level to meet the sixty per cent limit.

Funds that are predominately invested in social housing assets will not be in scope of the leverage limits, subject to certain criteria. This is due to the unique characteristics of these funds that make them less systemically risky as a cohort. In particular, to be considered out of scope from the leverage limits, the properties of a fund must be leased to a Local Authority (for the purpose of social housing) using long term leasing models where the income is guaranteed for a fixed period of

[69] Based on the Deep Dive Survey conducted in 2020 where reported data refers to Q4 2019.
[70] See https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:174:0001:0073:EN:PDF
[71] An indirectly held property asset includes 'any investment undertaking which derives its income from Irish property assets, excluding derivatives, debt instruments and equities that are (1) traded on open exchanges; and (2) where the underlying asset is controlled by an independent third party to the fund, its managers, its investors and any delegated authorities of the fund.' This definition may be subject to revision if regulatory arbitrage is identified.

time (depending on the specific lease). Further, there should be no LTV covenants or repayment on demand features associated with the debt raised by the fund. The *Macroprudential Policy Framework for Irish Property Funds* outlines - in detail - the full criteria funds must meet to be considered out of scope from the leverage measures.

The Central Bank will provide five years for existing funds to comply with the sixty per cent leverage limit. The Central Bank views that this implementation period reflects its careful consideration of the amount of adjustment required and guards against the risk of pro-cyclical asset sales. This is especially important in the current macro-economic environment of rising interest rates, with potential implications for property values and subsequently measured leverage (all other things being equal). It is expected that existing funds with leverage above sixty per cent would not increase the quantum of their debt during the implementation period. The implementation period is longer than is generally given to funds to comply with new regulatory requirements. This is intended to provide property funds with sufficient time to reduce their leverage in a gradual and orderly manner. The Central Bank expects funds to make early and steady progress towards lower leverage levels over the implementation period. The leverage limit will apply with immediate effect for any funds authorised from 24 November 2022 onwards.

Consistent with other macroprudential requirements, the leverage limit would be subject to regular monitoring and review by the Central Bank. Regular monitoring would aim to ensure that the leverage limit is achieving its macroprudential aim and that it is not imposing undue burden on market participants or the broader economy. The Central Bank does not intend to recalibrate the leverage limit regularly. These measures are intended to deliver a structural level of resilience for the property fund sector to adverse shocks. Nevertheless, to achieve its macro-prudential objective, there will be flexibility to respond to material changes in the macro-financial environment. See the *Macroprudential Policy Framework for Irish Property Funds* for further details.

Measures to address liquidity mismatch

To address the liquidity mismatch observed in property funds, the Central Bank is introducing new Guidance. The Guidance relates to how Regulation 18 of the Irish AIFM Regulations should be applied in the case of property funds. The Guidance set out that generally property funds should provide for a liquidity timeframe of at least 12 months, taking into account the nature of the assets held. This timeframe should be appropriately balanced between the notification and settlement period. The use of longer notification periods in particular would help to prevent the development of misaligned incentives that can trigger first-mover advantage dynamics. It would also act as a protection for non-redeeming investors as it gives the fund time to price the NAV and dispose of assets in a timely manner – if needs be – to fund redemptions.

The Central Bank expects existing property funds to implement liquidity timeframes in-line with the Guidance by May 2024. The Central Bank expects that new funds established and authorised after 24 November 2022 will adhere to the Guidance. See the *Macroprudential Policy Framework for Irish Property Funds* for further details.

Box F: Leverage and liquidity mismatch in Irish property funds

The Central Bank has identified two main potential sources of vulnerability in the Irish property funds sector: excessive usage of leverage and liquidity mismatch. This box describes some of the key analysis underpinning the decision to introduce macroprudential measures for Irish property funds.

