Banc Ceannais na hÉireann
Central Bank of Ireland

Eurosystem

Financial Stability Review

2022:I

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Notes

1. Unless otherwise stated, this document refers to data available on 20 May 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.

3. The following symbols are used:

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

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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. The Central Bank is committed to transparency over its judgements around financial stability and plans to use 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

Following a rapid economic recovery from the pandemic downturn, Russia's invasion of Ukraine has led to lower global growth expectations and intensified inflationary pressures. Since the last *Review*, global financial conditions have tightened considerably, amid the beginning of a period of monetary policy normalisation. This follows a prolonged period of rising asset valuations and global indebtedness in a 'search for yield' environment, increasing underlying vulnerabilities to a sharp tightening in financial conditions. Domestically, price pressures coupled with a tight labour market point to emerging cyclical pressures in certain sectors, including the housing market. Profitability in the banking sector has recovered while new lending volumes continue to recover from pandemic lows. In light of the evolution of the risk environment since the depths of the pandemic shock, the Central Bank is gradually rebuilding macroprudential capital buffers through an increase in the countercyclical capital buffer (CCyB) to 0.5 per cent.

A pronounced slowdown in global growth and tighter financial conditions could have adverse implications for asset prices and debt serviceability internationally. Global financial conditions remain accommodative but have tightened considerably since the last *Review*, amid monetary policy normalisation as inflationary pressures have become more persistent, and global growth prospects have deteriorated. The global economy has a heightened vulnerability to a further tightening in financial conditions following a prolonged period of rising asset valuations and increased public and private indebtedness amid a 'search for yield' environment. A deterioration in global financial conditions could have implications for the domestic financial system through repricing of risk premia for the Irish sovereign, higher debt funding costs for banks and borrowers, and via the commercial real estate market through the impact on foreign investor sentiment.

Cyclical vulnerabilities are emerging domestically amid rising inflation and significant capacity constraints in some sectors. The domestic economy has been approaching its productive capacity on the back of a strong pandemic recovery. The economic consequences of Russia's invasion of Ukraine are expected to lead to a slowing in the pace of recovery, but growth is expected to remain strong even as short-run inflationary pressures increase. These price pressures follow persistent pandemic related supply chain disruptions and are likely to further amplify certain sectoral supply-demand imbalances, as evidenced in the housing market with significant house price and rent inflation observed since the last *Review*.

Inflationary pressures present new challenges for borrowers, but from a starting point of stronger resilience over the past decade. Irish businesses continue to recover from the pandemic with improvements in turnover and profitability across all sectors. However, as public support is removed and creditor demands normalise, insolvencies are likely to rise from current low levels, underscoring the importance of policy frameworks that support efficient liability restructuring and firm liquidation. For households, debt service capacity is vulnerable to inflation on non-housing expenditure and potential interest rate rises. The resilience of households is underpinned by a decade of falling debt levels, liquidity buffers from pandemic savings, housing equity from strong price growth and income growth in the most borrower-concentrated sectors.

Profitability in the banking sector has recovered and is set to be bolstered by the prospect of improved lending margins under tighter monetary policy and increased scale economies resulting from ongoing consolidation in the market. The capital ratio of the retail banking sector remains stable with significant headroom above regulatory requirements but it is expected to decline in

the coming years due to expected portfolio transfers in light of the exit of two retail banks. The profitability of the sector has returned to pre-pandemic levels but continues to be negatively impacted by a relatively high cost base and by changes to balance sheet composition as deposits from pandemic savings are re-invested in lower-yielding assets. Looking forward, cost savings from consolidation and potential interest rate increases are likely beneficial for profitability, as increases in lending margins outweigh repayment challenges for borrowers in the absence of a wider economic downturn.

The Central Bank is updating its strategy for deploying macroprudential capital tools. Over the past decade, the capital position of the Irish banking system has improved significantly through reforms to internationally-agreed prudential standards. The COVID-19 shock highlighted the benefits of a more resilient banking system and provided insights into the effectiveness of elements of the post-crisis reforms. In that context, the Central Bank has been conducting a review of its strategy around macroprudential capital buffers. This has included an assessment of the macroeconomic costs and benefits of the overall level of capital as well as the interactions between macroprudential capital buffers and the wider prudential framework, such as risk weighted requirements, and the development of the resolution framework for banks.

The Central Bank will use the CCyB as its primary macroprudential capital tool for safeguarding resilience to macro-financial risks. As a small, highly-interconnected economy, Ireland faces greater downside macro-financial risks compared to larger, more diversified economies. Under its updated strategy for macroprudential capital buffers, the Central Bank will be relying on a single instrument – the CCyB, rather than a combination of CCyB and a SyRB - to safeguard resilience against macro-financial risks, including those stemming from the small and globalised nature of the Irish economy. This strategy reflects the emerging lessons from the pandemic internationally on the value of releasable capital buffers to better enable the banking system to support the economy when shocks hit, and is consistent with the Central Bank's aim of ensuring resilience while reducing complexity in the macroprudential capital framework.

When macro-financial risks are neither elevated, nor subdued, the Central Bank will set a positive CCyB rate. The Central Bank's revised strategy for the CCyB intends to build up the CCyB rate and maintain it at 1.5 per cent when risk conditions are deemed to be neither elevated nor subdued. One input into that judgement has been an assessment of the macroeconomic benefits and costs of different levels of bank capital for the Irish banking system. Specifically, the Central Bank judges that - as a guide to informing its macroprudential capital strategy – Tier 1 capital levels of between 14 and18 per cent are appropriate at the system level, when there are not significant imbalances in cyclical systemic risks. Taking into account other prudential requirements, a 1.5 per cent CCyB rate would imply overall banking system capital demand at the lower part of that range. A further input into that judgement is a macroprudential stress test of the banking system. The positive CCyB rate is not calibrated to ensure the banking sector is resilient to *all* shocks. Higher cyclical buffers will be required when risk conditions are elevated and *vice versa*. Further, this relates to the banking system as a whole, while institution-specific considerations, including forward looking capital planning will be captured – as currently – through supervisory assessments.

Consistent with this framework and reflecting the shift in the risk environment, the Central Bank is increasing the CCyB rate to 0.5 per cent. In line with previous guidance on the rebuilding of macroprudential capital buffers, the Central Bank is beginning the gradual rebuilding of

macroprudential capital buffers through an increase in the CCyB rate to 0.5 per cent. This increase acknowledges a shift in the risk environment from the acute near term risks presented by the pandemic to the building of cyclical vulnerabilities. It further acknowledges the resilience required to ensure the banking system can serve households and firms in future periods of stress. Should macro-financial conditions evolve consistent with the central economic outlook, a CCyB rate of 1.5 per cent is expected to be announced by mid-2023.

The framework review of the mortgage measures and the development of macroprudential measures for property funds continue. The mortgage measures continue to incrementally improve the resilience of banks' balance sheets – with close to 1 in 2 mortgages issued since their introduction. The Central Bank is currently undertaking a review of the policy framework considering the objectives, instruments, and factors determining calibration to ensure that the mortgage measures continue to remain fit for purpose. Since the last *Review*, a public consultation gathered stakeholder feedback and an international conference gained national and international perspectives. The framework review is intended to conclude in the second half of 2022. In parallel, as property funds have become systemic to the Irish commercial real estate market, the Central Bank has been developing a set of macroprudential measures to limit leverage and liquidity mismatches. Relative to European comparators, these funds have higher leverage creating additional vulnerability to price falls, potentially amplifying adverse shocks to the commercial real estate market and the wider economy. A recent public consultation engaged with stakeholders and feedback is informing the final design of policies.

Forbhreathnú

I ndiaidh téarnamh mear eacnamaíoch ó chor chun donais na paindéime, níl na hionchais maidir le fás domhanda chomh maith agus a bhí agus tá brúnna boilscitheacha níos géire ann de bharr ionradh na Rúise ar an Úcráin. Ó foilsíodh an *tAthbreithniú* deireanach, tá géarú suntasach tagtha ar dhálaí airgeadais domhanda, fad atá tréimhse de normalú beartais airgeadaíochta ag tosú. Leanann sé seo tréimhse fhada ina bhfacthas luachálacha sócmhainní agus féichiúnas domhanda ag ardú i dtimpeallacht ina rabhthas 'ar thóir torthaí' agus, ar an gcaoi sin, méadaíodh bun-leochaileachtaí go dtí go raibh géarú ar dhálaí airgeadais. Go hintíre, tugann brúnna ar phraghsanna i dteannta margadh saothair teann le fios go bhfuil brúnna timthriallacha ag teacht chun cinn in earnálacha áirithe, lena n-áirítear sa mhargadh tithíochta. Tá téarnamh tagtha ar bhrabúsacht san earnáil baincéireachta fad atá líon na n-iasachtaí nua ag téarnamh i gcónaí ó líon íseal na paindéime. I bhfianaise fhorbairt na timpeallachta riosca ó íosphointe thurraing na paindéime, tá maoláin caipitil macrastuamachta á n-atógáil de réir a chéile ag an mBanc Ceannais trí bhíthin an Cúlchiste Fritimthriallach (CCyB) a ardú go dtí 0.5 faoin gcéad.

D'fhéadfadh go mbeadh impleachtaí díobhálacha ann do phraghsanna sócmhainní agus do sheirbhísiú fiach go hidirnáisiúnta de bharr moilliú suntasach ar fhás domhanda agus dálaí airgeadais níos géire. Tá dálaí airgeadais domhanda in-chomhfhoirmeach i gcónaí ach tá géarú mór tagtha orthu ó foilsíodh an *tAthbhreithniú* deireanach, fad atá normalú ag teacht ar an mbeartas airgeadaíochta toisc go bhfuil brúnna boilscitheacha ag éirí níos seasmhaí, agus na hionchais maidir le fás domhanda ag éirí níos measa. Tá an geilleagar domhanda níos leochailí do ghéarú ar dhálaí airgeadais i ndiaidh tréimhse fhada d'arduithe ar luachálacha sócmhainní agus d'fhéichiúnas méadaithe poiblí agus príobháideach i dtimpeallacht ina rabhthas 'ar thóir torthaí'. D'fhéadfadh go mbeadh impleachtaí ag an meathlú ar dhálaí airgeadais domhanda don chóras airgeadais intíre trí athphraghsáil ar phréimheanna riosca do bhannaí ceannasacha na hÉireann, trí chostais níos airde um chistiú fiachais do bhainc agus d'iasachtaithe, agus tríd an margadh réadmhaoine tráchtála de bharr an tionchair ar sheintimint infheisteoirí eachtracha.

Tá leochaileachtaí timhthriallacha ag teacht chun cinn sa chríoch baile de réir mar atá boilsciú ag méadú agus srianta suntasacha ar acmhainneacht in earnálacha áirithe. Tá an geilleagar intíre ag druidim i dtreo a chumais táirgthe de bharr téarnamh láidir ón bpaindéim. Táthar ag ceapadh mbeidh moilliú ar luas an téarnaimh de bharr iarmhairtí eacnamaíocha ionradh na Rúise ar an Úcráin, ach táthar ag súil go mbeidh fás láidir ann i gcónaí fiú mar a mhéadaíonn brúnna boilscitheacha gearrthéarmacha. Tá na brúnna seo ar phraghsanna ag teacht i ndiaidh srianta ar shlabhraí soláthair agus is dócha go méadóidh siad mhíchothromaíochtaí i ndáil le soláthar-éileamh in earnálacha áirithe, mar a léirítear sa mhargadh tithíochta áit a bhfuil boilsiú suntasach le feiceáil ar phraghsanna tithe agus ar chíos ó foilsíodh an *tAthbhreithniú* deireanach.

Cruthaíonn brúnna boilscitheacha dúshláin nua d'iasachtaithe ach tá leibhéal níos airde athléimneachta ag iasachtaithe le deich mbliana anuas. Tá gnóthaí Éireannacha ag téarnamh i gcónaí ón bpaindéim, agus tá feabhas le feiceáil ar láimhdeachas agus ar bhrabúsacht ar fud na n-earnálacha go léir. Mar sin féin, is dócha go dtiocfaidh méadú ar dhócmhainneachtaí ó na leibhéil ísle reatha de réir mar a bhainfear tacaíocht phoiblí agus de réir mar thagann normalú ar éilimh ó chreidiúnaithe, rud a leagann béim ar an tábhacht a bhaineann le creataí beartais a thacaíonn le hathstruchtúrú éifeachtúil dliteanas agus le leachtú éifeachtúil gnólachtaí. I gcás teaghlach, tá a gcumas seirbhísithe fiachais leochaileach do bhoilsciú ar chaiteachas neamh-thithíochta agus do

mhéaduithe ionchasacha ar rátaí úis. Mar bhonn agus mar thaca ag athléimneacht na dteaghlach, tá deich mbliana de leibhéil laghdaithe fiachais, maoláin leachtachta ó choigilteas le linn na paindéime, cothromas tithíochta de bharr fás láidir ar phraghsanna agus fás ioncaim sna hearnálacha sin inar mó líon na n-iasachtaithe.

Tá téarnamh tagtha ar bhrabúsacht san earnáil baincéireachta agus déanfar í a neartú tuilleadh leis an ionchas do chorrlaigh feabhsaithe iasachta faoi bheartas airgeadaíochta níos doichte agus barainneachtaí scála méadaithe a éireoidh as comhdhlúthú leanúnach sa mhargadh. Tá cóimheas caipitil na hearnála baincéireachta miondíola cobhsaí i gcónaí sa mhéid go bhfuil lamháil shuntasach i gceist os cionn na gceanglas rialála ach meastar go laghdóidh sé sin sna blianta atá le teacht de bharr aistrithe ionchasacha punann toisc go bhfuil dhá bhanc mhiondíola ag imeacht as an margadh. Tá brabúsacht na hearnála tar éis filleadh ar leibhéil réamh-phaindéime ach tá iarmhairt dhiúltach uirthi i gcónaí ag bonn costais sách ard agus ag athruithe ar chomhdhéanamh clár comhardaithe de réir mar a dhéantar coigilteas ó thréimhse na paindéime a athinfheistiú i sócmhainní a mbíonn torthaí níos ísle orthu. Ag féachaint romhainn, is dócha go rachaidh coigilteas costais ó chomhdhlúthú agus ó mhéaduithe ionchasacha ar rátaí úis chun tairbhe don bhrabúsacht toisc go mbeidh na dúshláin aisíocaíochta d'iasachtaithe á sárú ag méaduithe ar chorrlaigh iasachta in éagmais cúlú eacnamaíochta níos leithne.

Tá nuashonrú á dhéanamh ag an mBanc Ceannais ar a straitéis maidir le feidhm a bhaint as uirlisí caipitil macrastuamachta. Le deich mbliana anuas, tá feabhas suntasach tagtha ar staid chaipitil chóras baincéireachta na hÉireann trí athchóirithe ar chaighdeáin stuamachta a comhaontaíodh go hidirnáisiúnta. Leag turraing COVID-19 béim ar na buntáistí a bhaineann le córas baincéireachta níos athléimní agus thug sí léargas ar éifeachtacht gnéithe áirithe de na hathchóirithe iar-ghéarchéime. Sa chomhthéacs sin, tá athbhreithniú á dhéanamh ag an mBanc Ceannais ar a straitéis maidir le maoláin caipitil macrastuamachta. Áirítear ann, measúnú ar na costais mhaicreacnamaíocha agus na buntáistí a bhaineann le leibhéal foriomlán an chaipitil, mar aon leis na hidirghníomhaíochtaí idir maoláin caipitil macrastuamachta agus an creat macrastuamachta níos leithne, amhail na ceanglais riosca-ualaithe, agus forbairt an chreata réitigh do na bainc.

Baineann an Banc Ceannais úsáid as CCyB mar a phríomhuirlis caipitil macrastuamachta chun athléimneacht a chosaint i leith rioscaí macra-airgeadais. Mar gheilleagar beag idirnasctha, tá níos mó rioscaí macra-airgeadais ar an taobh thíos ag bagairt ar Éirinn i gcomparáid le geilleagair níos mó atá níos éagsúlaithe. Faoina straitéis nuashonraithe maidir le maoláin caipitil macrastuamachta, beidh an Banc Ceannais ag brath ar ionstraim aonair - CCyB, seachas meascán de CCyB agus SyRB - chun athléimneacht a chosaint ar rioscaí macra-airgeadais. Léiríonn an straitéis seo na ceachtanna atá le foghlaim ón bpaindéim go hidirnáisiúnta maidir leis an tábhacht a bhaineann le maoláin caipitil inscaoilte chun a chumasú don chóras baincéireachta tacú leis an ngeilleagar nuair a bhuaileann turraingí é, agus tá sí ag teacht le haidhm an Bhainc Ceannais chun athléimneacht a chinntiú agus castacht sa chreat caipitil macrastuamachta a laghdú ag an am céanna.

Nuair nach mbeidh rioscaí macra-airgeadais ardaithe nó maolaithe, socróidh an Banc Ceannais ráta dearfach CCyB. Le straitéis athbhreithnithe an Bhainc Ceannais maidir le CCyB, féachtar le ráta CCyB a thógáil agus a choimeád ag 1.5 faoin gcéad, nuair a mheastar nach bhfuil dálaí riosca ardaithe nó maolaithe. Ionchur amháin sa bhreith sin is ea measúnú ar na sochair agus costais mhaicreacnamaíocha a bhaineann le leibhéil éagsúla caipitil do na bainc i gcóras baincéireachta na hÉireann. Go sonrach, measann an Banc Ceannais – mar threoir chun a straitéis maidir le caipiteal

macrastuamachta a fhoirmiú – gurb iomchuí leibhéil chaipitil Leibhéal 1 idir 14 agus18 faoin gcéad iomchuí ar leibhéal an chórais, nuair nach mbeidh míchothromaíochtaí suntasacha ann ó thaobh rioscaí timthriallacha sistéamacha. Agus ceanglais stuamachta eile á gcur san áireamh, thabharfadh ráta CCyB 1.5 faoin gcéad le tuiscint go bhfuil éileamh iomlán caipitil an chórais baincéireachta sa chuid íochtair den raon sin. Ionchur eile sa bhreithniú sin is ea tástáil struis mhacrastuamachta ar an gcóras baincéireachta. Ní dhéantar ráta dearfach CCyB a chalabrú chun a chinntiú go mbeidh an córas baincéireachta athléimneach i leith *gach uile* thurraing. Beidh maoláin thimthriallacha níos airde ag teastáil nuair a bheidh dálaí riosca ardaithe agus *vice versa*. Baineann sé seo leis an gcóras baincéireachta ina iomláine, fad a dhéanfar breithniúcháin atá sonrach d'institiúidí ar leith, lena n-áirítear pleanáil réamhbhreathnaitheach caipitil a léiriú - mar a dhéantar faoi láthair - trí mheasúnuithe maoirseachta.

I gcomhréir leis an gcreat sin agus ag freagairt don athrú ar an timpeallacht riosca, tá ráta CCyB á ardú ag an mBanc Ceannais go dtí 0.5 faoin gcéad. I gcomhréir le treoir roimhe seo maidir le maoláin caipitil stuamachta a atógáil, tá tús curtha ag an mBanc Ceannais le hatógáil maolán caipitil stuamachta de réir a chéile trí ráta CCyB a ardú go dtí 0.5 faoin gcéad. Leis an méadú seo, aithnítear athrú ar an timpeallacht riosca ó rioscaí géara gearrthéarmacha de bharr na paindéime go dtí carnadh leochaileachtaí timthriallacha. Ina theannta sin, aithnítear an athléimneacht is gá chun a chinntiú gur féidir leis an gcóras baincéireachta freastal ar theaghlaigh agus ar ghnólachtaí le linn tréimhsí anáis amach anseo. Má thagann dálaí macra-airgeadais chun cinn i gcomhréir leis an ionchas eacnamaíoch lárnach, meastar go bhfógrófar ráta CCyB 1.5 faoin gcéad faoi lár 2023.

Tá an t-athbhreithniú creata ar na bearta morgáiste mar aon le forbairt beart macrastuamachta le haghaidh cistí réadmhaoine fós ar siúl. Leanann na bearta morgáiste d'fheabhas a chur de réir a chéile ar athléimneacht chláir chomhardaithe na mbanc – sa mhéid gur eisíodh beagnach 1 as gach 2 mhorgáiste ó tugadh na bearta isteach. Tá athbhreithniú á dhéanamh ag an mBanc Ceannais faoi láthair ar an gcreat beartais ina mbreithnítear na cuspóirí, na hionstraimí, agus na tosca lena gcinntear calabrú chun a chinntiú go leanfaidh na bearta morgáiste de bheith oiriúnach don fheidhm. Ó foilsíodh an *tAthbhreithniú* deireanach, bailíodh aiseolas ó pháirtithe leasmhara trí chomhairliúchán poiblí agus fuarthas dearcthaí náisiúnta agus idirnáisiúnta trí chomhdháil idirnáisiúnta. Beartaítear an t-athbhreithniú creata a thabhairt chun críche sa dara leath de 2022. I gcomhthreo, tá sraith beart macrastuamachta á bhforbairt ag an mBanc Ceannais chun neamhréireachtaí giarála agus leachtachta i gcistí réadmhaoine a theorannú ó tharla go bhfuil baint shistéamach ag cistí réadmhaoine le margadh réadmhaoine tráchtála na hÉireann. I gcoibhneas le comparadóirí Eorpacha, tá giaráil níos airde ag na cistí seo, rud a chruthaíonn leochaileacht bhreise i leith laghduithe ar phraghsanna agus d'fhéadfadh go méadódh sé sin turraingí díobhálacha don mhargadh réadmhaoine tráchtála agus don gheilleagar níos leithne. Chuathas i gcomhairle le páirtithe leasmhara le déanaí trí chomhairliúchán poiblí agus beidh an t-aiseolas a fuarthas mar bhonn eolais do cheapadh na mbeart.

Risks

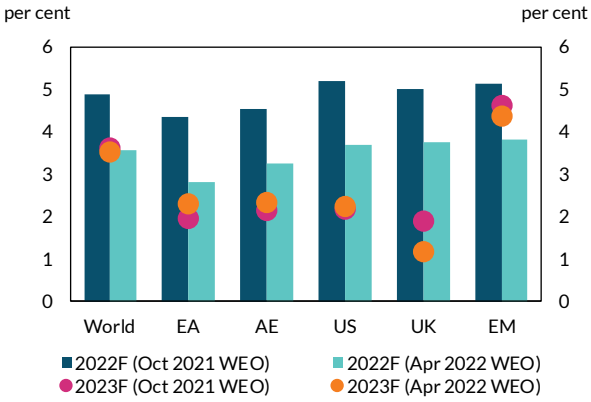
A pronounced slowdown in global growth, accompanied by persistent inflationary pressures internationally

The outlook for the global economy has deteriorated in recent months. The war in Ukraine has undermined global growth prospects, disrupting the recovery from the COVID-19 shock. At the same time, the outbreak of the war and the imposition of sanctions on Russia have further compounded energy, commodity and food price shocks. Price pressures are now more broadly based than at the time of the last Review, which increases the risk that more persistent inflationary pressures could feed through to medium-term inflation expectations. Any such de-anchoring of inflation expectations would have implications for the monetary policy stance internationally, with the potential that increases in interest rates or quantitative tightening may be faster and be more pronounced than previously expected. Such developments may increase the risk of shocks to both global growth and inflation, with adverse implications for debt serviceability and asset prices internationally. Ireland, as a small open economy dependent on international trade and imported energy and fuel commodities, is particularly susceptible to adverse global macroeconomic developments and rising global inflation.