Leverage in Irish property funds

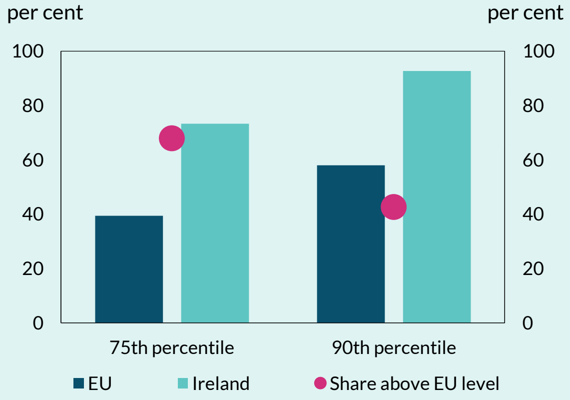
Irish property funds are, on average, more highly leveraged than their European peers. Average leverage in Irish property funds is 45 per cent, while the European value is 17 per cent (Chart 91). The difference is particularly evident in the tails of the distribution (see Chart A).[1] The most highly leveraged ten per cent of property funds in Europe have leverage above 58 per cent, while in Ireland, the most highly leveraged the ten per cent of property funds have leverage above 93 per cent. This means that the proposed limit of sixty percent would lie above the 90th percentile of leverage across all EU real estate funds. This suggests that the limit would be "cutting off" the tail or the outliers observed across the European distribution.

Shareholder loans contribute significantly to the higher levels of leverage in Irish property funds, however a combination of factors has led to a reduction in their issuance. Shareholder loans are debt-type financing provided by shareholders to the fund and are typically the most junior debt in a funds' debt portfolio. Shareholder loans accounted for approximately 15 per cent of the total debt held by Irish property funds as at end-2021.[3] Their use had mainly been for tax efficiencies or commercial flexibility, with the former incentives reduced in the Finance Act 2019. In addition, the Central Bank communicated its regulatory stance against the use of shareholder loans in Central Bank's Alternative Investment Fund Managers' Directive (AIFMD) Q&A, QA 1141 and 1142 in 2020. These loans are not consistent with the objective of collective investment vehicles unless conducted at arm's length and transacted on normal commercial terms.[4] Analysis shows that the amount of outstanding shareholder loans decreased by 39 per cent, from €2.52bn in 2019 to €1.53bn at end 2021 (Chart B).[5]

At the end of 2021, 63 Irish property funds exceeded the sixty per cent leverage limit, with an estimated €1.67bn of excess debt in the system-but this estimate falls substantially if shareholder loans were to be converted to equity. The total assets under management (AuM) of these funds was €7bn.[2] These funds make up 39 per cent of the number of Irish property funds, while their assets account for 32 per cent of the total AuM of the property funds sector in Ireland (Chart C). The vast majority of existing shareholder loans are due to mature before the end of the five year implementation period, Once these shareholder loans mature and provided they are converted to equity, it is estimated that there will be €1.1bn excess debt in the system at the end of the five-year transition period.[6] Assuming a full conversion of *all* shareholder loans outstanding at the end of 2021 to equity would reduce the amount of debt in excess of the sixty per cent leverage limit to €0.83bn.

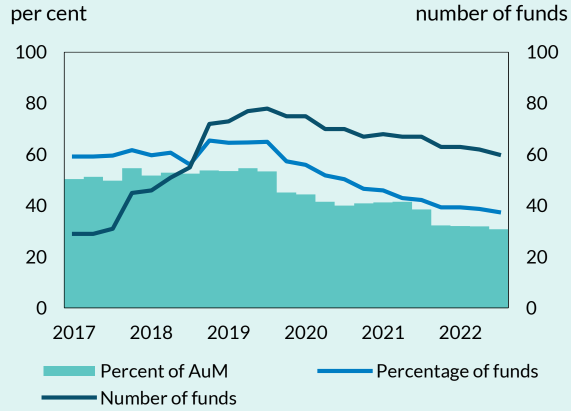
The required leverage adjustment can take place through a number of channels; the five year transition period is designed to facilitate a gradual and orderly adjustment. Adjustments can, for instance take place through replacing any non-matured shareholder loans with equivalent equity subscriptions; raising additional equity from shareholders; replacing existing or maturing third-party loans with new equity subscriptions; increasing retained earnings and/or reducing dividend payments to investors; or using cash proceeds from asset sales to repay debt. Since the Consultation Paper was launched, the macroeconomic environment has shifted, with rising interest rates and a less favourable macro-financial outlook. In light of that, the five year transition period is intended to provide property funds with sufficient time to reduce gradually their leverage in an orderly manner and reduce the need for asset disposals.