The outlook for the global economy has weakened considerably since the last *Review*, reflecting the heightened uncertainty as a result of the Russian invasion of Ukraine and the related supply-side shock to inflation. While the Russian invasion of Ukraine is first and foremost a humanitarian tragedy for the Ukrainian people, the economic consequences of the war are being felt across the globe (see Box A). The global economy recovered strongly in 2021 on the back of easing public health restrictions and the re-opening of economies following the COVID-19 shock, but the pace of global economic expansion is expected to slow in the near-term as a result of the war and the associated economic sanctions. Growth forecasts for this year have been revised downwards reflecting the increase in geopolitical risks and uncertainty. Ireland, as a small open economy, is particularly exposed to international developments given its heavy reliance on international trade and foreign direct investment. Growth forecasts for Ireland's key trading partners, while remaining positive for 2022, are lower than before the outbreak of the war (Chart 1). A protracted war could lead to further downward revisions to the global growth outlook with implications for the Irish economy and financial system. Overall, the impact of the conflict represents a supply-side shock, which will lead to higher prices and, possibly, a lower availability of energy and other key commodities for households and corporates.

Chart 1: The outlook for global growth has deteriorated in recent months

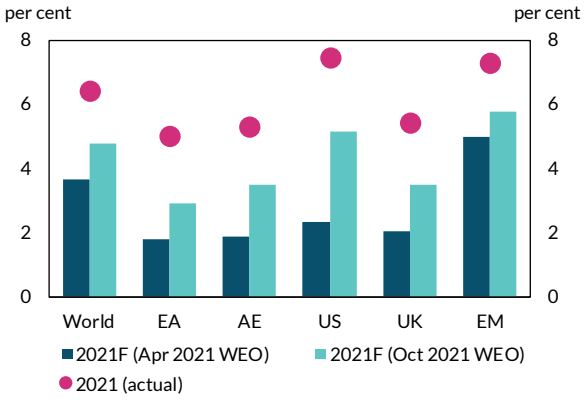
Evolution of global GDP growth forecasts



Source: IMF.
Notes: WEO refers to the World Economic Outlook. The reference period in the brackets denotes the publication date of the forecasts. EA refers to euro area, AE refers to advanced economies, EM refers to emerging markets, F refers to forecasts.

Chart 2: Inflation has far exceeded previous forecasts since the last *Review*

Evolution of global inflation forecasts



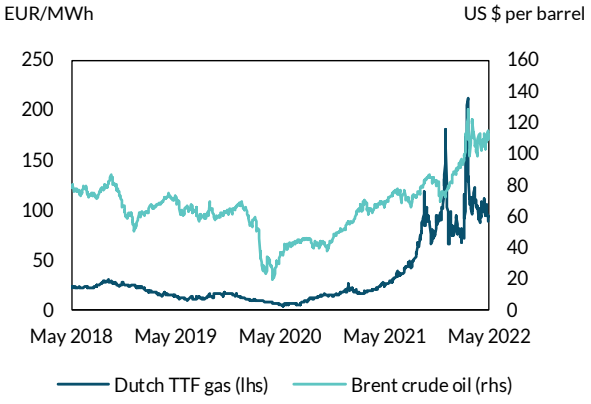
Source: IMF.
Notes: WEO refers to the World Economic Outlook. The reference period in the brackets denotes the publication date of the forecasts. EA refers to euro area, AE refers to advanced economies, EM refers to emerging markets, F refers to forecasts.

Price pressures continue to build, with inflation internationally exceeding previous forecasts.

Inflation rates internationally have remained elevated since the last *Review*, particularly in the US (Chart 2). The supply-side shock that followed the Russian invasion of Ukraine has further exacerbated such pressures, through higher gas and oil prices (Chart 3). The increase in prices internationally has been broadly-based, with non-energy related inflation increasing substantially across advanced economies (Chart 4). The high rates of inflation have resulted in a sharp decline in consumer confidence, with expected adverse knock-on consequences for consumption (Chart 5). At the same time, global PMI data indicate that manufacturing input costs continue to increase sharply, impacting firms internationally (Chart 6). Inflationary pressures are expected to persist through 2022, given the headwinds to energy and commodity supply as a result of the Russian invasion of Ukraine. If the current high rate of inflation were to persist or to increase further, this could also potentially lead to a de-anchoring of inflation expectations, requiring a more pronounced tightening of monetary policy than currently expected (see *Risks: Global repricing*).

Chart 3: Energy prices have increased further since the outbreak of the war

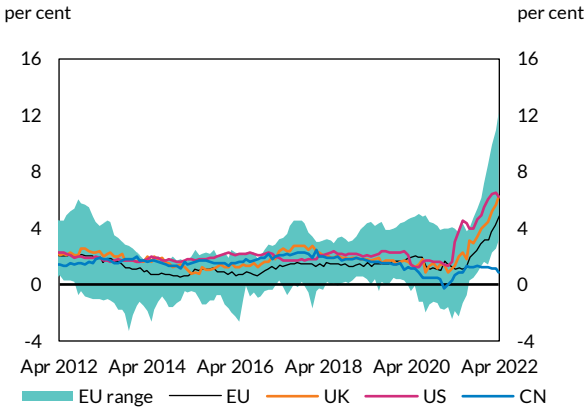
Gas and oil price evolution



Source: Bloomberg.
Notes: Dutch title transfer facility (TTF) is the European benchmark for gas prices.

Chart 4: Non-energy related inflation continues to rise

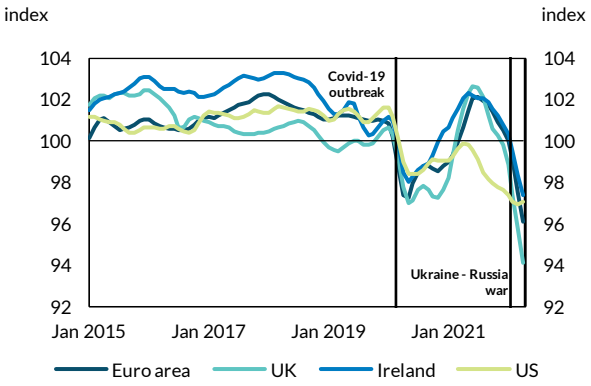
Annual percentage change in non-energy related basket of goods



Source: Eurostat and Bloomberg.
Notes: EU range refers to the spread between the largest and smallest annual change in inflation (excl. energy) of EU Member States. Last observation April 2022.

Chart 5: Consumer confidence has fallen internationally since the last *Review*

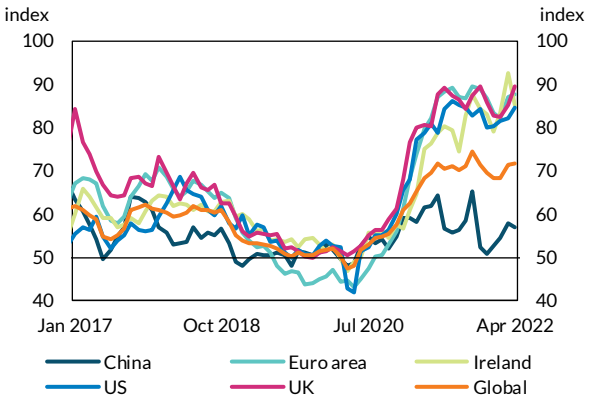
International consumer confidence indices



Source: OECD.
Notes: The consumer confidence index (long-term average Jan 2000-April 2022 = 100) provides an indication of future developments of households' consumption and saving. Values above 100 signals a boost in the consumers' confidence towards the future economic situation. Values below 100 indicate a pessimistic attitude towards future developments in the economy. Last observation April 2022.

Chart 6: Increased manufacturing input prices are leading to cost pressures for firms

PMI activity



Source: Refinitiv Datastream.
Notes: An index value above 50 indicates an increase in manufacturing input prices, whereas a value below 50 indicates a decrease. Last observation April 2022.

Supply chain bottlenecks and disruptions continue to impede global growth and will likely compound existing inflationary pressures. As demonstrated at the height of the pandemic, global supply chains are complex and heavily interconnected. A disruption in one segment of the market has the potential to spread through such supply chains, undermining broader economic activity. Supply chains, while showing some signs of improvement more recently, continue to be disrupted by logistical issues and remain under significant pressure internationally (Chart 7). The war in Ukraine and tightening of pandemic-related public health restrictions in parts of China have the potential to aggravate an already challenging operating environment for international trade. In the case of the latter, there are signs that supply delays have increased in recent months given the recent imposition of COVID-19 related lockdowns in a number of key industrial cities and manufacturing hubs in China (Chart 8). These delays have been most notable in the build-up of shipping traffic in Chinese ports and ongoing shipping delays from Chinese ports. The greater integration of China into the global economy has increased the sensitivity of international financial markets to Chinese macroeconomic risks. Indeed, recent analysis suggests that Chinese macroeconomic shocks can have a significant impact on global financial markets, particularly in equities and commodities.[1]

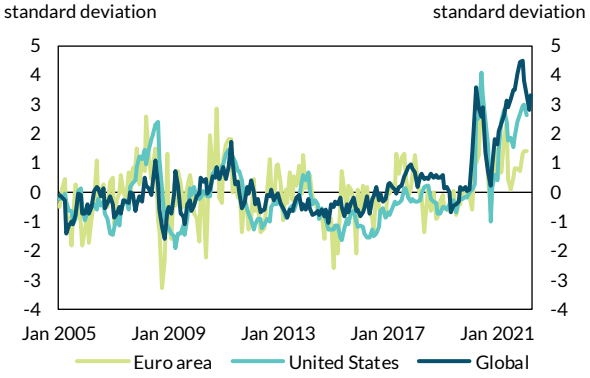
While macro-financial risks from COVID-19 have receded globally, the potential for future disruptions to economic activity due to a resurgence of the virus remain. While less severe than previous variants of concern, the outbreak of the Omicron variant since the last *Review* illustrates the rapidly evolving nature of the COVID-19 pandemic and the potential for more contagious variants to emerge. The impact of the Omicron variant on the global economy was less severe when compared to previous waves of the virus, due to the continued roll-out of vaccination programmes. Nevertheless, tail risks remain with the potential for further variants of concern to emerge to have broader macro-financial impacts given that access to vaccines globally remains uneven. Indeed, the increasing spread of the Omicron variant and China's zero COVID-19 policy has seen many economic hubs and trade centres enter strict lockdowns in recent months similar to

[1] For more see Box 4 in ECB (2022) "Financial Stability Review", May.

those seen during the height of the global pandemic. The imposition of these COVID-19 related lockdowns since the last *Review* are amplifying the economic slowdown in China (Chart 8).

Chart 7: Supply chain pressures remain elevated

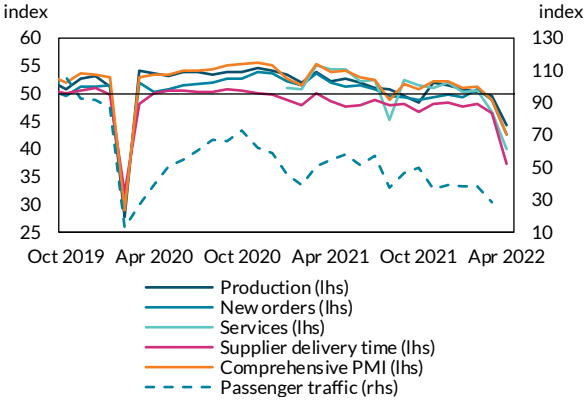
Euro area, US and global supply chain pressure index



Source: Federal Reserve Bank of New York.
Notes: Index scaled by its standard deviation. The indices are based on the findings of Benigno, G., Di Giovanni, J., Groen, J. and A. Noble, "Global Supply Chain Pressure Index: March 2022 Update," Federal Reserve Bank of New York Liberty Street Economics, March 3, 2022. Last observation February 2022 for euro area and US indices, April 2022 for the Global index.

Chart 8: Main economic activity indicators for China declined since the last *Review* following COVID-19 lockdowns

Economic activity and passenger indices



Source: National Bureau of Statistics of China.
Notes: All indices refer to PMI indicators, except passenger traffic index (Sep 2019 = 100). Values below 50 indicates a contraction of the manufacturing sector compared to the previous month. Passenger traffic refers to the number of passengers transported with various means within a specific period of time. Last observation April 2022, March 2022 for Passenger traffic index.

The combination of a pronounced slowdown in global growth, coupled with rising inflationary pressures, would have adverse implications for asset prices and debt service capacity. This follows a prolonged period of rising asset valuations in a search for yield environment, increasing the global economy's underlying vulnerability to tigher financial conditions. The risk of eroding real incomes and the possibility of higher-than-expected interest rates may undermine the debt servicing capacity of borrowers, given the increase in indebtedness internationally in recent years (see *Risks: Global repricing)*. At the same time, this constellation of shocks could have an adverse impact on asset prices, including real estate, with potential implications for the balance sheets of financial institutions, including banks and non-bank financial institutions.

As a small, highly globalised economy, Ireland remains particularly vulnerable to a slowdown in the global economy as well as further supply-side shocks to inflation. Given the economy's dependence on international trade and imported energy and fuel commodities, further shocks to the global growth outlook or supply-side inflation would lead to adverse spillovers to the real economy in Ireland.

Box A: Risks to Irish financial stability emanating from the war in Ukraine

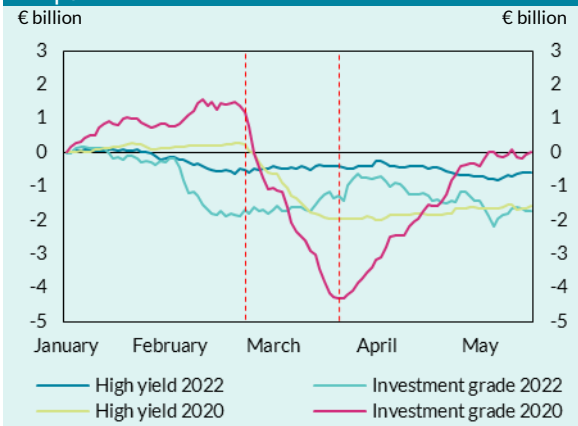
By Stephen Doyle & Caroline Mehigan (International Finance Division)

The macro-financial outlook is characterised by significant uncertainty due to a number of factors: while many economies are recovering from the pandemic, others are still confronting it; price pressures are rising, with challenging trade-offs around monetary policy; and financial assets have been re-pricing, amid expectations of higher interest rates and credit risk. The war in Ukraine has added further complexity and exacerbated these risks through its direct negative impact on economic conditions, particularly in Europe, and with the potential to act as a trigger for vulnerabilities that have been building across the financial system for some time. In addition, the war has the potential to amplify geopolitical risk for the next decade or more, which could have financial stability implications. While the direct links of the Irish financial system and economy to Russia are small, the main channels of transmission of the war in Ukraine to the Irish financial system are via second-round effects.[1] This Box focuses on three main transmission channels of the war in Ukraine to the Irish financial system.

Firstly, an escalation of geopolitical tensions could act as a trigger for a broader global financial market disruption. 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 easy financial conditions and rising asset prices. Further escalation of the war in Ukraine – or an exacerbation of the adverse macro-economic consequences of the war – could act as a trigger for a further sharp repricing of global financial assets and an increase in risk premia. To date, while global financing conditions have tightened, the functioning of 'core' global markets has not been impaired to the same extent as was observed at the onset of the COVID-19 shock. But there is a divergence developing between Europe and the US. In addition to the wider "risk off" sentiment in financial markets this could reflect Europe's proximity, industry linkages and energy reliance on Russia. For example, since the invasion, equity market volatility has been notably higher and financial conditions are tighter in the euro area.[2] In addition, there have been significant withdrawals from European corporate debt funds – albeit much smaller than during the COVID-19 shock – suggesting investors expect challenges for European corporates (see Chart A).

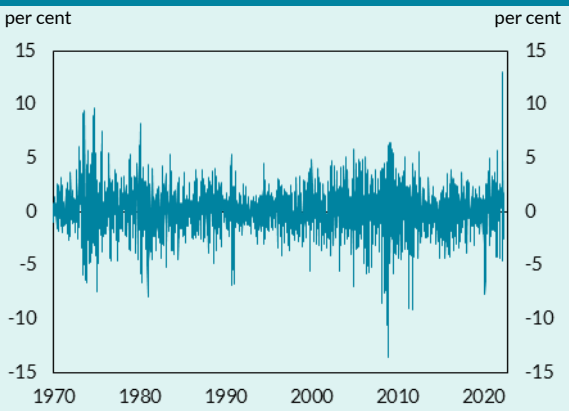
One segment of financial markets that has seen particular strains since the outbreak of the war in Ukraine is energy and commodity markets (see Chart B). The increased volatility in commodity prices has increased demand for liquidity, via higher margin requirements. The initial and ongoing funding required to trade in derivatives markets for commodities – initial margin requirements and variation margins – have risen since the onset of COVID-19, with the war exacerbating this trend (see Chart C). To date, these stresses have been contained within commodity markets, with margin calls being met, no commodity firm failures, or wider liquidity squeezes. However, further volatility in energy and commodity prices could add to liquidity pressures for market participants, leading to a reduction in hedging activities (by financial and non-financial corporates alike), the possibility of uncovered exposures, and the risk of default of counterparties. Heightened liquidity pressures can pose challenges for NFCs who typically have less available high quality liquid assets than financial intermediaries. Further, while energy prices are currently elevated, if prices were to reduce quickly, retracement risk could emerge. If prices were to reverse, this variation margin would need to be repaid, risking a liquidity squeeze.

Chart A: Withdrawals of European corporate debt during the onset of the war in Ukraine and the COVID-19 pandemic



Source: Morningstar and authors' calculations.
Notes: Data shows cumulative net flows of Irish domiciled bond funds from European corporate bonds in the first five months of 2020 and 2022. The first dashed line refers to the start of the Russian invasion of Ukraine on the 24th February 2022 and the second dashed line shows the 24th March 2020 which represents the largest cumulative net outflows during the onset of the pandemic. Bond funds categorised using a 70 per cent threshold. Last observation 20 May for 2020 and 2022 data.

Chart B: Volatility in commodity markets has increased to record levels

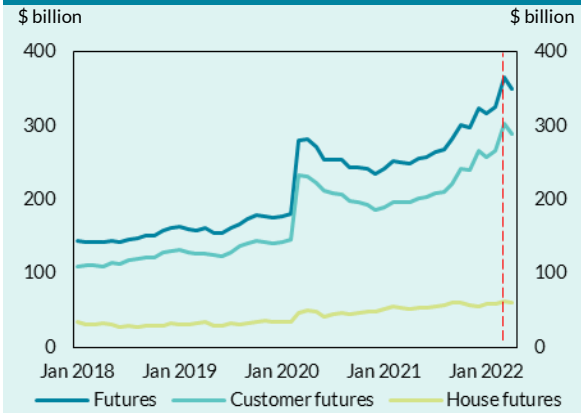


Source: Bloomberg and authors' calculations.
Notes: Data shows weekly commodity price change in the Bloomberg Commodity Index. Last observation 20 May 2022.

Secondly, a prolonged or escalating conflict could lead to a further deterioration in the global macroeconomic outlook. The invasion of Ukraine has already had an adverse impact on the domestic and global macroeconomic outlook, with central expectations of materially higher inflation and lower growth than previously anticipated.[3] The war has further increased supply chain pressures and exacerbated post-pandemic economic uncertainty, contributing to reduced investment, lower consumption, and domestic demand. In addition, the most recent EU sanctions package on Russian oil, combined with Russian imposed gas embargos on a number of EU member states, suggest that energy prices could remain elevated – or even increase further – in the foreseeable future. Combined, these could lead to an adverse macro financial scenario of high inflation and low growth with financial stability implications (see *Risks: Slower growth and higher inflation)*. Higher energy costs will likely weigh on (energy intensive) businesses and depending what happens to real wages, could lead to an erosion of household real incomes, which could affect borrowers' repayment capacity.

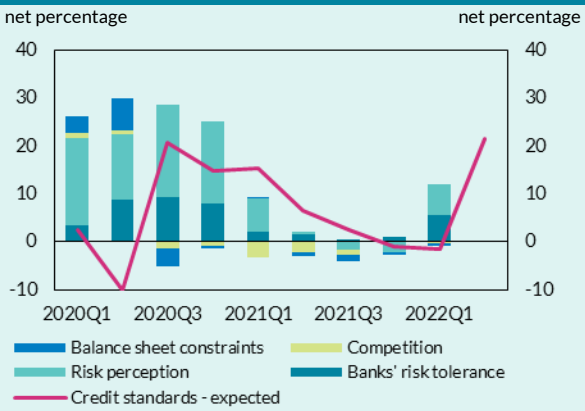
Relatedly, increased energy prices and supply chain issues are adding to pre-existing price pressures, presenting monetary policy trade-offs as we emerge from pandemic policies. Faster than anticipated interest rates rises could also affect the repayment capacity of households and corporates with subsequent effects on lenders. Indeed, heightened uncertainty over the war and policy responses are already reflected in lenders' behaviour. Interest rates increases are already being passed on to borrowers. And, although lower than at the onset of the pandemic, the ECB Bank Lending Survey showed a net tightening of credit standards on loans to enterprises in the first quarter of 2022 (see Chart D).[4] This likely reflects the uncertain economic impact of the war in Ukraine and the anticipation of less accommodative monetary policy.

Chart C: Initial margin requirements – commodity futures



Source: Commodity Futures Trading Commission.
Notes: Dashed red line refers to the start of the Russian invasion of Ukraine on the 24th February 2022. Last observation April 2022.

Chart D: European banks tighten lending standards



Source: ECB Bank Lending Survey, April 2022.
Notes: Chart shows the net percentage of banks reporting a tightening of credit standards and the contributing factors. Data relates to loans to enterprises. Further information on the contributing factors can be found at the ECB's publication on the Bank Lending Survey. Last observation 2022 Q1. Last observation for credit standards expectations is 2022 Q2.

Thirdly, there is a heightened cyber risk that could affect the financial sector in parallel. In recent months, there has been a significant increase in malicious cyber activity by state-sponsored actors, cyber-criminal groups, and hacktivists eager to support or take advantage of the conflict. While the targets to date have predominantly been in Russia, Ukraine and Eastern Europe, there is potential for Irish firms and institutions to be impacted, particularly via third parties or supply chain disruptions. Given the clear evidence of Distributed Denial of Service attacks, wiper malware, and other espionage tools, the threat to European countries including Ireland is elevated in the short-to-medium term. This could be targeted either to key infrastructures (e.g. SWIFT, telecoms, and energy), individual financial institutions, or critical third party service providers. This risk, were it to crystallise, could have substantial operational implications and could transmit across the financial system through complex interlinkages.