Chart A: Distribution of leverage for property funds in Ireland and the EU



Source: ESMA and CBI (MMIF returns).
Notes: EU aggregate data shared with the Central Bank of Ireland by ESMA and based on EU-level AIFMD data. Debt-to-assets conversion was performed on the assumption that property funds hold no derivative securities. Data as of end 2021.

Chart B: Number of funds with leverage exceeding the 60 per cent limit and their assets



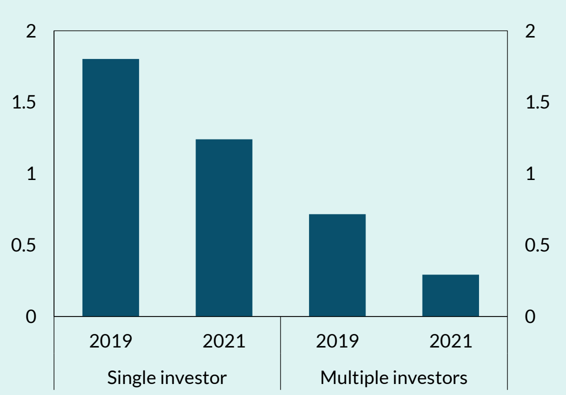
Source: MMIF returns.
Notes: Sample selected as of end 2021. Percentage of AuM and percentage of funds are presented on the left-hand scale, while number of funds is presented on the right-hand scale.

Liquidity mismatch of Irish property funds

Although redemption frequencies are low in Irish property funds, liquidity mismatch is evident in a subset of these funds given the very illiquid nature of commercial property assets. Liquidity mismatch occurs when the liquidity timeframe of a fund is shorter than the expected time required to sell property assets. The Deep Dive Survey showed that, even in normal times, around forty per cent of property assets held by property funds cannot be sold within the liquidity timeframe offered (Chart D). This figure would likely increase in stressed periods.

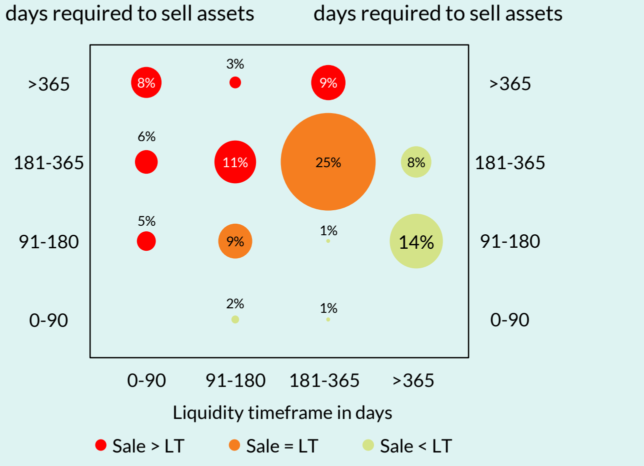
In order to mitigate liquidity mismatch in property funds, the Central Bank is providing Guidance with respect to how Regulation 18 of the Irish AIFM Regulations should be interpreted to ensure consistency between investment strategy, the liquidity of the underlying assets and redemption frequencies. The Central Bank expects that generally property funds should provide for a liquidity timeframe of at least 12 months taking into account the nature of assets held. This will assist in ensuring that the redemption terms of the property fund align with the liquidity of the assets held in both normal and exceptional circumstances. The Guidance also outlines the Central Bank's judgement that longer notification periods are better able to guard against first move advantage dynamics than longer settlement periods.

Chart C: Value of shareholder loans since 2019



Source: Deep Dive Survey and financial statements available Aug 2022.
Notes: Deep Dive Survey Data as end of 2019. Based on a sample of matched funds between the list of current property funds and funds present in the Deep Dive Survey (115 funds in total, of which 49 have shareholder loans outstanding as of end-2021).