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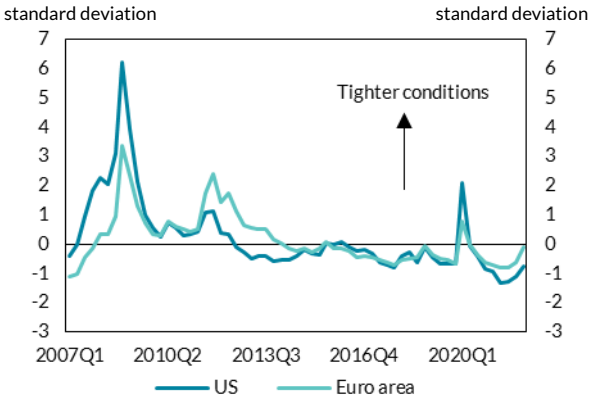
1 See Statistical Release "Direct Financial Links to Russia by Economic Sector", Central Bank of Ireland, 04 March 2022.
2 See Global Financial Stability Report, Figure 1.4 & 1.5, International Monetary Fund, April 2022.
3- See Quarterly Bulletin 2022:2, Central Bank of Ireland, IMF World Economic Outlook, IMF Global Financial Stability Review.
4- See ECB Bank Lending Survey, April 2022.

An abrupt tightening of global financing conditions and sharp asset price adjustments, amid elevated indebtedness internationally

Global financial conditions have tightened considerably since the last Review, amid less accommodative monetary policy, rising inflationary pressures and growing downside risks to the economic outlook. This has led to a significant re-pricing of global financial assets and an increase in market volatility, although 'core' global markets have not seen the same degree of disruption observed at the onset of the COVID-19 shock. The uncertain path of monetary policy tightening internationally or a slowdown in global growth could trigger a further sharp change in financing conditions. This could expose previously-accumulated financial vulnerabilities, following a prolonged period of rising global asset prices and search for yield behaviour in financial markets. The high levels of global indebtedness, both public and private, may also exacerbate any macro-financial implications from a sharp repricing of risk premia. A deterioration in global financial conditions could affect the Irish economy and financial system through a number of channels. These include a repricing of risk premia for the Irish sovereign and a higher cost of financing for Irish-resident corporates and financial institutions. A sharp tightening in global financial conditions could also have an adverse impact on foreign investor sentiment in the Irish CRE market.

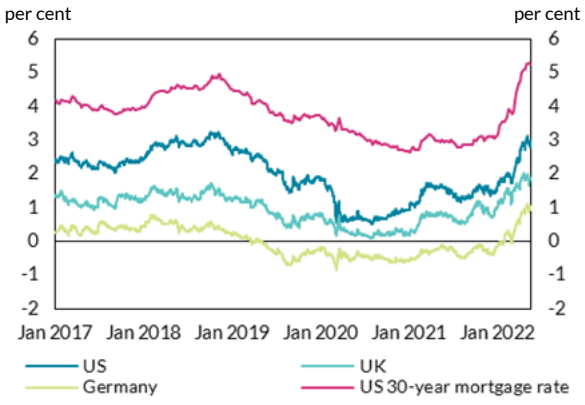
Global financial conditions have tightened significantly across advanced and emerging economies since the last *Review*. This reflects the continued normalisation of monetary policy internationally, increasing downside risk to the economic outlook as a result of the war in Ukraine and a slower post-pandemic economic recovery in recent months. Despite this, financial conditions still remain around, or below, historical averages in both the US and the euro area (Chart 9). At a global level, the tightening of financial conditions has been particularly pronounced in emerging markets, especially those with close ties to Russia. This has occurred as a result of less accommodative monetary policy to combat inflation, lower equity valuations and higher external borrowing costs.

Chart 9: Financial conditions have tightened noticeably in the US and euro area since the last *Review*
Financial conditions index



Source: IMF.
Notes: Last observation 2022Q1.

Chart 10: Government bond yields have risen steadily in advanced economies in 2022, feeding through to other interest rates
30-year fixed-rate mortgage in the US and developments in 10-year bond yields in advanced economies



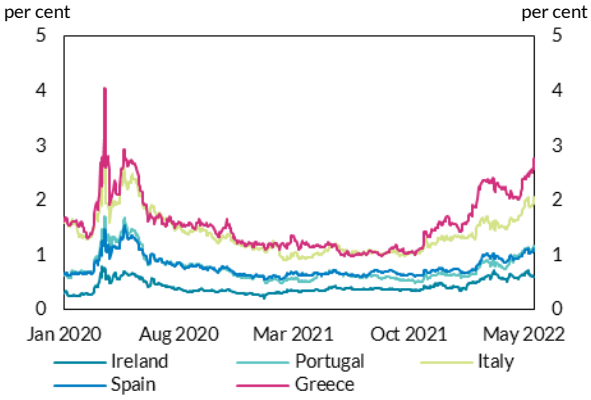
Source: Bloomberg, Freddie Mae's Primary Mortgage Market Survey and Central Bank of Ireland calculations.
Notes: The "US 30-year mortgage rate" series shows the average interest rate on a 30-year mortgage in the US. Last observation 19th May 2022. Last observation for bond yields is the 20th May 2022.

Expectations of significantly tighter monetary policy have led to an increase in government bond yields, especially in the US. The market-implied path for interest rates has increased sharply since the beginning of the year across advanced economies, as central banks have taken steps towards normalising policy in light of elevated inflation rates. Amid market expectations of a tighter monetary policy stance, long-term government bond yields have increased significantly in recent months (Chart 10). In addition, yield spreads in some euro area countries have widened, with investors requiring a higher premium to hold debt of more highly-indebted governments in an environment of tightening global financial conditions (Chart 11).

The war in Ukraine has led to increased volatility in segments of financial markets. Given the important role of both Russia and Ukraine in global commodity markets, the war has led to a sharp increase in volatility in commodity markets, including crude oil and natural gas (Chart 3). This has also led to rising initial margin requirements, adding to liquidity strains in commodity markets (see Box A). In equity markets, volatility in US and euro area stocks increased at the onset of the war, before subsiding (Chart 12). At the same time, the MOVE index points to increased volatility in government debt markets, consistent with increased uncertainty around the path of inflation expectations and monetary policy.

Chart 11: European government debt spreads have widened since the last *Review*

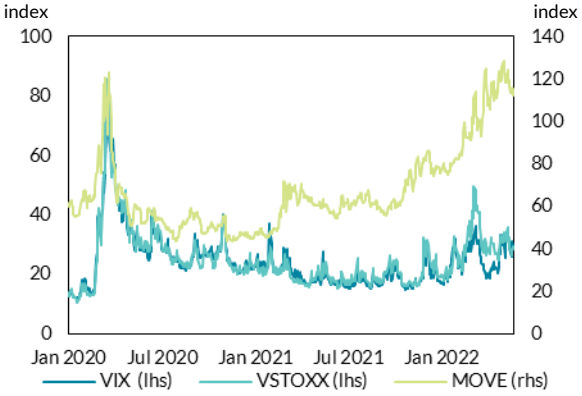
Selected 10-year European bond spreads over German bond yields



Source: Bloomberg and Central Bank of Ireland calculations.
Notes: Data shows the spread between European sovereign bond yields and German bond yields. Last observation 20 May 2022.

Chart 12: The increase in volatility in government debt markets has been particularly pronounced in recent months

VIX, VSTOXX and MOVE indices



Source: Chicago Board Options Exchange, BofA Securities; via Eikon Datastream.
Notes: The VIX index measures 30-day expected equity market volatility of the US stock market while the VSTOXX index measures 30-day equity market volatility based on the EuroStoxx 50 index. The MOVE index measures expected bond market volatility by tracking US Treasury options. Last observation 20 May 2022.

Equity market valuations have seen significant corrections since the last *Review*. The high level of uncertainty and slower growth expectations (see *Risks: Slower growth and higher inflation*), together with higher expectations for interest rates, have resulted in a significant downward adjustment to global equity valuations. The market correction has brought down price/earnings (P/E) ratios significantly since January 2022. While in some sectors, particularly in the US, the P/E ratios are still above their long term average, valuations are now less stretched relative to the last *Review*, driven by falls in technology stocks (Chart 13). At the same time, the excess CAPE yield[2] has fallen below its long-term average, highlighting the vulnerability of the implied equity risk premium to

[2] The average earnings yield over the past 10 years for the S&P 500 minus the real yield (adjusted for inflation) on 10-year Treasuries.

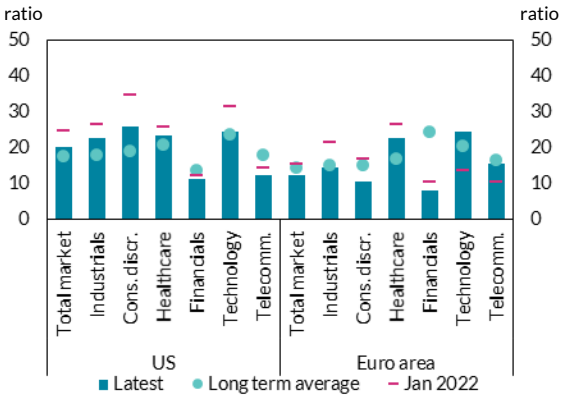
interest rate hikes. Moreover, the use of leverage by investors remains high, which could magnify losses if equity market volatility was to increase further.[3]

In real estate markets, robust house price growth internationally suggests a continued build-up in cyclical risks. Residential real estate prices have registered sharp price increases across advanced economies since the onset of the COVID-19 pandemic. Real estate prices are now significantly above pre-pandemic levels in nearly all advanced economies, and have been rising significantly faster than rents in many countries, pointing to a reduction in residential yields (Chart 14). This increases the vulnerability of global housing market developments to rising interest rates. In the US, for example, there is already evidence that the sharp increase in mortgage rates (Chart 10), is leading to a softening in housing market activity. For example, US mortgage rates show the biggest quarterly increase since the second quarter of 1994.

Global financial markets remain vulnerable to faster than expected monetary policy tightening internationally as well as to disruptions to the global economic recovery. US inflation developments since the last *Review* have resulted in an acute focus on the Federal Reserve's FOMC policy deliberations, while higher than expected inflation could also pose downside risks through the effect on profits, consumption and growth. The risk of abrupt increases in nominal long-term yields would have implications for both asset prices and the cost of servicing record levels of outstanding debt.

Chart 13: Equity valuations have fallen from historically high levels relative to earnings

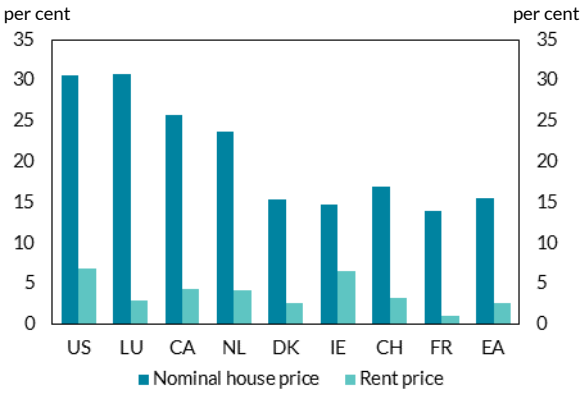
US and euro area sectoral price-to-earnings ratios



Source: Eikon Datastream and Central Bank of Ireland calculations.
Notes: Cons. discr. denotes consumer discretionary. Weekly data with long term averages from 1973. Last observation 16th May 2022.

Chart 14: Global house prices have accelerated post-pandemic

Growth in global house and rental price indices since 2019Q4



Source: OECD.
Notes: In most cases the nominal house price index covers the sales of newly-built and existing dwellings. Growth rate of indices are expressed as percentages and relates to between 2019Q4 and 2021Q4 for house prices and between 2019Q4 and 2022Q1 for rental prices.

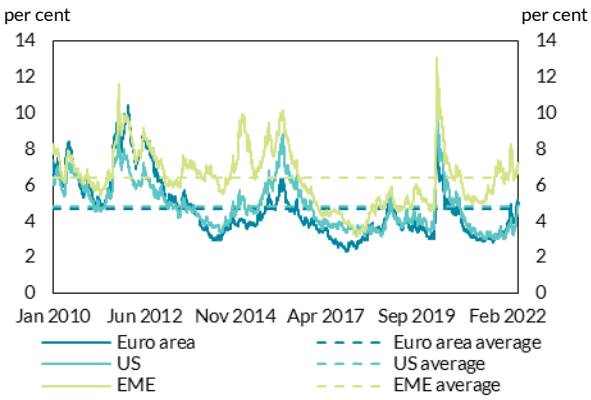
The recent adjustment in valuations is taking place following a prolonged period of search for yield behaviour in segments of global financial markets. Following a significant expansion in recent years, new issuances of high yield bonds have slowed, as spreads on high-yield corporate bonds have widened towards historical averages (Chart 15). In the collateralised loan obligation (CLO) market, issuances have also slowed from record levels, as spreads widened in both secondary market leveraged loans and CLO tranches (Chart 16). The search for yield behaviour in this

[3] According to the US Financial Industry Regulatory Authority (FINRA), the combined margin debt of member firms' customers stands at USD 799 billion in March 2022, having fallen from a height of USD 935 billion in October 2021.

segment of the market has also been evident in trends in underwriting standards. A record of more than 90 per cent of US leveraged loans issued last year have been 'covenant-lite'. Another manifestation of increased risk-taking in financial markets has been the flow of investment into high-risk global crypto markets in recent years (Chart 17).[4] Since the last *Review*, there have been significant price falls and crystallisation of stresses in segments of the global crypto market, while prevalent data gaps for crypto markets present challenges for financial stability assessments, including its interconnectedness to the wider financial system.[5] Overall, the prolonged search for yield behaviour in recent years raises the potential of a build-up of financial vulnerabilities in segments of financial markets, which could be exposed in an environment of tighter financial conditions.

Chart 15: Spreads are rising following the war in Ukraine, especially in the euro area and in emerging economies

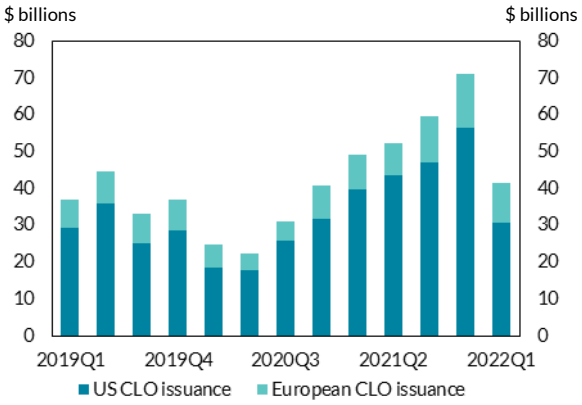
High yield corporate bond spreads



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 20 May 2022.

Chart 16: CLO issuance has slowed in recent months amid greater market volatility and uncertainty

Issuance of collateralised loan obligations



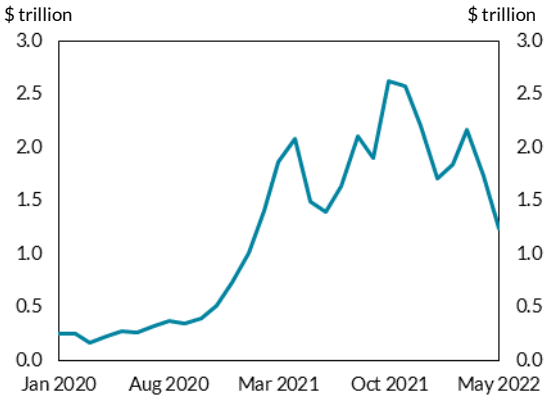
Source: S&P Leveraged Commentary & Data.
Notes: Last observation 2022 Q1.

Global indebtedness also stands at record levels, increasing the vulnerability of the global economy to tighter financial conditions. The low interest-rate environment and favourable financing conditions of the last decade has facilitated the build-up of significant levels of both public and private debt (Chart 18). A combination of lower-than-expected economic activity, higher inflation and increases in financing costs may stretch the debt servicing capacities of various sectors of the global economy. Governments have provided large fiscal supports over the course of the pandemic to help minimise the economic shock associated with the COVID-19 pandemic as well as increased public spending in recent months to cushion the impact of the war in Ukraine. As a result sovereign debt is at record levels in many economies. A corollary of the action taken by governments means they have less capacity to take action to mitigate future shocks. This is amplified in Ireland's case due to the increased reliance of the public finances on corporation tax receipts, which remain concentrated among a small number of large firms (see *Resilience: Sovereign*).

[4] See Central Bank warning on investing in crypto-assets, March 2022.
[5] See ECB (2022), "Decrypting financial stability risks in crypto-asset markets", Special Feature, Financial Stability Review 2022, May.

Chart 17: The global crypto market has grown in recent years pointing to market exuberance

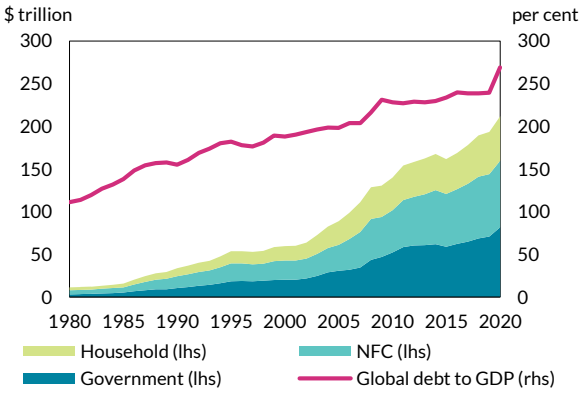
Total crypto market capitalisation



Source: CoinMarketCap.
Notes: Total market capitalisation of all crypto, including stablecoins and tokens. Last observation 20 May 2022.

Chart 18: Global indebtedness is historically high

Global debt and global debt to GDP

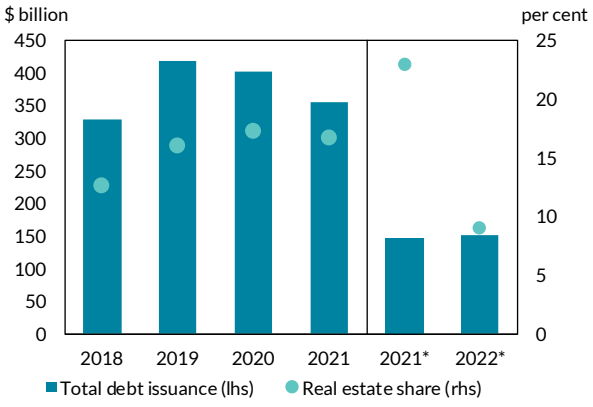


Source: IMF Global Debt Database and Central Bank of Ireland calculations.
Notes: NFC refers to non-financial corporates. Last observation: 2020.

The low interest-rate environment coupled with the COVID-19 shock has also increased the amount of corporate debt which now stands at historically high levels. Increasing recourse to high-yield bonds and leveraged loans point to a build-up of fragility within the corporate debt sector – in particular in the US. The withdrawal of government supports, lower-than-expected economic activity coupled with rising inflation and interest rates internationally will likely exacerbate existing fragilities within various sectors. The high profile default of the Chinese real estate firm Evergrande has brought to the fore the elevated debt levels of the corporate sector in China and the potential spillovers that can occur in response to shocks in corporate debt markets. For example, the level of high yield-debt issued by the Asian real estate sector is down markedly in 2022 when compared with previous periods (Chart 19).

Chart 19: The issuance of Asian high-yield real estate debt has declined markedly since the Evergrande default

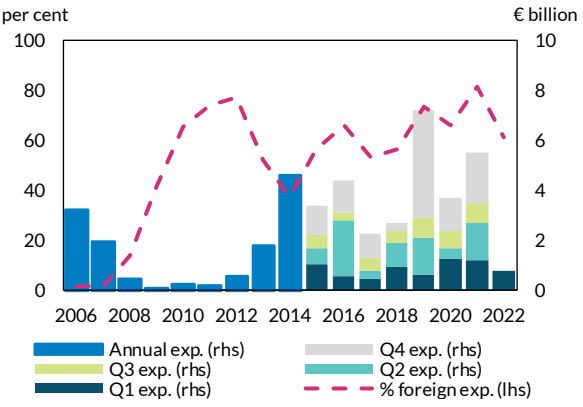
The level of high-yield debt issued by Asian corporates and their share of the real estate sector



Source: Bloomberg and Central Bank of Ireland calculations.
Notes: Amount of debt issued each year by corporates with an issuer credit rating below BBB for at least one of the 3 main CRAs. Real estate sector is identified according to the BICS 2 Classification level. *Denotes debt issued between January and 20 May in 2021 and 2022.

Chart 20: Significant volumes of investment into the Irish CRE market are from foreign sources

Investment expenditure on Irish CRE



Source: CBRE Research.
Notes: Share of foreign expenditure excludes investment where origin is unknown. Last observation 2022Q1.

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 nature of its economy, Ireland is particularly exposed to downside risks in global financial conditions. A generalised repricing of risk could also reverberate to the domestic economy through a decline in investor sentiment leading to reduced foreign investment in the CRE sector. As noted in previous *Reviews*, significant volumes of investment in the Irish CRE market are from foreign sources (Chart 20), 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. 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 (see *Resilience: Non-bank financial sector*) or to mortgage borrowers.[6] 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.

[6] 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.

Emerging cyclical vulnerabilities amid rising inflation and significant capacity constraints in some sectors

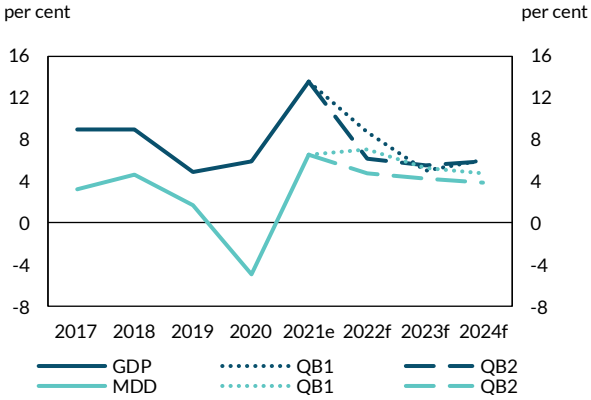
The central outlook for the domestic economy is for slower, but still strong, growth following the Russian invasion of Ukraine. The conflict has led to downward revisions to growth forecasts and has amplified inflationary pressures since the last Review, while uncertainty around the outlook has also increased. Despite the uncertain outlook, the Irish labour market has experienced a robust recovery following the COVID-19 shock. There is now growing evidence of increased cyclical pressures in some sectors, with binding capacity constraints, amid the broader rise in inflation. In the housing market, rising input costs, labour shortages and supply chain issues may hamper the housing supply response, at a time when Ireland's humanitarian response to the crisis in Ukraine is adding to the existing demand for housing. The combination of these factors is likely to further amplify the underlying supply-demand imbalance in the housing market. While there are signs of recovery in the Irish commercial real estate market, the sector remains exposed to risks, including from structural changes arising from the COVID-19 shock.

The outlook for the domestic economic recovery from the COVID-19 shock, while still strong, has weakened following the Russian invasion of Ukraine, and the significant economic challenges it presents. While direct trade links between Ireland and Ukraine, and Ireland and Russia are limited, the economic headwinds prompted by the outbreak of war, including the supply-side shocks to energy, food and commodities are expected to dampen domestic economic activity. Uncertainty surrounding the macro-financial environment has increased substantially since the last *Review*, while downside risks have also increased. The latest domestic economic growth forecasts, while still pointing to strong growth in 2022, have been revised downwards since the last *Review* (Chart 21). These downward revisions to growth projections reflect a weakened global economic environment with the Russian and Ukrainian conflict also expected to reduce growth in Ireland's key trading partners.