Chart D: Assets by time needed to sell and liquidity timeframe from the fund prospectus [7]



Source: Deep Dive Survey, Prospectus Information and authors' calculations.
Notes: Data as of end-2019. The size of the bubbles indicates the percentage of the total amount of assets held by the property funds identified. "Sale" refers to the days required to sell assets and "LT" refers to the liquidity timeframe in days.

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[1] Figures based on distribution data received from ESMA, the Central Bank's MMIF returns and staff calculations.
[2] Figures based on the Central Bank's MMIF returns and staff calculations. Property funds were identified as being funds who at the end of 2021 held Irish property in excess of fifty per cent of their total assets.
[3] Figures based on a review of financial statements issued by investment funds identified as being in-scope of the measures. Only funds which reported to the Deep Dive Survey and continue to report financial statements as of end-2021 are taken into account. This was done for the sake of sample comparability.
[4] The Q&A clearly stipulated the Central Bank's view that shareholder loans are not consistent with the objective of collective investment vehicles, such as investment funds, and that any loans provided by shareholders be provided "at arm's length and transacted on normal commercial terms".
[5] Figures based on a review of financial statements issued by investment funds identified as being in-scope of the measures. Only funds which reported to the Deep Dive Survey and continue to report financial statements as of end-2021 are taken into account. This was done for the sake of sample comparability.
[6] Figures based on the Central Bank's MMIF returns and staff calculations. Excess debt is defined as the amount of debt above the 60 per cent limit for debt-to-assets.
[7] Based on table 1 in the Financial Stability Note "Property funds and the Irish commercial real estate market" by Daly, Moloney and Myers (2021).

Abbreviations

Country and currency abbreviations follow the European Union standards.

AE	Advanced economies
AIB	Allied Irish Bank
AIFMD	Alternative Investment Fund Managers Directive
BIS	Bank of International Settlements
BOI	Bank of Ireland
BTL	But-to-let
CBRE	Coldwell Banker Richard Ellis Group
CCR	Capital Requirements Regulation
CCR	Central Credit Register
CCyB	Countercyclical capital buffer
CET1	Common equity tier 1
CLO	Collateralised loan obligation
CPI	Consumer price index
CRD	Capital Requirements Directive
CRE	Commercial real estate
CRO	Companies Registration Office
CSO	Central Statistics Office
CT	Corporation tax
DSR	Debt-service ratio
EA	Euro area
EBA	European Banking Authority
ECB	European Central Bank
EEA	European Economic Area
EM(E)	Emerging market (economies)
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
EU	European Union
EWSS	Employment Wage Subsidy Scheme
FDI	Foreign direct investment
FSB	Financial Stability Board
FSR	Financial Stability Review
FTB	First-Time Buyer
GDP	Gross domestic product
GFC	Global Financial Crisis
GNI	Gross national income
HH	Households
HICP	Harmonised index of consumer prices
HMR	Household main residence
ICT	Information and communications technologies
IFRS	International Financial Reporting Standards
IMF	International Monetary Fund
IOSCO	International Organisation of Securities Commission
KBC	Kredietbank ABB Insurance CERA Bank
LDI	Liability driven investment
LGD	Loss given default
LTI	Loan to income ratio
LTV	Loan to value ratio
MDD	Modified domestic demand
MSCI	Morgan Stanley Capital International
NBFI	Non-bank financial intermediary
NFC	Non-financial corporation
NGFS	Network for Greening the Finanical System
NIM	Net interest margin
NPL	Non-performing loan
NTMA	National Treasury Management Agency
OCR	Overall capital requirements
OECD	Organisation for Economic Co-operation and Development
O-SII	Other Systemically Important Institutions
PDH	Primary dwelling house
PMI	Purchasing managers' index
PTSB	Permanent PTSB
PUP	Pandemic unemployment payment
RPPI	Residential property price index
RRE	Residential real estate
RWA	Risk-weighted asset
SCR	Solvency capital requirement
SME	Small and medium enterprise
SSB	Second and subsequent buyer
SSM	Single Supervisory Mechanism
SVR	Standard variable rate
UBI	Ulster Bank Ireland
VAT	Value added tax
WEO	World Economic Outlook

T: +353 (0)1 224 6000
E: mfdadmin@centralbank.ie
www.centralbank.ie

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