The improvement in macroeconomic conditions following the lifting of all remaining pandemic restrictions earlier in the year is reflected in the labour market and the ending of fiscal supports. By the time of its closure at the end of March 2022, the number of people in receipt of the Pandemic Unemployment Payment had fallen to just under 45,000 from a peak of over 605,000 people in April 2020. Similarly, the number of workers registered with the Employment Wage Subsidy Scheme is estimated to have fallen to approximately 232,000 at the end of April 2022, from a high of over 325,000 individuals in June 2021. The Irish labour market experienced a more robust recovery than many European peers and numbers employed are now in excess of pre-pandemic levels (Chart 22). This is also reflected in the standardised ILO unemployment rate which stood at just under 5 per cent in the first quarter of 2022.

Chart 21: Despite downward revisions, economic growth is forecast to grow strongly in the coming years

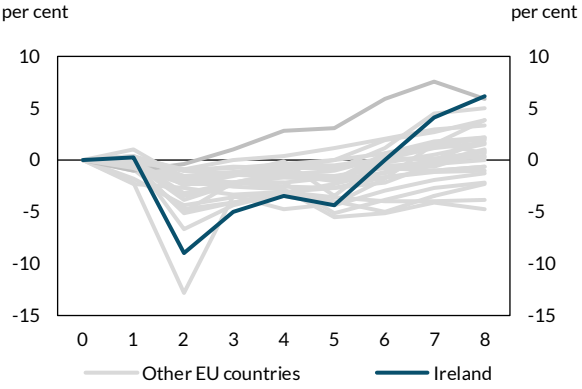
Actual and Central Bank of Ireland forecast annual growth in real GDP and Modified Domestic Demand



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 January 2022 (QB1) and April 2022 (QB2).

Chart 22: The Irish labour market has experienced a more robust recovery than many European peers

Per cent change in total employment from pre-pandemic level (i.e. 2019Q4): Ireland and EU countries by quarter



Source: Eurostat.
Notes: Data cover the period 2019Q4 (quarter 0) to 2021Q4 (quarter 8).

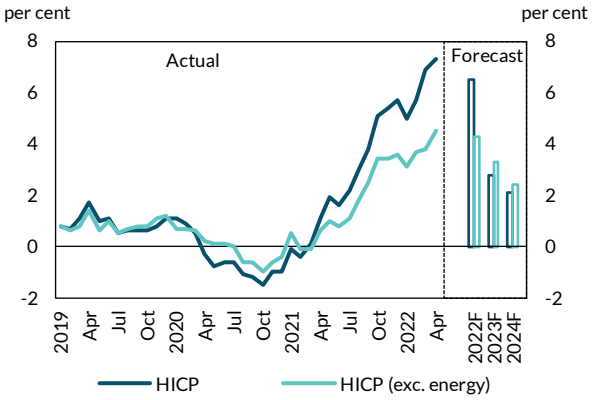
Further disruption to fragile post-pandemic supply chains and increased commodity price volatility due to the war are adding to significant inflationary pressures. As a small, open economy with a heavy reliance on imported fuel and energy products, Ireland is heavily affected by international developments, leaving domestic households and businesses exposed to rising prices across a broad spectrum of goods and services. The HICP inflation rate for Ireland reached 7.3 per cent in April 2022, while forecasts for domestic inflation have been revised upwards since the last *Review* (Chart 23). Alongside energy and transport costs, food prices are also likely to grow over the coming months. Such increases in the cost of living will have a disproportionate effect on lower income and rural households who typically spend a higher share of their weekly income on such items.[7] A protracted or further escalation of the war in Ukraine risks amplifying supply-side shocks giving rise to further price pressures.

The heightened uncertainty as a result of the war coupled with supply chain bottlenecks may intensify the current imbalance between housing supply and demand in the near term. While an improvement in forward-looking supply indicators such as residential planning permissions, registrations and commencements suggested a strong pick-up in construction activity from the start of 2022 (Chart 24), growing input costs and labour shortages could result in the delivery of lower than expected housing output over the near term. The price of many key building materials, such as timber, steel and cement have risen substantially (Chart 25), even before the outbreak of war in Ukraine. At the same time, the demand for housing continues to be robust and will likely increase further as efforts intensify to meet Ireland's humanitarian responsibilities to provide shelter to Ukrainian refugees.

[7] See Lydon, R., "*Household characteristics, Irish inflation and the cost of living*", Central Bank of Ireland, Economic Letter, Vol. 2022, No.1, (2022).

Chart 23: Inflation domestically has exceeded forecasts since the last *Review*

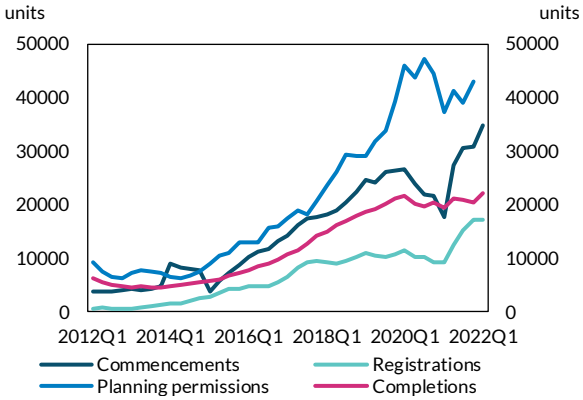
Actual and Central Bank of Ireland forecast annual rate of change in HICP



Source: CSO and Central Bank of Ireland.
Notes: HICP forecasts represented by bars are taken from the Central Bank of Ireland's 2022Q2 (April) Quarterly Bulletin. Last observation of actual data April 2022.

Chart 24: An improvement in forward-looking supply indicators prior to the war in Ukraine had pointed to a strong pick-up in construction activity from 2022

Indicators of residential construction activity: rolling annual totals

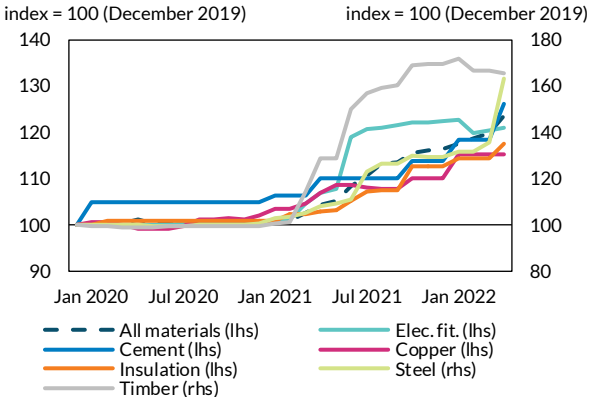


Source: CSO and Department of Housing, Local Government and Heritage.
Notes: Last commencement, completion and registration observations 2022Q1, planning permission data 2021Q4.

The housing supply shortage remains evident in the lack of available second-hand residential properties listed for sale. Recent data from Daft.ie show that the number of properties advertised for sale on their website is at the lowest ever level nationally (Chart 26). Across the country, approximately two thousand fewer properties were on the market at the end of March 2022 (10,050) compared to the same point in 2021. Of the properties listed for sale, about one quarter were located in Dublin, where despite some pick-up in listings during 2021, the availability of properties has declined once more in the opening months of 2022, back towards its previous lowest level of approximately 2,700 units.

Chart 25: The prices of many key building materials have increased substantially since early 2021

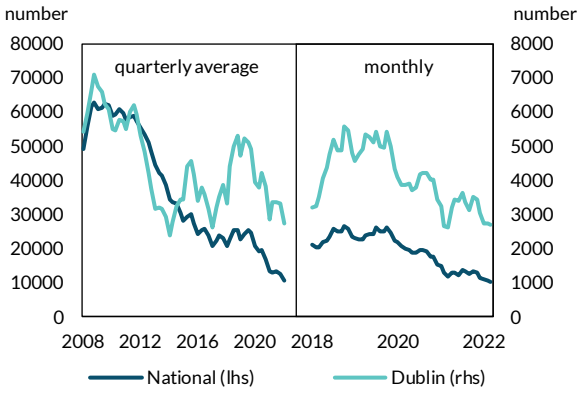
Wholesale price index: overall and selected construction materials



Source: CSO.
Notes: Elec. fit. = "Electrical fittings", Insulation = "Insulating materials", Steel = "Structural steel and reinforcing metal". Timber = "Rough timber (including plain sawn)". Last observation April 2022.

Chart 26: The supply of properties listed for sale is at the lowest recorded level

Stock listed for sale on Daft.ie: National and Dublin

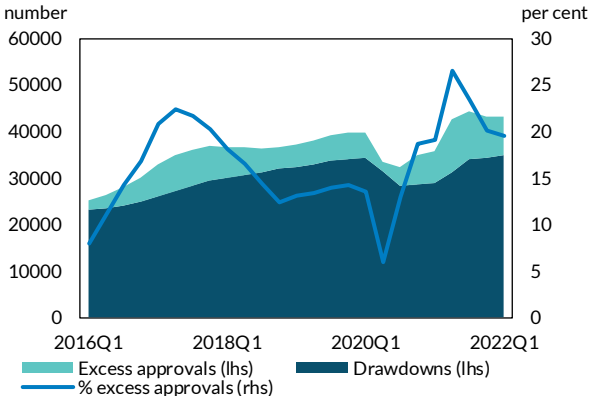


Source: Daft.ie.
Notes: Observations in LHS pane denote quarterly average of properties listed for sale beginning in 2008Q1. Data in RHS pane are monthly data beginning in January 2018. Last observation Q1 / March 2022.

Mortgage market activity has recovered from the COVID-19 shock with drawdowns now higher than before the onset of the pandemic. Moreover, the rolling annual figure of almost 35,000 mortgages drawn down at the end of Q1 2022 (Chart 27), is the highest cumulative four quarter total since mid-2009. First-time buyers (FTBs) have, for some time now, been the main drivers of mortgage drawdowns, making up over two thirds of the new loans drawn over the past year. A similar pattern has emerged with respect to mortgage approvals with the series recording the highest value since the dataset began in 2015. The availability of units to purchase will determine how this translates into mortgage drawdowns.

Chart 27: Mortgage market activity has recovered well from the pandemic, but the housing supply shortage is hampering the conversion of approvals into drawdowns

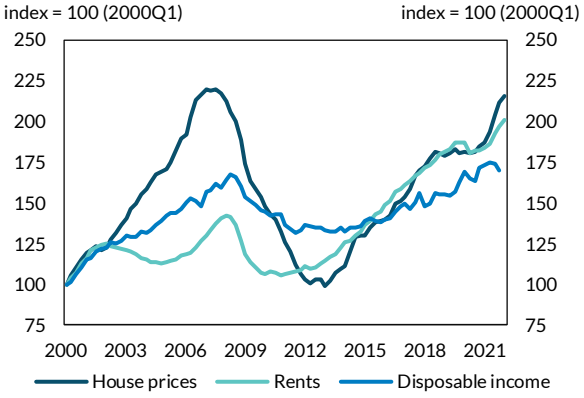
Mortgage approvals and drawdowns: rolling annual totals



Source: Banking and Payments Federation Ireland.
Notes: Last observation 2022Q1. Data refer to mortgage drawdowns and approvals for residential property purchases.

Chart 28: House prices have grown broadly in-line with rents, with both prices and rents growing faster than incomes

House price, rent and household disposable income indices



Source: CSO and Central Bank of Ireland calculations.
Notes: Last observation, house prices and rents 2022Q1, household disposable income 2021Q4.

The prevailing dynamics of housing supply and demand are fuelling substantial rises in residential property prices and rents. The pace of house price growth has accelerated notably in recent months, with residential property prices increasing by 15.2 per cent nationally in the year to March 2022, the fastest growth rate since early 2015. As a result, nominal house prices are now just over 2 per cent below their previous peak 2007 value. Similarly, residential rents, which had been decreasing in early 2021, are rising at their fastest rate since early 2016. Annual rents increased by 9.3 per cent in April 2022, and are now approximately 40 per cent above their previous peak (2008) level, as the ending of COVID-19 restrictions and full re-opening of the economy gave rise to a sharp fall in the availability of rental properties.[8]

In recent years, both house prices and rents have grown faster than incomes. The pace of growth in household incomes has been considerably slower than both house prices and rents since the financial crisis, adding to housing affordability pressures (Chart 28). This contrasts with developments prior to the financial crisis, when house prices – but not rents – increased much faster than incomes, pointing to an important role of credit conditions in explaining housing dynamics at the time. Still, higher positive deviations from long-run averages of price-to-income

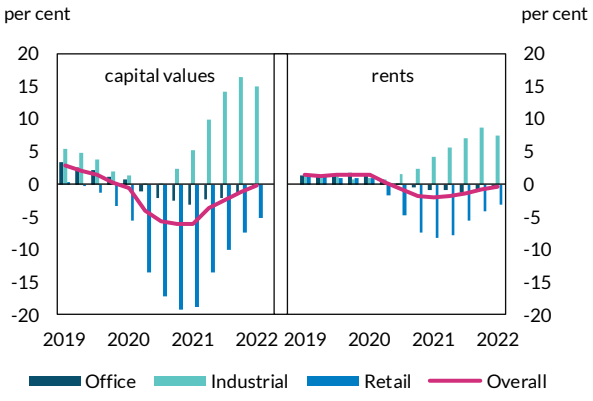
[8] According to Daft.ie data for instance, the number of properties listed for rent has fallen from an average of approximately 4,500 units during the latter half of 2020, to a historic low of approximately 850 properties at the beginning of May 2022. Moreover, this compares to an average figure of approximately 10,000 homes available to rent, at any point in time during the years 2006-21 (the period for which Daft.ie data are available). The equivalent figures for the Dublin rental market, are for average listings of approximately 3,000 units during the past 15 years, to an availability of just over 450 units in May 2022. For more details see Daft.ie Irish Rental Report Q1 2022.

ratios have historically been associated with higher probabilities of house price declines in the future, especially when shocks occur. This points to evidence of emerging cyclical vulnerabilities in the housing market against a backdrop of expected increased interest rates internationally.

While the decline in Irish commercial real estate valuations has moderated, there are signs of an uneven recovery across the market following the COVID-19 shock. The pace of decline in CRE capital values and rents continued to ease during 2021 and into the opening quarter of 2022 as the sector starts to recover from the effects of the pandemic. Overall, capital values were 0.1 per cent lower year-on-year at the end of Q1 2022 compared to a fall of 6.1 per at the same time last year (Chart 29). Aggregate figures mask a heterogeneity in developments at a sectoral level. The largest declines continue to be observed in the retail sector, where broader structural trends such as the increased popularity of on-line shopping and other changes to shopping habits were amplified throughout the pandemic. The weakness of demand for retail premises, and to a lesser extent office space, in the last couple of years has resulted in a notable increase in vacancy rates within these sectors (Chart 30). While the absence of public health restrictions is likely to assist in the normalisation of consumer spending patterns and consumption to the benefit of the retail sector, any reduction in real incomes from higher inflation will act as a drag on spending in the quarters ahead.[9]

Chart 29: The pace of decline in Irish CRE capital values and rents continued to moderate during 2021 and into 2022

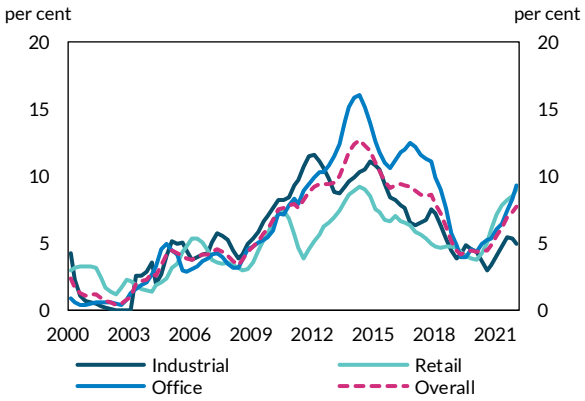
Annual change in CRE capital value and rental growth indices



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 2022Q1.

Chart 30: CRE vacancy rates rose during the pandemic, with notable increases in the availability of retail and office space

Irish CRE vacancy rate: overall and by sector



Source: MSCI.
Notes: Chart is based on a 4Q rolling average of the observations. Last observation 2022Q1.

The office sector remains vulnerable to both cyclical and structural vulnerabilities as a result of the COVID-19 shock. The widespread adoption of remote working over the past couple of years is likely to persist to some degree for a large number of Irish firms and MNEs. With more staff working from home at any one time, and a greater willingness amongst firms to adopt the practice for at least part of the working week, a degree of uncertainty around future office space requirements has emerged. This is particularly relevant given the potential volume of additional

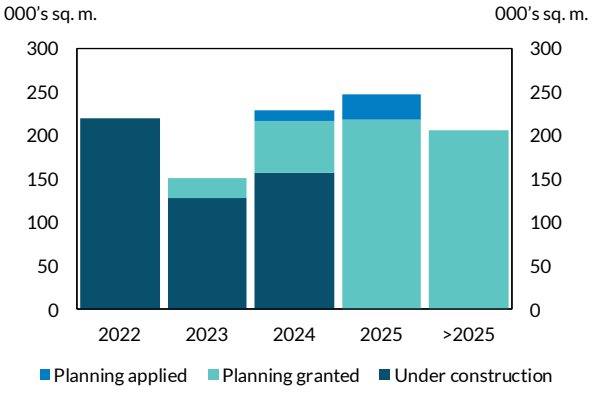
[9] In contrast, capital values and rents in the industrial and logistics sector have grown strongly throughout the pandemic (Chart 29), as vacancy rates have begun to decline (Chart 30). This is due to a range of factors including a shortage of modern, well-situated facilities, the increased adoption of e-commerce and a re-evaluation of just-in-time supply chains which have experienced significant disruption related to COVID-19 and more recently the invasion of Ukraine.

Dublin office space due to be delivered to the market over the next couple of years (Chart 31), at a time when vacancy rates in the sector have already risen sharply in recent quarters (Chart 30).

Owing to site closures and other pandemic-related disruptions, a large amount of delayed new office supply is expected to be added to the market in the coming years. According to the most recent data, there is currently over 1 million square metres of new Dublin office space at various stages of the supply pipeline, approximately half of which is already under construction and scheduled for completion between 2022 and 2024 (Chart 31).[10] With well over 200,000 square metres of additional office stock due for delivery in 2022 alone, it is estimated that lettings of over 300,000 square metres would be required this year to absorb this volume of additional space.[11] This would require take-up to return to pre-pandemic levels, compared to an average annual take up of about 150,000 square metres of Dublin office space during 2020 and 2021 (Chart 32). While there was evidence that the office market was undersupplied prior to the COVID-19 outbreak, given structural changes in how people and companies work in its aftermath, there is higher uncertainty around the capacity of the market to absorb this level of additional space over a relatively short period.

Chart 31: The supply pipeline for the Dublin office market is strong despite structural challenges

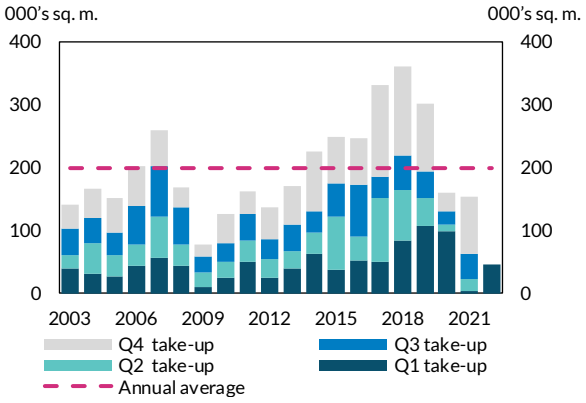
Dublin office space supply pipeline



Source: CBRE Research.
Notes: Last observation April 2022.

Chart 32: Letting activity in the Dublin office market has picked up notably in recent quarters from the low levels of take-up during the pandemic

Dublin office take-up



Source: CBRE Research.
Notes: Last observation 2022Q1.

Notwithstanding a notable pick-up in letting activity in the period since the last *Review*, the recent take-up of Dublin office space remains well below pre-pandemic levels. Approximately 90,000 square metres of space was leased in the final three months of 2021, the highest quarterly amount since the beginning of the pandemic, bringing the total for the year to over 150,000 square metres. This equates to about 75 per cent of the average annual take-up across the last two decades (Chart 32). A further 46,000 square metres of office space was leased in Q1 2022, which represents a substantial increase on the 4,000 square metres occupied in Q1 2021 and is broadly in line with average first quarter take up since 2003. As a result of the slowdown in letting activity

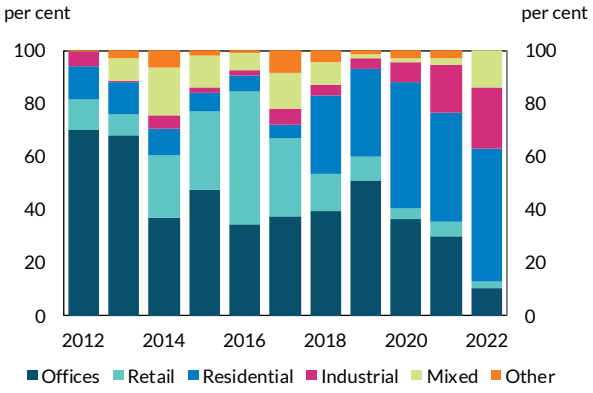
[10] According to CBRE, approximately 20 per cent of the Dublin office space in the supply pipeline as of April 2022 is already pre-let.
[11] The estimate of 300,000 square metres of lettings required to absorb the space due to be delivered in 2022 is based on an assumption that a significant share of tenants who lease new space will move out of existing premises which then become vacant and in need of new tenants. See BNP Paribas Real Estate Q4 2021 Office Market Report, February 2022, for more details.

during the pandemic, the office vacancy rate has registered a sharp increase, from less than 5 per cent at the end of 2019 to over 9 per cent according to the latest data (Chart 30).[12]

Despite the heightened uncertainty of the macro-financial outlook, investment in Irish CRE held up in the opening quarter of 2022, on the back of substantial investment activity in Q4 2021. Approximately €760 million was invested in Irish CRE assets in Q1 2022 which compares favourably with investment in the same quarter in the pre-COVID-19 period (see Chart 20 *Risks: Global repricing*). The majority (61 per cent) of the investment originates overseas, with investors from the US and Germany particularly active. Institutional investors and, to a lesser extent, property companies and other collective vehicles were the main categories of investors. Similar to previous quarters, the residential sector attracted the largest portion of this funding, underlining the importance of this type of investment to the housing market (Chart 33).

Chart 33: Residential property assets continue to be popular amongst CRE investors

Breakdown of CRE investment by sector



Source: CBRE Research.
Notes: 2022 data refers to Q1 data only.

[12] Separate data from CBRE, suggests that the pick-up in letting activity which occurred in the closing months of 2021 and into 2022, has seen the Dublin office vacancy rate fall back a little towards 8 per cent in Q1 2022, from over 9 per cent a year earlier.

Overall Risk Environment

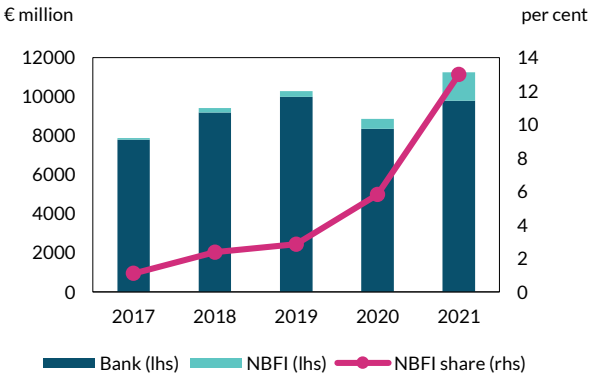
While pandemic-related risks have dissipated since the last Review on the back of a strong recovery, medium-term risks facing the financial system have increased and are amplified by the war in Ukraine. The assessment of the overall macro-financial outlook has become more challenging in light of the series of unexpected shocks affecting the global economy in recent years. Following a rapid economic recovery from the pandemic downturn, the global outlook is now clouded by the implications of the invasion of Ukraine by Russia. International growth forecasts have been revised downwards, inflationary pressures have intensified and expectations of further monetary policy normalisation have led to tighter financial conditions since the last Review. This follows a prolonged period of rising asset valuations amid a search for yield environment, increasing the global economy's underlying vulnerability to tighter financial conditions. Domestically, the economy has been approaching its productive capacity on the back of the strong pandemic recovery, but the outlook has also deteriorated in recent months. Credit expansion has recovered from pandemic lows, albeit it has been uneven across sectors and aggregate credit developments remain relatively muted. In property markets, house prices have continued to grow strongly, while CRE prices have stabilised. Overall, looking ahead, the domestic environment points to the potential for a continued gradual build-up of cyclical vulnerabilities, albeit this trajectory could be interrupted by downside risks to the global economic outlook.

The macro-financial outlook in Ireland is characterised by high uncertainty, with evidence of cyclical vulnerabilities gradually building in some sectors. 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 assesses these factors holistically (see Box B), to inform its overall judgement around cyclical macroprudential policy decisions, such as the CCyB (see *Policy: CCyB*).

Credit growth has recovered from pandemic lows, albeit it has been uneven across sectors. New mortgage lending has recovered to exceed pre-pandemic levels, with an increased role for non-bank lending (Chart 34). The increased volume of new lending for house purchases primarily relates to credit provision for first-time buyers (Chart 35). While growth in bank credit to the overall NFC sector has increased to pre-pandemic levels, new loans to SMEs are increasing at a slower rate (Chart 36). Overall, aggregate credit growth remains relatively muted but has been on an upward trajectory recently (Chart 37). 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 (see *Resilience: Non-bank financial sector*). Looking ahead, forward-looking indicators such as credit enquiries on new loan applications suggest a pick-up in credit activity following the reopening of economic activities after the COVID-19 shock.

Chart 34: NBFI new mortgage lending has increased in 2021

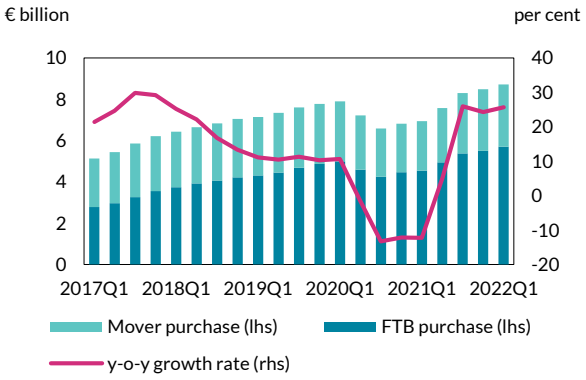
New mortgage lending by banks and NBFI sector



Source: Central Bank of Ireland.
Notes: NBFI refers to non-banks financial intermediaries. Due to omission of certain smaller lenders, totals reported will not match precisely with definitions of total mortgage drawdowns used in other sources. Last observation 2021 H2.

Chart 35: New lending to Irish residents for house purchases has increased since the last *Review* and recovered from pandemic lows

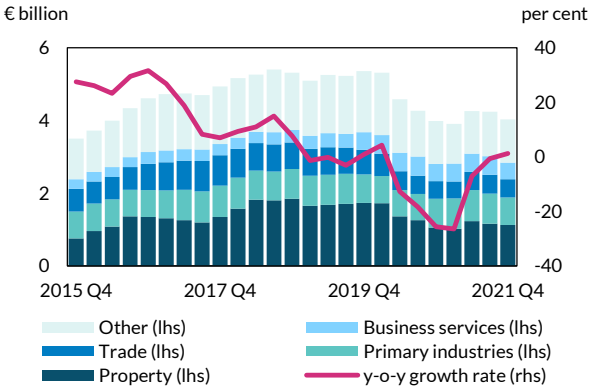
Quarterly value of new mortgage lending provision



Source: Banking and Payments Federation Ireland and Central Bank of Ireland calculations.
Notes: FTB refers to first-time buyers. The chart shows 4-quarter rolling sums, on which y-o-y growth rate is calculated. Last observation 2022Q1.

Chart 36: Banks' new lending to SMEs has not fully recovered from the COVID-19 shock

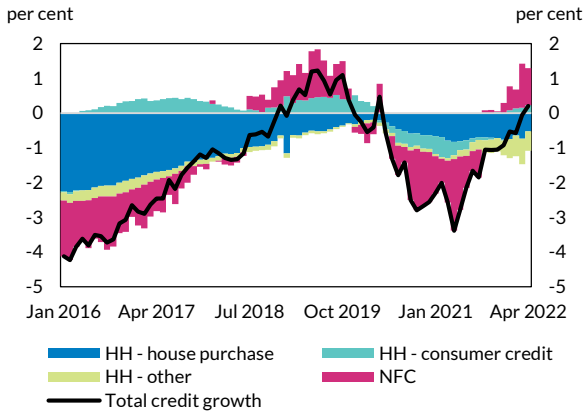
New bank lending to SMEs by activity type



Source: Central Bank of Ireland Money and Banking statistics, 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 SMEs exerting Financial Intermediation services. Last observation 2021 Q4.

Chart 37: Annual growth rate of outstanding bank credit is above the pandemic low but overall remains relatively muted

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 April 2022.

In real estate markets, house prices have continued to grow very strongly, while CRE prices have stabilised. Post-pandemic house price growth has been strong, in line with international trends, driven primarily by supply-demand imbalances. In the CRE market, the pace of decline in Irish capital values and rents continued to moderate during 2021 and into the opening quarter of 2022 following the COVID-19 shock. More broadly, while financial conditions in Ireland overall remain relatively favourable, they have tightened since the last *Review* and remain vulnerable to a reversal of risk premia or broader market turbulence (Chart 38).

The domestic economy has been approaching its productive capacity on the back of the strong pandemic recovery, but the outlook has deteriorated following the Russian invasion of Ukraine. In the labour market, employment has rebounded very strongly to exceed pre-pandemic levels. The job vacancy rate has also remained high, following significant increases through 2021. Looking ahead, the war in Ukraine has led to a material increase in expected inflation and a downgrade in expected growth, but the economy is still projected to continue to expand at a strong rate in 2022 and a tightening labour market is expected over the next few years.

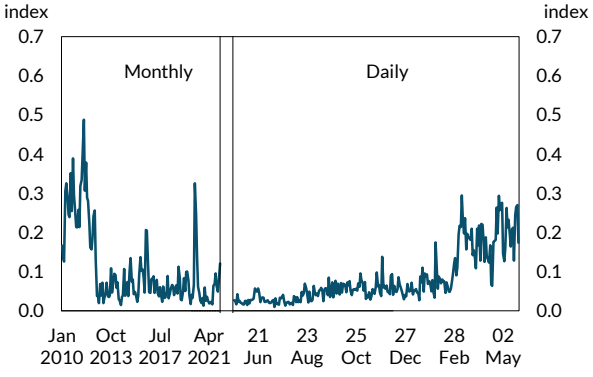
Globally, following a prolonged accommodative period, financing conditions have tightened. As a small, highly globalised economy, Ireland is particularly sensitive to global macro-financial developments. Prolonged accommodative financial conditions in the previous decade, rising asset prices and increased risk-taking in global financial markets, amidst a search for yield environment, have increased the global economy's underlying vulnerability to tighter financial conditions.

Analytical tools used to assess the evolution of downside risks to the domestic macro-financial outlook suggest that, as the immediate pandemic shock has been dissipating, medium-term downside risks have increased slightly. The growth-at-risk framework can be used to assess future tail macroeconomic outcomes given current economic activity, financial conditions and cyclical systemic indicators. These models do not, however, account for structural changes occurring in the broader macro-financial environment. Estimated downside tail risk over the medium-term horizon, based on the 5th percentile at risk for the three year growth forecast for GNI*, has deteriorated in recent months. Still, estimated tail risk remains well below the levels which preceded the 2008 global financial crisis, pointing to more contained macro-financial vulnerabilities (Chart 39).

There is potential for multiple risk factors to materialise in tandem, due to common underlying triggers. Such triggers include, amongst others, further disruptions from a prolonged war, further COVID-19 shocks including new variants of concern or spillovers to the global economy arising from an abrupt slowdown in China, or additional supply-side shocks to inflation with implications for the path of monetary policy tightening internationally.

Chart 38: Irish financial market stress has increased in recent months

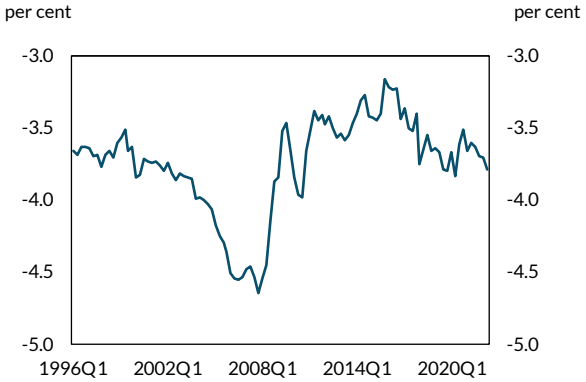
Irish Composite Stress Index



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., 2021). Daily frequency. Left-hand panel includes monthly observations, while right-hand side panel includes daily observations. Last observation 20 May 2022.

Chart 39: GNI* growth tail risk has deteriorated since the last *Review*

GNI* growth-at-risk T+12Q (annualised)



Source: Central Bank of Ireland calculations.
Notes: The models are estimated with data up to 2021Q4 and fitted until 2022Q1 by assuming no change to the alternative credit gap since 2021Q4 (where data updates are not yet available).

Box B: Identifying and assessing systemic risks in Ireland

By Macro-Financial Division

The aim of systemic risk assessments is to identify and measure the potential for negative macro-financial outcomes ("tail risks") to occur in the future. Evaluating the nature and magnitude of risks facing the financial system in a forward-looking, systematic manner is a critical input to the setting of macroprudential policy. This Box summarises the Central Bank's overall approach for assessing systemic risks.[1] The analytical toolkit supporting the Central Bank's judgements around the risk environment has been – and will continue to – evolve over time, building on global academic and policy advancements in the area of systemic risk assessment.

There are four main elements to the Central Bank's risk identification and assessment framework (Figure A).

Firstly, there is the monitoring of selected indicators that have historically been good leading indicators of financial system stress in Ireland and globally. These indicators – which cover developments in credit markets, asset prices, macroeconomic conditions as well as the global macro-financial environment – are typically considered relative to specific thresholds.[2] Some of these indicators are presented in the Systemic Risk Pack and are categorised across three broad headings, namely structural risks, cyclical risk and real estate risk.[3] The monitoring of indicators acts as a starting point for identifying potential macro-financial developments that could point to growing or receding risks, in a consistent, systematic manner.

Second, the continuous development of the analytical and modelling toolkit allows for combining signals from these indicators into quantitative, forward-looking measures of downside risks. This builds on a growing literature that seeks to use current macro-financial conditions to forecast the tail of the distribution of potential future macro-financial outcomes. For example, forward-looking quantitative measures of tail risks can be assessed for a variety of macro-financial series (e.g. GDP-at-risk, CRE-at-risk). Similar toolkits include early warning models of future crises or models that seek to estimate the deviation between current developments in credit and asset prices from their trends in order to assess the magnitude of imbalances. Insights from quantitative models and analytical tools are important inputs to inform judgements around the risk environment.

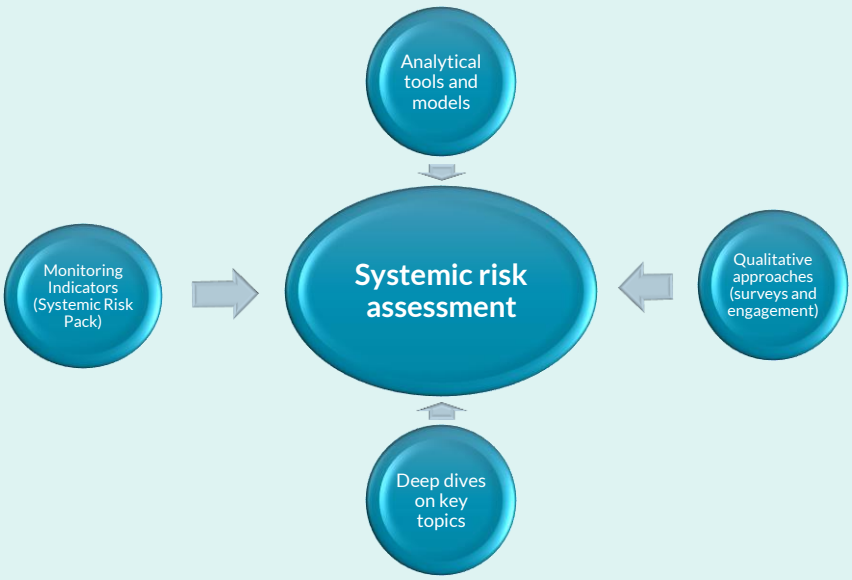
Third, qualitative approaches are employed, including the use of surveys and engagement with a range of stakeholders to understand macro-financial conditions. These surveys provide timely information on specific aspects of the economy or financial system including, for example, market participants' expectations around topics such as house prices or housing market conditions. Moreover, engagement with stakeholders through workshops and consultations as well as Central Bank staff's engagement in wider European or Eurosystem committees also provide timely qualitative information on the current risk environment.

Fourth, deep dives on specific topics are undertaken to complement regular risk analysis, especially where structural changes in the economy or financial system might mean that historical data may potentially give imperfect signals around the magnitude or scale of future risks. For example, in 2020, the Central Bank undertook a deep dive study into Irish property funds and their role within the broader CRE market in order to understand the magnitude of risks related to leverage, liquidity mismatches and interconnectedness with other parts of the domestic economy and financial system.[4] Relatedly, last year, the Central Bank examined the potential structural implications of the COVID-19

shock on the broader CRE market, including the possible impact of increased remote working on the office market in Ireland.[5] Another example is the multi-year work programme that the Central Bank has initiated to deepen its understanding of climate-related financial risks. These deep dives are particularly important in the context of a constantly evolving economy and financial system, where history might not prove a good guide to the future.

Taken together, these four elements are used to inform judgements on the nature and magnitude of risks facing the financial system in Ireland. Given the importance of clear and transparent communication in relation to systemic risk assessment, the underlying analyses are published in Central Bank publications such as the Financial Stability Review as well as Financial Stability Notes, Economic Letters or Research Technical Papers. Reflecting the changing structure of the economy and financial system, both internationally and in Ireland, the Central Bank's risk assessment framework will continue to adapt and evolve over time.

Figure A: High level overview of systemic risk identification and assessment toolkit



[1] See Hallissey, N., Killeen, N and M. Wosser (2022), "Identifying and assessing systemic risks in Ireland", Central Bank of Ireland Financial Stability Notes, Vol. 2022, *forthcoming*.
[2] The thresholds can include comparisons to historical values, European averages or, in some cases, analytically derived thresholds.
[3] See the Central Bank of Ireland's Systemic Risk Pack for further details on the indicators used.
[4] See, for example, Daly, P., Moloney, K. and S. Myers (2021), "Property funds and the Irish commercial real estate market", Central Bank of Ireland Financial Stability Notes, Vol. 2021, No. 1.
[5] See, for example, Kennedy, G., Killeen, N., Skouralis, A., Velasco, S. and M. Wosser (2021), "COVID-19 and the commercial real estate market in Ireland", Central Bank of Ireland Financial Stability Notes, Vol. 2021, No. 4.

Resilience

Non-financial corporations

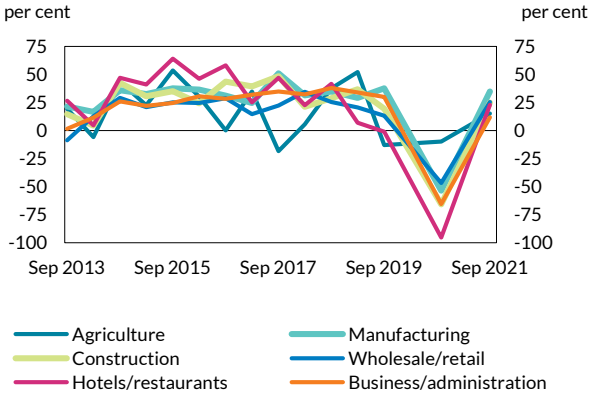
Irish businesses continue to recover from the pandemic downturn. Turnover and profitability indicators have been improving across all sectors, while improved public health conditions have facilitated recovery for those hardest hit by the pandemic. However, inflation is presenting new challenges for business profitability. A cohort of firms continued to claim government supports into spring 2022 and many firms have deferred liabilities built up during the pandemic. Corporate insolvencies are likely to rise in the coming months from their currently unusually low levels, as government support ceases and payment demands from creditors intensify. Policy frameworks that facilitate corporate restructuring are important to mitigate the risk of inefficient liquidations.

SME turnover levels have been recovering (Chart 40). The net share of SMEs reporting an increase in turnover fell dramatically at the start of the pandemic, but rebounded strongly in 2021. This was true even for badly affected sectors such as Accommodation & Food. The sharp improvement in the period to September 2021 highlights that a positive recovery picture had been emerging, even before the general relaxation of public health measures in early 2022.

SME profitability has also been improving (Chart 41). The net share of SMEs reporting that they were profitable increased during 2021 in all sectors. The latest data show a significant rebound on pandemic lows, with the net share hitting approximately 45 per cent. However, there is evidence of a slower recovery in the Accommodation & Food sector. This sector stands out as having a very large deterioration in profits during the acute phase of the crisis and potentially being on a longer path towards recovery.[13]

Chart 40: SME turnover levels are recovering

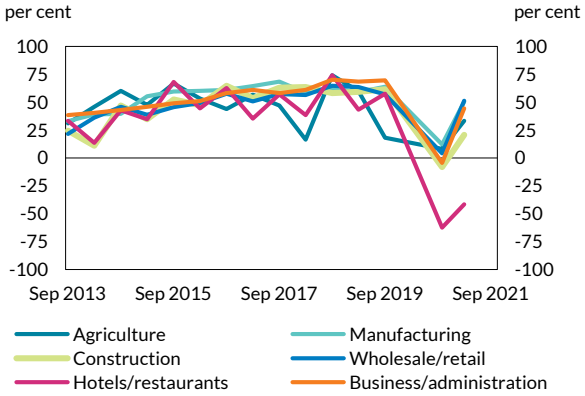
Net share of SMEs reporting increased turnover by sector



Source: Department of Finance SME 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 41: SME profitability has also been improving

Net share of SMEs reporting profitability by sector



Source: Department of Finance SME Credit Demand Survey.
Notes: The share of SMEs reporting profitability over the previous six months minus the share of SMEs reporting loss-making over the previous six months by sector.

Inflation is presenting new challenges for firm profitability (Chart 42). Survey data for Irish small businesses show that wage costs and the costs of purchases make up 70 per cent of expenditure on average, while direct energy costs make up only 10 per cent. Simulation of a 5 per cent wage

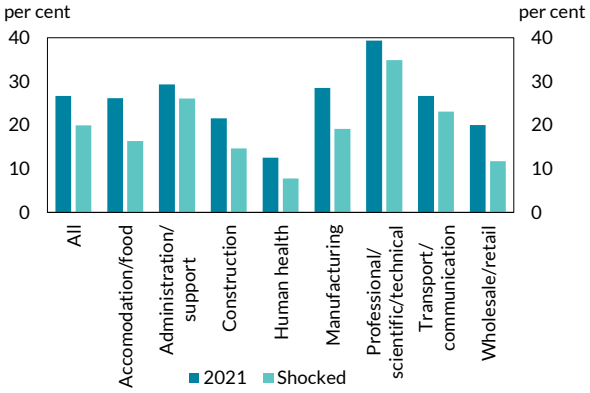
[13] See Durante and McGeever (2022) for further analysis on SME trading performance and credit conditions.

increase and 30 per cent increase in energy bills and purchase costs suggests that – if revenues rose by only 2 per cent – median profit margins would fall 7 percentage points, while 12 per cent of SMEs would become loss-making. This cost dynamic is a strong motivation to raise prices, which will be more feasible for businesses with more market power or in product lines with lower price elasticities. In turn, higher inflation may depress demand among consumers as they reconsider their spending priorities. Euro area survey data up to March 2022 suggests that higher costs for materials, energy, and wages are indeed dragging on business profitability.[14] Inflation also brings expectations of interest rate rises, which would raise debt-servicing costs for the half of SME loans that have variable interest rates.[15]

SME leverage has held steady through the pandemic (Chart 43). Despite a sharp deterioration in trading performance during the pandemic, the level of indebtedness of firms to financial creditors has been stable. New lending also remains down on 2019 levels. This is unlike the experience of firms in several other euro area countries, where government support to firms were mainly debt-like and channelled through the financial sector. The approach of the Irish government, which relied relatively heavily on wage subsidies and other grant support, is likely to mean debt overhang risks are less prevalent in Ireland during the ongoing recovery from the pandemic.

Chart 42: Inflation is presenting new challenges for firm profitability

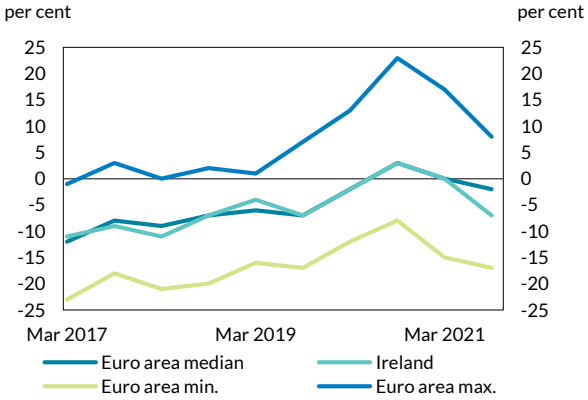
Average gross profit rate realised in 2021 and under hypothetical inflation shocked scenario by sector



Source: Department of Finance Credit Demand Survey and CSO.
Notes: Average gross profit to turnover realised by SMEs in 2021 and adjusted for 30 per cent energy, 30 per cent purchases, 2.3 per cent wage cost inflation (consistent with the Central Bank's Quarterly Bulletin forecast), and a 2 per cent turnover increase by sector.

Chart 43: SME leverage has held steady through the pandemic

Net share of SMEs reporting increased leverage



Source: ECB SAFE.
Notes: The share of SMEs reporting an increase in their debt-to-assets ratio in the previous six months minus the share of SMEs reporting a decrease.

SMEs continued to defer liabilities into autumn 2021, albeit at a lower rate (Chart 44). Tax was the most frequently deferred liability in each of three pandemic-era survey waves. This is consistent with aggregate figures showing that there was over €3bn of firm liabilities in Ireland's "tax warehousing" scheme. Liabilities to financial creditors (including banks) were the next most common deferral, though loan forbearance in 2021 was significantly smaller in scale than the payment break initiative during the early months of the pandemic (see *Resilience: Domestic retail banks).*

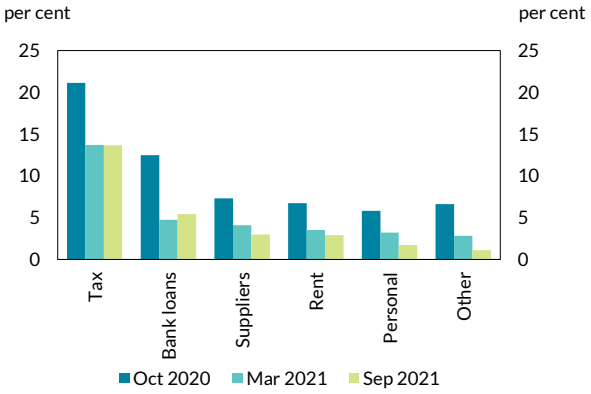
Tax deferrals have been an important source of finance (Chart 45). In sectors such as Accommodation & Food and Construction, the amount of tax liabilities deferred between 2020Q2

[14] See the March 2022 wave of the Survey on the Access to Finance of Enterprises (SAFE).
[15] See FSR 2021-II.

and 2021Q4 was higher than new bank lending volumes. The size of warehoused tax liabilities far outstrips lending under the COVID-19 Credit Guarantee Scheme, which is likely to amount to less than €1bn when the scheme is due to end in June 2022. Tax warehousing was likely preferred by SME borrowers due to it being accessible, flexible in its repayment schedule, and lower-cost than other types of borrowing. Repayment schedules are to be agreed in 2022, with payment demands commencing in 2023.

Chart 44: SMEs continued to defer liabilities into autumn 2021, albeit at a lower rate

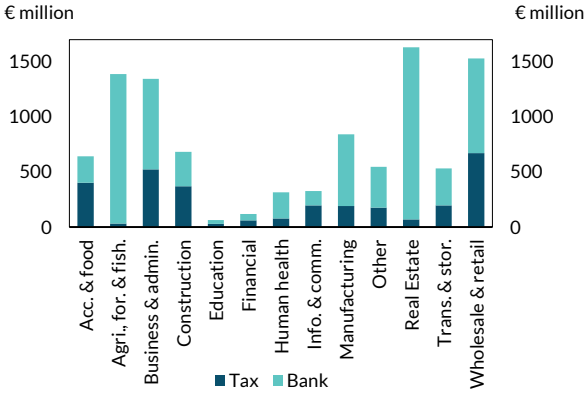
The share of SMEs deferring liabilities by liability type



Source: Department of Finance Credit Demand Survey.
Notes: The share of SMEs reporting that they deferred liabilities during the previous six months by liability type.

Chart 45: Tax deferrals have been an important source of liquidity finance

New bank lending and tax warehousing volumes during the pandemic by sector



Source: Central Bank of Ireland and Revenue Commissioners.
Notes: Gross new lending by Irish registered banks to Irish SMEs between April 2020 and December 2021 by sector and tax liabilities warehoused up to December 2021 by sector.

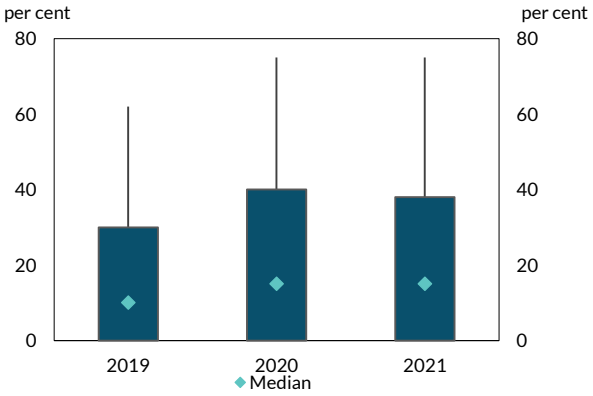
SME cash holdings remain above pre-pandemic levels (Chart 46). This has been supported by a strong turnover recovery for many firms, the heavy utilisation of grants, the deferral of many liabilities, and policy efforts to support the flow of credit to firms through the financial sector. To date, vulnerable firms have been able to meet or defer liabilities and so avoid pressure to liquidate. Previous work by the Central Bank indicates that the majority of businesses financially distressed due to the pandemic are likely to have a viable trading future under a baseline economic recovery (see FSR 2021:II).

A cohort of firms have claimed wage subsidies throughout the pandemic (Chart 47). Approximately 60 per cent of Accommodation & Food companies claimed the wage subsidy at some point during the pandemic, while about 20 per cent claimed the support in all six periods in which the subsidy was available.[16] Administrative & Support Services, Arts, Entertainment & Recreation, and Other Services are three other sectors with high levels of utilisation. In contrast, sectors like Construction and Wholesale & Retail have relatively few firms claiming in all periods.

[16] The seven periods are April-September 2020 and each quarter from 2020Q4 to 2022Q1. See Lambert, McGeever, and O'Brien (2022, forthcoming).

Chart 46: SME cash holdings remain above pre-pandemic levels

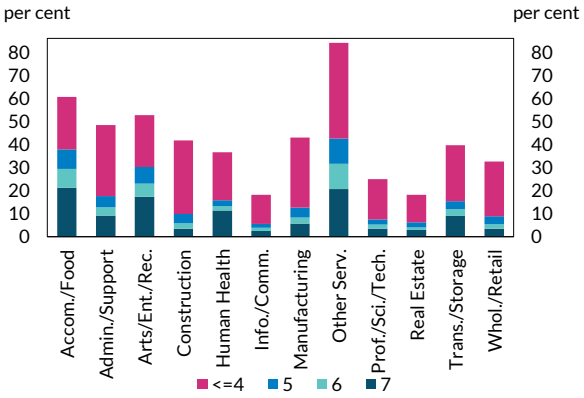
The distribution of SME cash-to-assets



Source: Department of Finance Credit Demand Survey.
Notes: The ratio of cash and cash equivalents to total assets in each of three survey waves.

Chart 47: Up to a fifth of firms in the most-exposed sectors have claimed wage subsidies throughout the pandemic

Share of active companies in receipt of the subsidy by number of claiming periods and sector



Source: Revenue Commissioners and CSO.
Notes: The share of active public or private limited companies that received the wage subsidy by sector and number of periods on the subsidy.

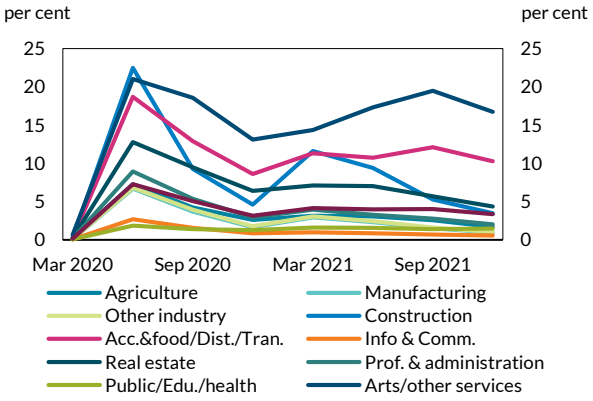
The tapering of grant support will remove an income flow for a large number of businesses. Wage subsidies have made up a significant share of wage costs in some sectors (Chart 48). Quarterly data from the CSO show that the Accommodation & Food, Arts, Entertainment & Recreation, and Other Services sectors made significant use of the subsidy up to end-2021. As of January 2022, there were almost 25,000 (or approximately one-in-twelve) businesses still registered for the Employment Wage Subsidy Scheme (EWSS). As support measures are withdrawn, some of these businesses may not be able to meet a full wage bill as well as other existing outgoings. For these businesses, their choices include cost cutting measures, employee layoffs, the restructuring of liabilities, or –ultimately – closure.

Interest rate rises would take time to filter through to SME borrowing costs. Approximately half of the balances owed by SMEs to Irish retail banks relate to loans with fixed interest rates. This means that a sudden rise in interest rates would only affect many borrowers when loans are being renewed. Approximately half of loan balances to the Accommodation & Food and Wholesale & Retail sectors are fixed, while Agriculture has a relatively low fixed rate share of around 30 per cent.

The profitability of large corporates is still below pre-pandemic levels (Chart 49). Large corporates have in general displayed a remarkable resilience in the face of the economic crisis. A small number of firms in exposed sectors experienced extreme declines in turnover during the acute phase of the pandemic, but government supports helped reduce losses and these firms have generally trimmed losses or returned to operating profitability. Average operating profit margins are 4.2 per cent, down on 6.6 per cent compared to the pre-pandemic level.

Chart 48: Wage subsidies have accounted for a significant share of wage costs in some sectors

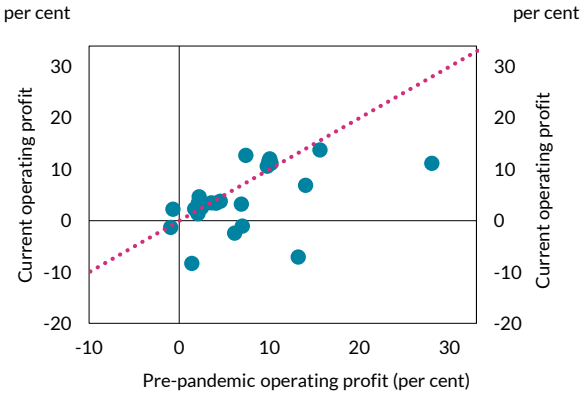
Share of wage costs met by the subsidy by sector



Source: CSO.
Notes: The share of wage costs met by the wage subsidy by sector.

Chart 49: Profitability was resilient for most large corporations during the pandemic

Operating profit margins in pre-pandemic and current periods



Source: Companies' Registration Office.
Notes: Pre-pandemic full-year operating profit-to-turnover ratio versus most recent full-year operating profit-to-turnover ratio for the 25 largest Irish-parent non-redomiciled non-financial corporates.

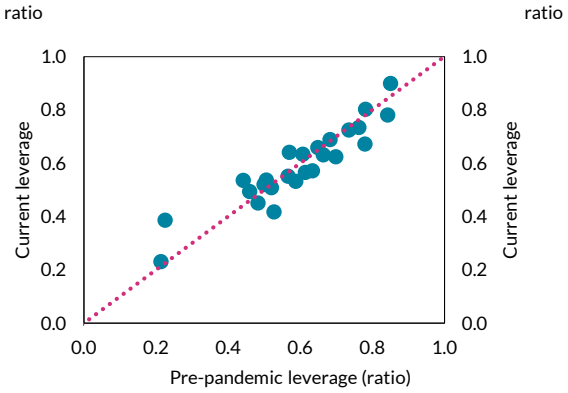
The cash holdings of large corporates have fallen, but remain above pre-pandemic levels. The initial response of large corporates to the pandemic was to increase their cash holdings sharply, likely reflecting precautionary motives and the stalling of investment decision-making. As trading conditions have improved and pandemic-related uncertainty subsided, firms are reducing their cash holdings. The median cash-to-assets ratio was 8 per cent prior to the pandemic, rose to 12 per cent at the peak, and is now running at 10 per cent.

Large corporate leverage remains in line with pre-pandemic levels (Chart 50). Resilient trading conditions for most firms, government support, and accommodative financing conditions in capital markets have allowed firms to hold their leverage broadly steady. The median and average change in leverage is zero. The largest increase relates to a firm with relatively low pre-pandemic leverage and was the result of a merger. Nonetheless, a cohort of large corporates have leverage ratios in excess of 0.75 and may be sensitive to asset value corrections or significant increases in debt servicing costs.

Insolvencies are likely to rise from currently unusually low levels, as government support ceases and payment demands resume (Chart 51). The rate of insolvencies in Ireland remains unusually low, likely due to the impact of government support and creditor forbearance in boosting firm liquidity. The tapering of government support and the intensification of payment demands is likely to result in some weak firms entering liquidation over the coming months. Insolvencies have risen significantly in the United Kingdom, a country with a very similar company law framework to Ireland's and where government supports to businesses largely ceased by autumn 2021.

Chart 50: Large corporate leverage held steady

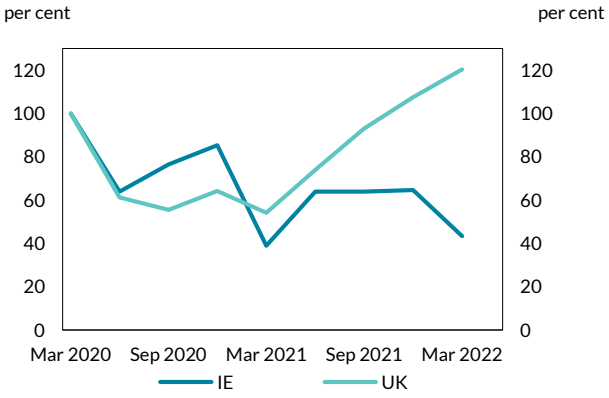
Liabilities-to-assets ratio



Source: Companies' Registration Office.
Notes: Pre-pandemic liabilities-to-assets ratio versus most recent liabilities-to-assets ratio for the 25 largest Irish-parent non-redomiciled non-financial corporates.

Chart 51: Insolvencies may rise as government supports cease and payment demands resume

Corporate insolvency rates, indexed to 2019 levels



Source: Companies Registration Office and UK Insolvency Service.
Notes: The rate of corporate insolvency by jurisdiction, indexed to 2019 levels. IE and UK figures relate to creditors' voluntary and court-ordered liquidations.

Policy frameworks that facilitate restructuring requests from distressed businesses are important to avoid inefficient liquidations. The introduction of the Small Company Administrative Rescue Process (SCARP) is a welcome step in promoting the orderly restructuring of distressed small companies. International research shows that barriers to accessing legal restructuring tools lead to excess liquidations among distressed companies, so initiatives to reduce restructuring costs and barriers are likely to support vulnerable yet viable businesses in resolving their financial distress and continuing to trade.[17] However, the scheme remains untested, with an extremely small caseload at the time of writing, and it is plausible that even the reduced costs of SCARP will pose barriers for distressed micro enterprises. Policies that aim to reduce the potential for individual, uncoordinated, creditor actions to lead to unnecessary liquidations will play an important role in the final fall-out from the pandemic among Irish businesses.

[17] See Greenwood et al. (2020).

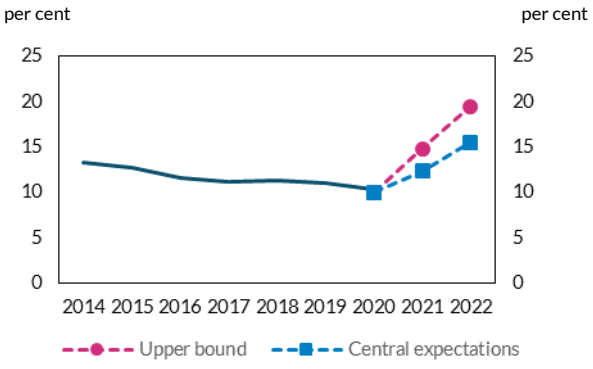
Households

Inflationary pressures are affecting the living standards of households. The debt service capacity of mortgage borrowers is vulnerable to inflation on non-housing expenditure and to potential interest rate rises as well as – in more adverse macroeconomic scenarios – possible labour market shocks. The resilience of household borrowers, however, is safeguarded by four factors. Firstly, the household sector has built up significant liquidity buffers during the pandemic. Secondly, although the cost of living has been increasing, income growth in most borrower-concentrated sectors had outpaced inflation up to end-2021. Thirdly, the mortgage measures have kept household indebtedness at sustainable levels. Finally, rapid house price growth has built additional equity for existing mortgagors, providing a cushion to potential house price shocks in the event of a downturn.

Inflationary pressures are resulting in cost of living challenges for households. Due to sharp increases in energy prices (see *Risks: Slower growth and higher inflation*), the aggregate share of household expenditure on energy and transportation is expected to rise significantly. Under an assumption of flat total expenditure, these items would rise from 10 per cent to between 15 and 20 per cent of total spending by end-2022 (Chart 52). These short-run pressures are projected to reverse a decade-long decline in the share of energy and transport in total household expenditure. Given that both expenditures are essential, these increases will impose pressure on many household budgets.

Chart 52: The cost of living has increased significantly since the pandemic

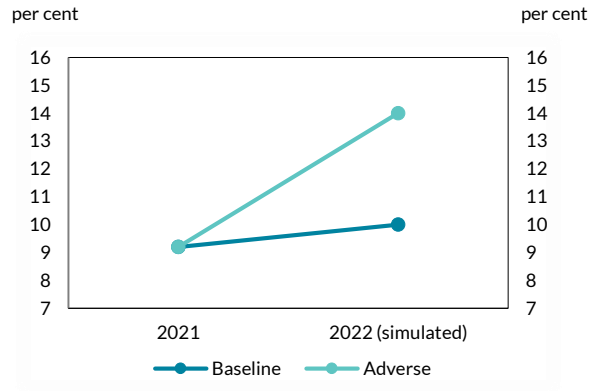
Share of household expenditure on energy including transportation



Source: CSO.
Notes: Energy and transport expenditure includes average household expenditure on fuel, light, electricity, operation of personal vehicles and transportation services. Total expenditure is assumed to remain constant. It is possible that households will change their energy use depending on the elasticity of demand for energy and transportation. We simulate two scenarios of estimated energy and transportation related expenditure in 2021 and 2022 using first, elasticity estimates in Labandeira et al. (2017) and then, assuming perfect inelasticity. The perfectly inelastic scenario would serve as an upper bound for increase in expenditure as it would assume no change in the consumption quantity.

Chart 53: Inflation on non-housing expenditures will challenge debt serviceability of mortgage borrowers through budget constraints

Proportion of mortgage borrowers at risk before and after the inflation shock



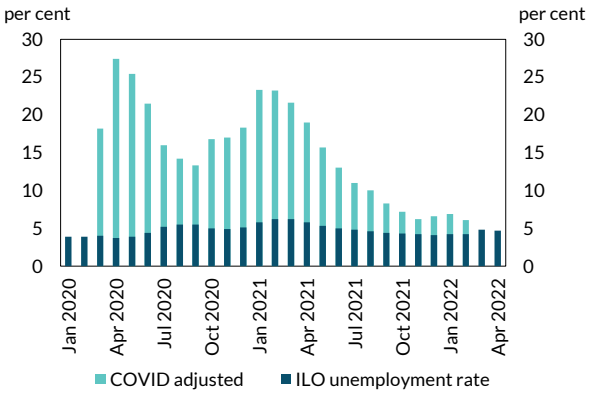
Source: Household Budget Survey and Central Bank of Ireland calculations.
Notes: *Buffer = (After Tax Income – Mortgage Payment – Non-housing essential spending).* Borrowers are defined as being "at risk" where *[Buffer < 0.1*Mortgage Payment].* Estimate of essential spending is constructed by stripping out one-off expenditure on appliances, college fees, sport, holidays and other forms of leisure from total expenditures. Inflation in 2022 is assumed to be 5.5 per cent and 9.8 per cent in the baseline and adverse scenario, respectively. Income growth is assumed to be zero in the adverse scenario and 1.7 per cent and 2.3 per cent in the baseline scenario in 2021 and 2022, respectively.

Sharp increases in goods and services inflation will have a direct effect on debt service capacity of some mortgage borrowers through budget constraints (Chart 53). Based on estimates from the Household Budget Survey, just before the pandemic 9 per cent of households were at risk of missing mortgage payments based on the amount of residual income available after essential

expenditure. Looking ahead, under central expectations, non-housing inflationary pressures would have direct effects on some borrowers' resilience, increasing the share of borrowers at-risk to over 10 per cent. Under an adverse scenario of higher inflation and flat incomes, this may rise to above 14 per cent, an increase of around one half relative to the pre-pandemic level. These estimates isolate the direct effect of inflation on mortgage distress via the expenditure channel, but do not consider the combined role of interest rate increases or wider unemployment shocks on payment distress, nor do they account for the mitigating effect that liquidity buffers may have on these pressures translating through to arrears.

Chart 54: The labour market has recovered from the shock of the pandemic

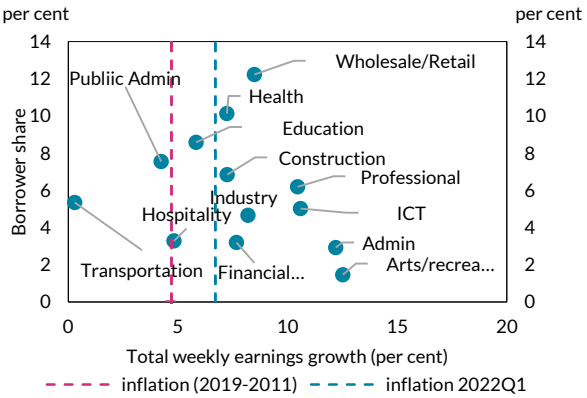
The unemployment rate and COVID-19 adjusted rate during the pandemic



Source: CSO.
Notes: As the PUP scheme has been closed on 25 February 2022, the COVID-19 Adjusted Measure of Unemployment has ceased in February 2022.

Chart 55: Mortgage borrowers' income has grown robustly as inflation picked up during the pandemic, but inflation has increased even further since

Mortgage book exposure and accumulative total weekly earnings growth between 2019 Q4 and 2021 Q4



Source: CSO, Earnings and Labour Costs and Central Bank of Ireland.
Notes: Pink dash line at 4.7% represents the cumulative HICP inflation rate between 2019 Q4 and 2021 Q4, and teal dash line at 6.7% shows the rate of inflation at 2022 Q1.

During the pandemic recovery, labour markets have performed strongly, acting as a first line of defence which is partly absorbing the negative impact of inflation on household finances. Since the lifting of pandemic-related restrictions, Irish labour markets have been recovered strongly. The standard measure of monthly unemployment was 4.7 per cent in April 2022, which was a return to its pre-pandemic level. The COVID-19 adjusted measure of unemployment[18] serving as the upper bound estimate of unemployment when all claimants of the Pandemic Unemployment Payment (PUP) were classified as unemployed, also fell back to 6.1 per cent in February 2022. This measure is down from a rate of 23 per cent in February 2021 (Chart 54). In addition, while mortgage holders are less likely to work in sectors where employment has been most affected by the COVID-19 pandemic (FSR 2021 H2), earning growth in borrower-concentrated sectors has also been robust to the inflation shock so far (Chart 55). Except for the transportation sector, which only accounts for about 5 per cent of mortgage borrowers, all other sectors had average weekly earnings growth that matches or even rose faster than inflation between the start of the pandemic and end-2021.

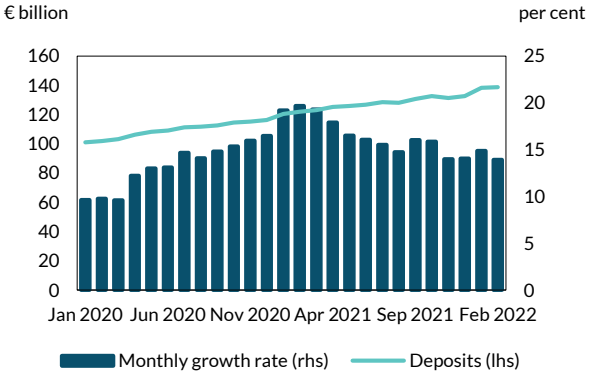
The household sector as a whole has built up significant liquidity buffers during the pandemic, providing additional protection from future income and expenditure shocks. Compared to the

[18] The COVID-19 adjusted measure of unemployment, first introduced for the March 2020 Monthly Unemployment Estimates release, estimates the share of the labour force that are not working due to unemployment, or due to COVID-19 related absences.

average level in 2019, household deposits have increased by €44 billion, to a series high of €131 billion in January 2022 (Chart 56). The flow of deposits is slower since 2021 Q2, following increased consumer spending, including the effects of rising prices, and the lifting of some COVID-19 public health restrictions in the second half of 2021. This liquidity buffer will be the second line of defence against future shocks to households' income or expenditure in an adverse macroeconomic scenario, which could lead to a combination of rising inflation, interest rate increases or renewed unemployment risks.

Chart 56: Households have been building up a significant liquidity buffer, but saving flows have started slowing down since 2021 Q2

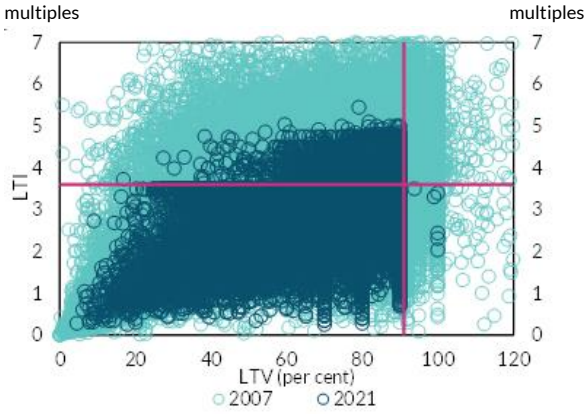
Household deposits and annualised growth rate



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

Chart 57: A dramatic fall in loans with LTIs and LTVs relative to the pre-2008 period

LTI-LTV distribution of new lending in 2007 vs. 2021



Source: Central Bank of Ireland Monitoring Templates Data (MTD) and Loan Level Data (LLD).
Notes: In-Scope (2021) PDH Lending only (2007 and 2021). Pink lines represent 90 LTV and 3.5 LTI mortgage measure limits.

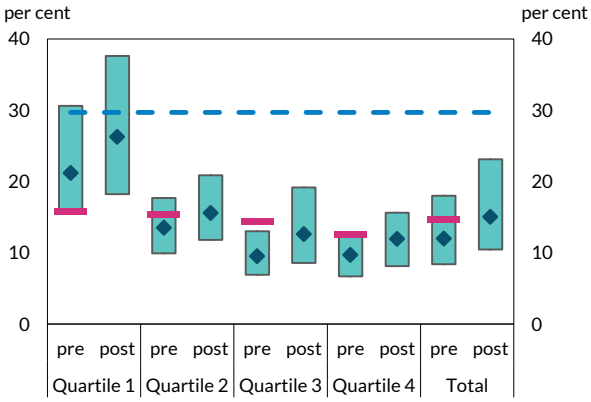
Mortgage measures implemented since 2015 have played a vital role in safeguarding borrowers' resilience in the changing landscape of the mortgage market. House prices in Ireland have been increasing rapidly since the beginning of 2021, reaching a rate of increase of 15.2 per cent in March 2022. At the same time, non-bank lenders have had an increasing market share in new mortgage origination in recent years (see Box D). These developments could have led to a potential loosening of lending standards, similar to that observed in the pre-2008 property market. These previous patterns have not materialised in riskier lending at this time, with prudent lending standards fostered by the mortgage measures. Relative to 2007, there was a notable compression of the distribution of LTI and LTV on new mortgage loans in 2021 (Chart 57).

The majority of mortgage holders appear capable of absorbing adverse macro shocks that are more severe than a baseline scenario, with pockets of vulnerability arising among lower-income borrowers. Prolonged inflation could lead to higher interest rates and significant unemployment risks (see *Risks: Domestic macro-financial*). Scenario analysis based on household survey data suggests that median mortgage servicing burdens relative to gross income (MSTI) would rise by approximately 3 percentage points (one quarter) from 12 per cent MSTI to 15 per cent MSTI under an adverse scenario combining higher interest rates and moderate unemployment shocks (Chart 58). The rise in mortgage servicing burdens is particularly pronounced for lower-income mortgage holders, rising over 5 percentage points from 21.2 per cent MSTI to 26.3 percent MSTI at the median, which would mean most mortgage holders in this group would have higher debt service burdens than those on new lending in 2021. For borrowers outside the bottom quartile,

this adverse shock to mortgage prices and incomes would continue to leave most borrowers at MSTI levels that would not imply materially concerning levels of repayment risk.

Chart 58: Lower-income mortgage borrowers began the period with the highest repayment burdens, and would be most exposed to an adverse scenario

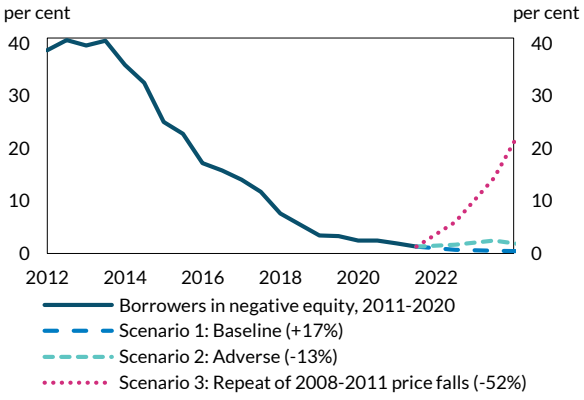
Mortgage debt servicing to gross income ratio (MSTI) under adverse macro scenarios



Source: Household Finance and Consumption Survey (HFCS), Central Bank of Ireland calculations, Central Bank of Ireland Monitoring Templates Data.
Notes: Box chart depicts the distribution of MSTI ratio between the 25Th and 75th percentiles. Key assumptions in the adverse macro scenario: 1) 5 per cent random unemployment shock on the individual level for those in employment. Individual employment incomes fall to max jobseekers benefit. 2) 2 percentage points increase in mortgage interest rate for adjustable rate mortgages only. The pink lines represent the median MSTI by income quartile, based on new mortgage lending data for 2021, In-Scope PDH lending only. Dashed blue line represents a 30 per cent threshold level, indicative of higher-risk exposures.

Chart 59: Recent price growth means there is an elevated equity cushion against house price falls

Percentage of mortgage borrowers at retail banks in negative equity under different scenarios



Source: Central Bank of Ireland.
Notes: Scenario projections are as at 30 June in each year from 2021 to 2023. In each scenario, loans amortise on schedule; however, this plays a relatively small role compared to property price fluctuations. New loans originate each year at 2018 LTVs and volumes.

Recent house price increases have led to a build-up of equity among existing mortgagors, providing an additional cushion against negative equity, which was a key trigger of mortgage defaults in previous financial crises (Chart 59). Under an adverse scenario, where house prices fall by around 13 per cent, the proportion of households falling into negative equity would rise only slightly, remaining far below the level seen in the financial crisis. Even in the particularly unlikely event of a fall in house prices of a magnitude seen between 2008 and 2011, negative equity would rise to levels seen in 2014, but, again, would remain at around half the levels seen at the peak of the financial crisis. Given the importance of both illiquidity and negative equity as triggers for default, the prospect of greater housing equity is likely to bolster mortgage borrower resilience to adverse shocks.

Domestic retail banks

The capital position of the sector remains robust with ample headroom above minimum requirements. Headroom is expected to decline in the coming years due to portfolio transfers arising from the exit of two retail banks. Asset quality has continued to improve, but pockets of commercial lending still exhibit elevated risk that may be exacerbated by inflationary pressures and uncertainty around the fallout from the pandemic. The profitability of the sector has returned to pre-pandemic levels but continues to be negatively impacted by large holdings of low yielding assets and a high cost base. Profitability may be bolstered by increased scale economies resulting from ongoing market consolidation. Potential interest rate increases, while potentially leading to repayment challenges for some borrowers, are on net expected to be beneficial for bank profitability, primarily through lending margins.

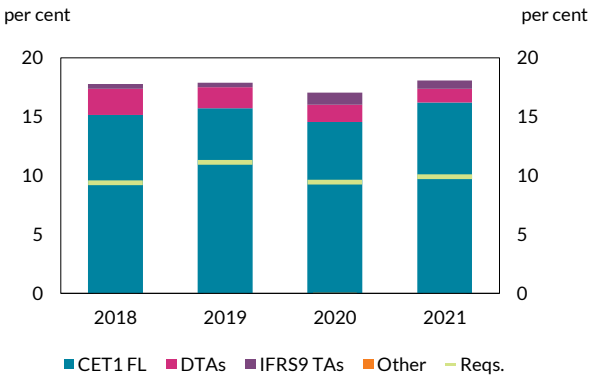
The risk-based capital position of the banking system remains resilient and well above regulatory requirements, but is expected to decline in the coming years (Chart 60). The capital position of the retail banking sector continues to remain stable, with significant buffers above regulatory requirements. The quantity of headroom CET1 capital[19] has been increasing since the onset of the pandemic, despite the associated disruptions to economic activity and the impact this had on loan loss provisioning. This in part reflects various policies that have been targeted at the banking sector to safeguard resilience and support the supply of credit to the economy, in addition to banks funnelling excess liquidity towards assets that attract relatively lower risk weights. However, the sector continues to benefit from transitional arrangements that currently account for around 1.9 percentage points of capital relief relative to a fully-loaded definition of capital. Furthermore, the portfolio acquisitions under binding agreements resulting from the exit of Ulster Bank and KBC Ireland are expected to lead to lower system-wide capital ratios. Where guidance from acquiring banks has been given on the likely capital impact of the acquisitions, it is expected that significant headroom capital will be used in funding the transactions.

The expansion of the sector's balance sheet has led to a decline in the leverage ratio (Chart 61). The leverage ratio, which measures capital resilience independently of risk-weighted assets, has fallen since the onset of the pandemic, but remains well above the minimum regulatory requirement of 3 per cent. This reflects the large increase in private sector deposits that, due to the prevailing macroeconomic environment, have largely been funnelled into assets that attract relatively low or no risk weights such as central bank reserves or sovereign bonds. Consequently, the average risk weighted density has also fallen quite significantly over this period, declining from 49 per cent in 2018 to 38 per cent in 2021 (see Box E for a detailed analysis of the risk weighted density on lending to Irish businesses, which has formed part of the Central Bank's review of macroprudential bank capital buffers).

[19] Where capital headroom is defined as the level of CET1 capital held in excess of the overall capital requirements (OCR), where the OCR is comprised of the pillar 1 and 2 requirements, the capital conservation buffer in addition to systemic buffers and the countercyclical capital buffer.

Chart 60: CET1 capital ratios are well above minimum requirements but are expected to decline in the coming years

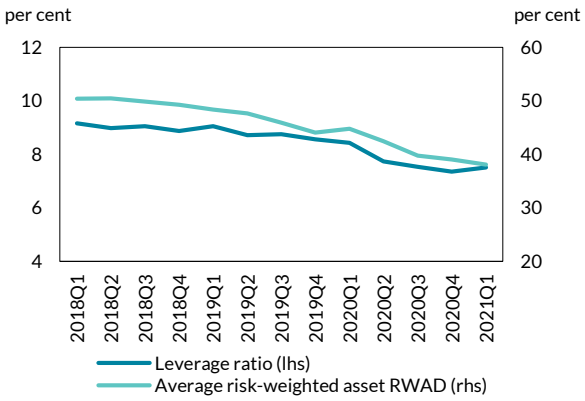
CET1 ratios



Source: Central Bank of Ireland.
Notes: The chart shows the weighted average CET1 ratio for AIB, BOI and PTSB in addition to the overall capital requirements (Reqs.) and the contribution of the transitional arrangements, where "DTAs" denotes the CET1 adjustment from deferred tax assets and "IFRS9 TAs" denotes the CET1 adjustment due to IFRS9 transitional arrangements.

Chart 61: The leverage ratio and average risk-weight density continue to trend downwards

Leverage ratio and average risk-weighted asset density



Source: Central Bank of Ireland.
Notes: The charts shows the weighted average leverage ratio and the average risk-weight density (RWAD) for AIB, BOI and PTSB. RWAD is calculated by dividing total assets by total risk weighted assets.

Asset quality has generally improved throughout 2021, but commercial loans continue to exhibit elevated levels of risk (Chart 62). As at 2021 year-end, the aggregate NPL ratio fell to a pre-pandemic low since the financial crisis, standing at 3.5 per cent. The decline in the aggregate non-performing stock was largely driven by loan sales and restructures in the non-performing residential mortgage portfolio. Loans to commercial borrowers, however, continue to exhibit elevated risk characteristics seen through both a higher share of underperforming loans (loans characterised as IFRS9 Stage 2) and an elevated NPL ratio. While the net inflow of commercial loans into Stage 2 has attenuated throughout 2021, the share remains elevated relative to pre-pandemic levels and may reflect a source of vulnerability to bank resilience in the event of further credit deterioration.

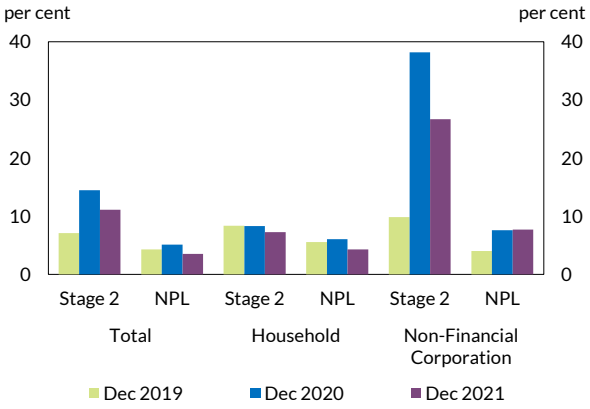
NPL ratios in commercial lending sectors hardest hit by the pandemic remain well above pre-pandemic levels The ratio of non-performing commercial loans in those sectors hardest hit by pandemic-related disruptions have trended upwards throughout the pandemic and now range between twice and six-times as large as their 2019 levels (Chart 63). The exposure of the banking sector to companies still in receipt of wage subsidy schemes has been declining steadily throughout 2021[20] (Chart 64), as the number of companies requiring continued support fell. While there remains considerable uncertainty over the near term, the declining need for policy support should, all else equal, reduce the negative impact on capital adequacy as government support is unwound. Further uncertainties remain around the future of commercial real estate exposures in particular, as post-pandemic working arrangements continue to be developed, while a pocket of the most pandemic-exposed companies may yet face restructuring and liquidation as the true extent of distress crystallises. Further, inflationary pressures (*see Risks: Slower growth and higher*

[20] The falling share is being predominantly driven the decline in the number of companies in receipt of a wage subsidy scheme (as opposed to changes in the stock of commercial lending).

inflation) will add further pressure on banks' exposure to vulnerable commercial borrowers, particularly those with a heavy dependence on energy.

Chart 62: While improving, commercial loans continue to exhibit heightened levels of risk

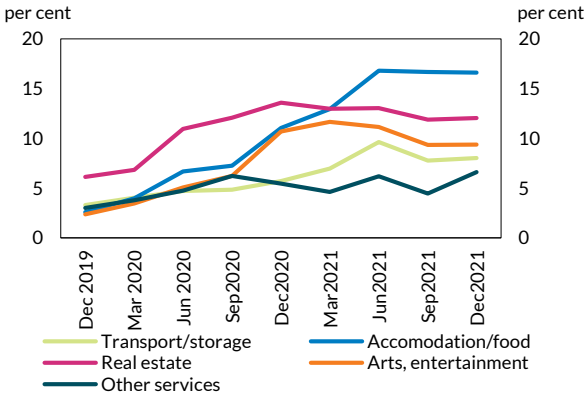
IFRS 9 stage shares



Source: Central Bank of Ireland.
Notes: The chart shows the share of loans classified as IFRS9 Stage 2 and non-performing. The "Total" bars indicate the relative share of either Stage 2 or non-performing loans as a percentage of all loans subject to impairment. "HH" and "NFC" reflect the relative share of loans classified as either Stage 2 or non-performing as a percentage of all loans advanced to households and NFCs, respectively.

Chart 63: NPL ratios in sectors hardest hit by the pandemic remain elevated

Commercial NPL ratios



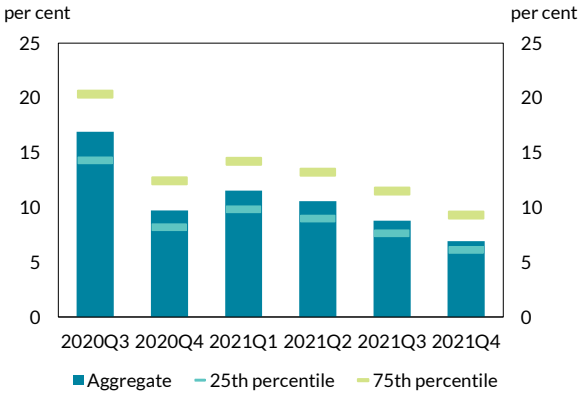
Source: Central Bank of Ireland.
Notes: The chart shows the NPL ratios among commercial loans by NACE sector. Figures are presented as a weighted average for AIB, BOI and PTSB.

Previous experience would suggest that performing loans classified as higher-risk could result in substantial default rates, but there are limits around the extent to which historical data can provide useful signals in the current shock. According to Central Bank estimates, loans with similar classification to today's Stage 2 commercial loans displayed high rates of distress in the last crisis, when weighted by the issuing banks' own internal rating scale.[21] During the previous crisis, the weighted annual default rate on a proxy group for Stage 2 commercial loans averaged 12 per cent. The current level of provisioning on Stage 2 commercial loans would be able to absorb a similar default rate (Chart 65) before any new provisioning was required. If the default rate were to tend towards the maximum observed during the previous crisis (32 per cent), material increases in new net provisioning would be required. It is important to acknowledge that the COVID-19 crisis bears major differences to the global financial crisis both in terms of the recovery outlook, but also the improved resilience of borrowers at the onset of the current crisis (Chart 57). Taken together, these important factors may limit the extent to which we observe the rate of credit deterioration observed over the last crisis.

[21] Stage 2 classification was only introduced in 2018. For this reason, a "proxy Stage 2" group is created in pre-2018 data using weighting based on the internal ratings distribution of post-2018 Stage 2 loans.

Chart 64: Exposure to companies in receipt of wage subsidies is declining

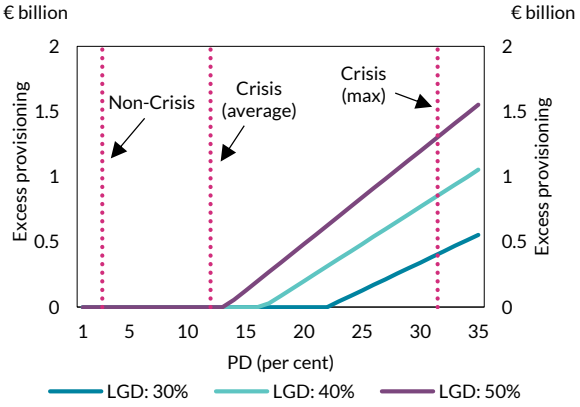
Retail bank exposure to commercial loans in receipt of wage subsidy schemes



Source: CCR; CRO; Revenue Commissioners
Notes: The chart shows the share of commercial lending in receipt of a wage subsidy scheme. Aggregate is presented as the weighted average among AIB, BOI and ULSB. Loan-level data is sourced from the CCR, while identifiers for wage subsidy companies are obtained using the CRO and Revenue Commissioners.

Chart 65: The current risk profile of Stage 2 commercial loans has exhibited high default rates in the past

Annual commercial default rates and new provisioning requirement



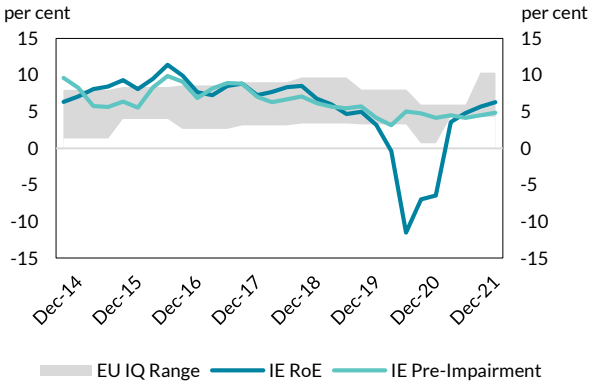
Source: Central Bank of Ireland.
Notes: The chart shows the weighted annual default rates for commercial loans over the crisis period (2009Q2 – 2012Q4) and non-crisis period (2007Q4 – 2008Q4; 2013Q2 – 2017Q2). The weighted default rate is computed by first calculating the weighting of each segment of commercial lending (SME, CRE and CORP) by the issuing banks' own internal rating scale, which, historically, has been a reliable predictor of short-term distress. The historical default ratings are then calculated for each internal rating scale by commercial lending segment. Finally, these default rates are weighted by the share of exposures in each internal ratings scale to arrive at the weighted default rate.

Banks' profitability improved significantly in 2021, supported by the writing back of provisions.

After making significant losses in 2020, the sector has returned to profitability both pre- and post-provisioning, in 2021, with the RoE at 6.5 per cent at year-end (Chart 66). Provisioning has largely driven profitability throughout the pandemic, where a large impairment charge in 2020 resulted in broad-based losses across the system. Following a strong rebound in the domestic economy the writing back of provisions have been supportive of profitability in 2021. Additionally, pre-impairment income has started to recover on the back of an improvement in income generation in 2021. The recent improvement in profitability in 2021 now moves the sector's RoE closer to the European median.

Chart 66: Profitability has returned to pre-pandemic levels

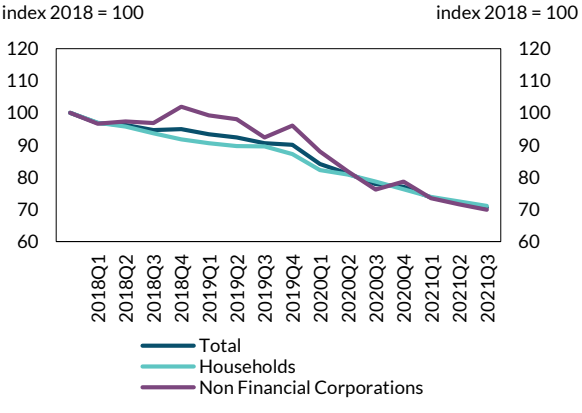
RoE and pre-impairment profit scaled by total equity



Source: Central Bank of Ireland and BankFocus.
Notes: "IE RoE" and "IE Pre-Impairment denotes the weighted average return on equity and pre-impairment scaled by total equity for AIB, BOI and PTSB. "EU IQ Range" denotes the interquartile range for the return on equity among a sample of representative European banks.

Chart 67: Excess liquidity has contributed to a decline in the loan-to-deposit ratio across key asset classes

Loan-to-deposit ratio

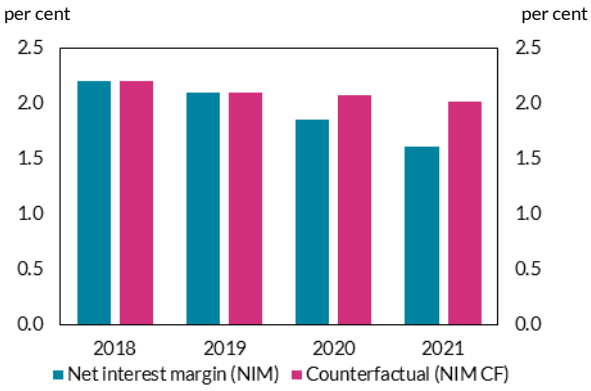


Source: Central Bank of Ireland.
Notes: The chart shows the trend in the loan-to-deposit ratios in total (Total) for household lending and deposits (Households) and for commercial lending and deposits (Non Financial Corporations) for AIB, BOI and PTSB.

Pandemic-induced changes to the composition of assets continue to put downward pressure on net interest margins and the loan-to-deposit ratio. The relatively large and recent expansion in customer deposits in combination with subdued lending volumes has exacerbated a pre-pandemic trend of falling loan-to-deposit ratios, both in aggregate and across household and commercial lending (Chart 67). Excess deposits have largely been channelled into central bank reserves and sovereign bonds, causing their relative shares in bank portfolios to rise significantly throughout the pandemic. As the margins on these assets are relatively low in comparison to residential and commercial lending, NIMs have been squeezed. According to Central Bank estimates, this portfolio composition effect accounts for around 0.22 and 0.40 percentage points of the fall in net interest margins in 2020 and 2021 respectively (Chart 68).

Chart 68: Large holdings of low yielding assets continue to exert pressure on NIMs

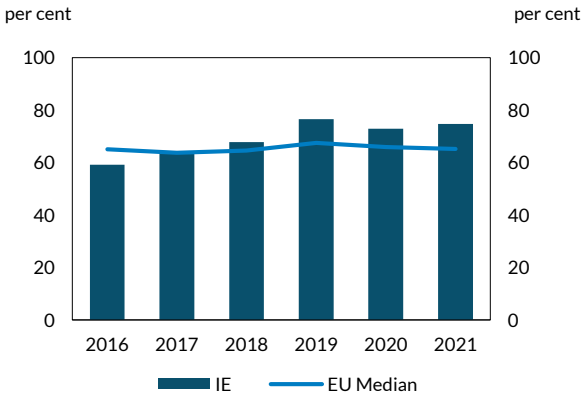
Net interest margin



Source: Central Bank of Ireland.
Notes: "NIM" and "NIM CF" denote the weighted average net interest margin as reported and under a counter-factual exercise respectively for AIB, BOI and PTSB. The counterfactual exercise conducted in this chart examines the impact on the net interest margin if the sector were to operate in 2020 and 2021 with its 2019 portfolio composition i.e. if relative share of loans to various counterparties were fixed at their 2019 levels.

Chart 69: Cost inefficiencies remain high in a European context

Cost-to-income ratio



Source: Central Bank of Ireland and BankFocus.
Notes: "IE" indicates the weighted average cost-to-income ratio across AIB, BOI and PTSB. "EU Median" is the median cost-to-income ratio across a sample of representative European banks.

High cost-to-income ratios remain a structural challenge for the sector. Irish banks entered the pandemic with relatively high cost-to-income ratios, both in a historical sense but also relative to European peers (Chart 69). While the sector has achieved a modest decline in costs since the onset of the pandemic, any benefit to the cost-to-income ratio has been offset by a simultaneous fall in income due to prevailing macroeconomic conditions (Chart 70). In recent years, Irish banks have reported relatively large exceptional costs (Chart 70) that have kept total expenses elevated. Such costs were notable in 2019 where the sector booked restitution costs[22], but also in 2020 and 2021 related to the sector's transformational change to increased digitalisation in addition to advisory fees to facilitate portfolio acquisitions as part of the ongoing consolidation in the retail banking market. Given that such costs are temporary in nature, the potential for greater scale and the increasing digitalisation of banking services presents the sector with opportunities to lower its future cost base and align it with European norms.

The higher-rate environment that is emerging due to inflationary pressures is likely to benefit retail banks. Higher inflation and higher interest rates will affect the banking sector through a number of channels (see Box C). Higher inflation and higher interest rates will test the debt service

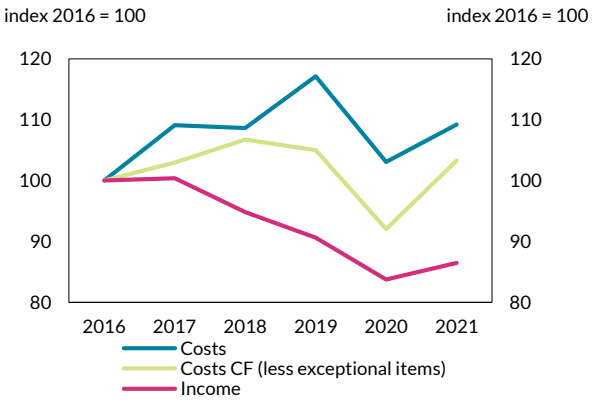
[22] Associated with the Tracker Mortgage Examination.

capacity of household and business borrowers (see *Resilience: Households* and *Resilience: Non-financial corporations)*. The Central Bank's assessment is that, in the absence of a wider economic downturn, the resilience built over the past decade means that household and business borrowers do not pose material sources of systemic risk. Offsetting any loan impairments due to these debt service risks will be a rise in Net Interest Income (NII), owing to increases in loan pricing which will likely outpace any increases in bank funding costs that occur as interest rates rise. Relative to other European banks, Irish banks are particularly well-placed to increase NII due to these maturity transformation effects, owing to their relatively high reliance on lending relative to other types of asset (see Chart 49, *FSR 2020:II*).

Market perceptions of the sector have improved in recent quarters but remain subdued. Irish banking equity prices have outperformed European banking indices in the quarters leading up to the Russian invasion of Ukraine (Chart 71). The positive outlook for the sector likely reflects recent increases in risk-free euro area yields (Chart 72) and the aforementioned importance of net interest income to their retail banking business models. In particular, recent increases at the short-end of the yield curve will likely be supportive of net interest income given the excess liquidity that the sector is currently holding as central bank reserves, which attract negative rates. Additionally, the strong rebound in the Irish economy and ongoing consolidation in the sector will further provide opportunities for income diversification and growth in traditional lines of business through greater loan volumes. However, the market valuation of several European banks including the Irish retail banks remains subdued, with the price-to-book ratio remaining significantly below one (Chart 73).

Chart 70: Large exceptional items have contributed to costs remaining high in recent years

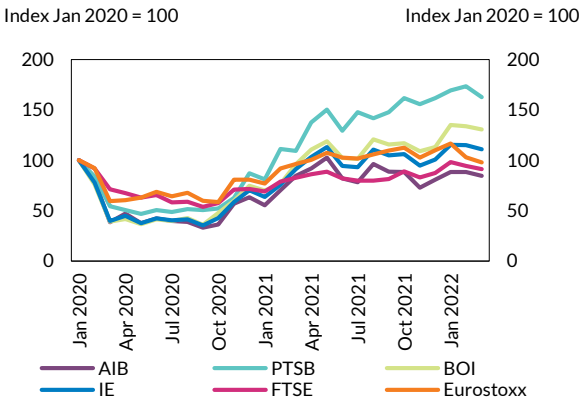
Cost to income decomposition



Source: Central Bank of Ireland and retail banks' annual reports.
Notes: "Costs CF" denotes expenses after stripping out the impact of exceptional items.

Chart 71: Irish bank equities have outperformed European indices in recent months

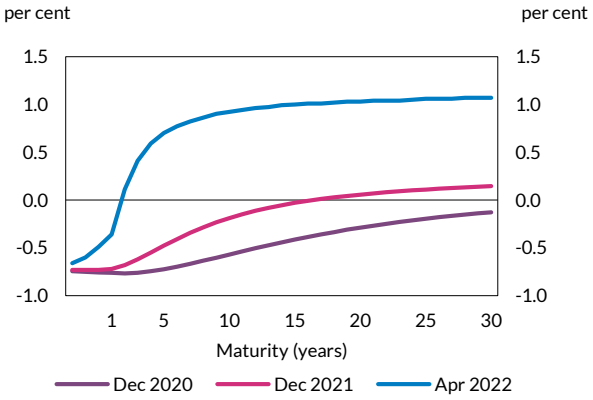
Bank equity prices



Source: Bloomberg.
Notes: Equity prices for the Irish banks and European bank indices. "IE" is calculated as a weighted average among AIB, BOI and PTSB according to market capitalisation.

Chart 72: Risk-free yields have increased in recent months

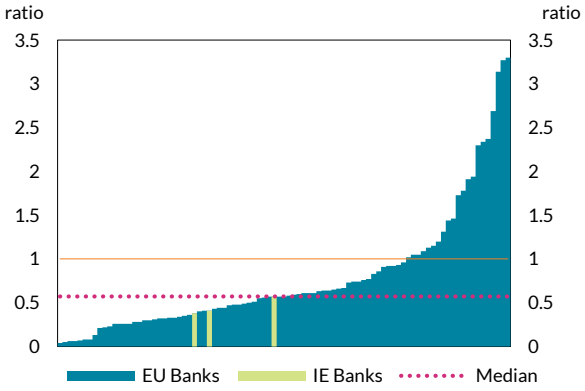
Euro area sovereign yield curves



Source: ECB SDW.
Notes: Chart shows the yield curves for euro area sovereigns with an AAA rating.

Chart 73: Despite the recent improvement in the profitability outlook, market valuations remain subdued

Price-to-book ratios



Source: BankFocus.
Notes: The chart shows the price-to-book ratios for a sample of 92 euro area banks. Ratios are presented as at 9 May 2022. Irish banks include AIB, BOI and PTSB.

The operational and cyber resilience of banks has come under greater pressure in recent months. The escalation of conflict in Eastern Europe and the threat of retaliatory cyber-attacks on important infrastructure and institutions are key considerations. The on-going impact of the pandemic with respect to continued remote working and increased consumer demand for digital services also increases pressure on banks to enhance their information technology and security capabilities. The significant digital transformation initiatives that are currently underway across the domestic retail banks in order to meet consumer demand and compete with the newer and more agile competitors, particularly in the payments space, bring with them increased execution risk as well as a potential increased reliance on cloud service providers and other third parties. Management of these third party relationships and potential vulnerabilities, most importantly with respect to continuity of service, data integrity and security, geographic location, and exit/substitution strategies, is vital to ensure on-going delivery of critical or important business services.

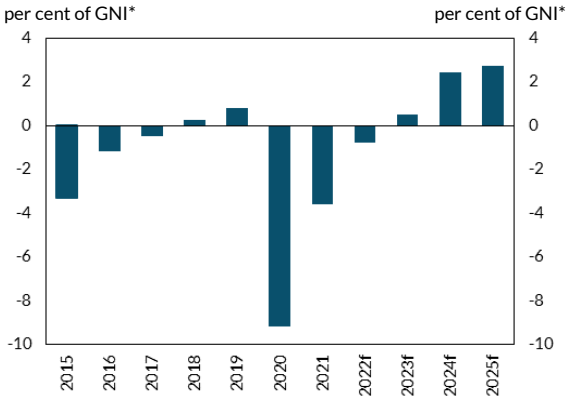
Sovereign

The pandemic has had a significant effect on public finances, and measures related to rising energy prices and the war in Ukraine add further pressures. Having run a deficit of 8.8 per cent of GNI in 2020 owing to the pandemic response, a general government deficit of 3.5 per cent was recorded in 2021 with a deficit of just 0.8 per cent expected in 2022. The increase in the debt to GNI* ratio has been less severe than the increase in the deficit, with debt expected to be below 100 per cent of GNI* by the end of this year. This still represents a significant stock of debt that in nominal terms is currently around €30bn higher than its pre-pandemic level in 2019. Pre-existing pressures related to housing, climate action, and demographics present medium-term challenges, in an environment where yields have been rising and a reliance on corporation tax receipts is at a historic high.*

The public finances have improved considerably since 2020. The Department of Finance's 2022 Stability Programme Update (SPU) projects that the deficit will fall to 0.8 per cent of GNI* this year, before recording surpluses of 0.5 and 2.4 per cent in 2023 and 2024, respectively (Chart 74). This represents a significant improvement in the outlook compared to the Department's previous forecast released as part of Budget 2022, which showed the general government balance remaining in deficit until 2025. The improvement in the fiscal outlook is primarily due to a strong revenue performance in 2021 and the first quarter of this year that is expected to carry through to later years. On the expenditure side, temporary pandemic spending is expected to drop out over the coming years, but it is uncertain how much of this could end up being replaced by spending related to the war in Ukraine, including humanitarian measures to support refugees. Since the outbreak of the war, the Central Bank has reduced its forecast for economic growth by 2.3 percentage points in 2022 and 0.9 percentage points in both 2023 and 2024, with upward revisions to inflation forecasts occurring (see *Risks: Domestic macro-financial).*

Chart 74: The general government balance is projected to improve steadily

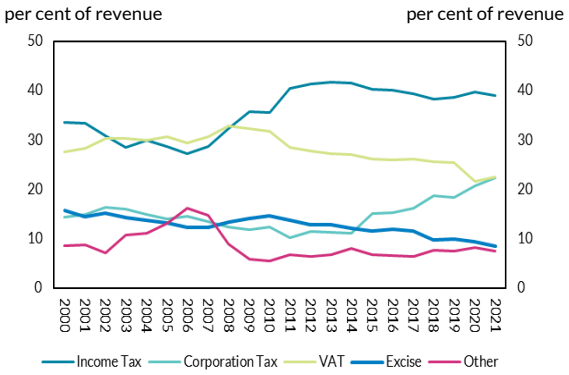
Irish general government balance



Source: CSO and Department of Finance.
Notes: The General Government Balance describes the total surplus/deficit of all sectors of Government e.g. central and local

Chart 75: Corporation Tax has reached its highest ever share of tax revenue

Corporation tax as a share of exchequer tax revenue



Source: Department of Finance exchequer returns.

The reliance on corporation tax receipts continues to grow. End year exchequer returns for 2021 show that €15.3bn was collected in corporation tax las year. This figure was 27.1 per cent above Government expectations and a 29.5 per cent increase on the previous year. The total revenue performance in 2021 was stronger than expected, with annual revenue growth of 17.3 per cent. While the annual growth rate is affected by the pandemic, overall revenue in 2021 was still 10.2

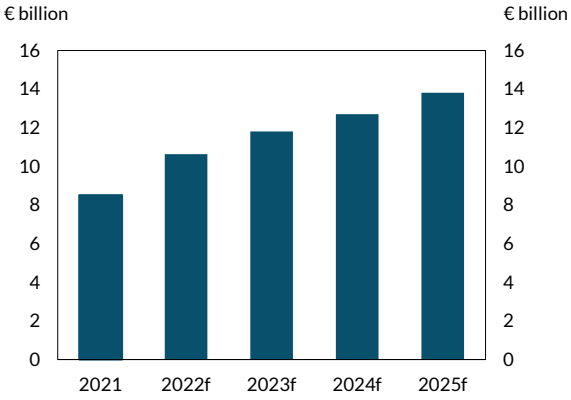
per cent above its pre-pandemic level. This growth was broad-based, with all major tax heads increasing year on year.[23] Since €1 in every €4.50 collected in tax comes from corporation tax, it is close to becoming the Government's second largest source of revenue (Chart 75). Concentration risks also stem from just 10 companies paying around half of all receipts from the tax head.

Measures related to rising energy costs will add to pre-existing spending pressures (Chart 76). In February 2022, a €0.5bn package aimed at mitigating increases in the cost of living was introduced. This was almost entirely comprised of expenditure measures such as the €200 energy credit for households and €125 lump sum fuel allowance payment. Further measures have since been announced bringing the total amount to €1bn.[24] Such measures risk being prolonged in the case of more persistent inflationary pressures. Precise targeting of those households most in need will limit the budgetary impact. If policies aimed at reducing the cost of living persist and are not offset by revenue-raising measures, the budgetary position will be weakened at a time when a range of long-term fiscal pressures are growing more prominent e.g. those related to climate action and ageing.

In addition to the impact on energy prices, the war in Ukraine requires humanitarian spending to support refugees arriving in Ireland. Estimates of the likely final costs are not possible to determine at this point. Where funding requirements to meet the costs of the humanitarian provision cannot be met through re-prioritisation of existing resources, spending in 2022 would in the first instance be financed from the €2.5bn portion of the COVID-19 contingency that is not already committed. In 2023, a contingency of €3bn has been set aside for Ukraine spending. If the number of refugees is larger than expected, expenditure pressures will increase.

Chart 76: Annual Government investment will increase by 30 per cent over the next three years

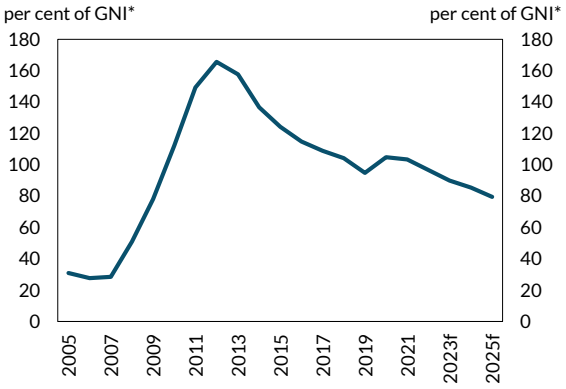
Government gross fixed capital formation



Source: Department of Finance.

Chart 77: The outlook for Irish Government debt remains favourable

Irish general government debt



Source: CSO and Department of Finance.

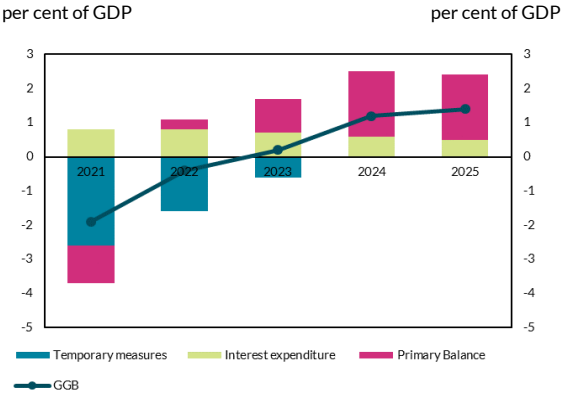
One-off factors play an important role in the improvement in the General Government balance. The favourable projection for the budget balance passes through to the outlook for Government debt (Chart 77).The return to surplus is supported by once off improvements such as COVID-19 measures being phased out this year and next (Chart 78). The phasing out of the EWSS and PUP, for example, support an immediate improvement in the budget balance, but the fiscal position in 2024 and 2025 is less certain.

[23] December 2021 Fiscal Monitor
[24] This excludes the tax package introduced in Budget 2022.

Favourable borrowing conditions have improved debt dynamics for the Irish sovereign in recent years, but borrowing costs are now increasing. While Ireland's bond yields have increased since late last year (Chart 79), sovereign funding conditions remain broadly favourable. The National Treasury Management Agency (NTMA) plans to issue between €10bn and €14bn of bonds this year, with €5.75bn of this raised by mid-May. The NTMA took advantage of favourable market conditions in recent years by extending the maturity profile of Ireland's debt and by refinancing maturing debt at lower rates. This has resulted in a smoother maturity profile for Government bonds out to 2030. The current yield on Irish 10 year debt is 1.5 per cent[25]. While this is up from 0.4 per cent at the beginning of the year, it is still well below the average interest rate on bonds that are maturing over the next three years (3.7 per cent).[26]. This implies that interest rates could rise further before the rolling over of maturing debt would increase the average interest rate.

Chart 78: The removal of COVID-19 measures plays a large role in returning the GGB to surplus

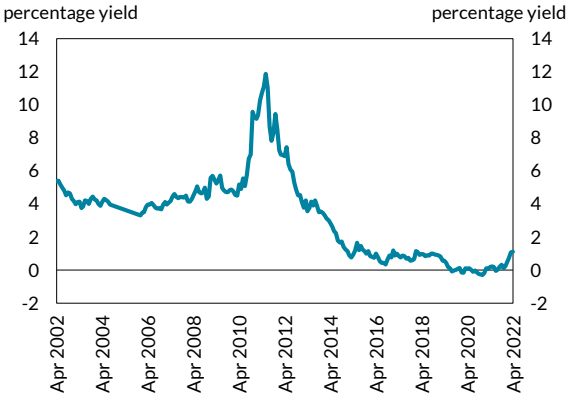
Improvement in GGB by component



Source: Department of Finance, Stability Programme Update 2022.Notes: The General Government Balance (GGB) represents the surplus/deficit of all sectors of Government. Here, its improvement is broken down into the changes in interest expenditure, the primary balance (budget balance excluding interest), and temporary measures (temporary pandemic supports and other one-offs).

Chart 79: Irish bond yields have increased over the course of 2021

Irish Government 10-year bond yield



Source: Datastream.

While the medium-term outlook for the budget balance improved considerably in SPU 2022, there is an elevated level of uncertainty surrounding the fiscal projections. New spending on humanitarian assistance for Ukraine and cost of living measures will have to be balanced against long-standing priorities like increasing housing supply and delivering climate action. Government investment is expected to increase strongly. This will be informed by the National Development Plan and supported in part by Next Generation EU (NGEU) funding, but given the current inflationary environment, this leaves Government exposed to the possibility of rising costs on capital projects. The General Government balance is projected to be in deficit in 2022 while borrowing costs are increasing and risks around the sustainability of corporation tax revenue persist. To reduce risks to the public finances, returning to a position of a surplus budget balance as conditions allow should be achieved in parallel with other policy priorities (e.g. in housing, climate action, and ageing).

[25] The NTMA raised €1.25bn in May, issuing 10 and 23 year bonds at yields of 1.5 and 1.8 per cent respectively. In January 2022, by comparison, they raised €3.5bn through the syndicated sale of a 10 year bond at a yield of 0.4 per cent.
[26] After a 0 per cent Treasury Bond matures in October, bonds maturing until 2025 have an interest rate of 3.4 per cent or higher.

Non-bank financial sector

The role of non-bank financial intermediaries in financing the domestic economy has been growing in recent years. While these entities provide important diversification benefits to the economy, they can also become a source of macro-financial vulnerabilities, which need to be monitored and – if needed - addressed. Property funds are the market-based intermediaries with the strongest linkages to the Irish domestic economy. A cohort of these funds display higher levels of leverage, which makes them more vulnerable to adverse shocks. Liquid assets of property funds are also relatively low, although this is partly mitigated by lower redemption frequencies. Non-bank lenders i.e., those entities lending to domestic borrowers without a retail banking license, are also of growing importance to the domestic economy. For SMEs, non-bank lenders now account for an estimated 37 per cent of the value of total new lending. This activity can provide benefits to the Irish financial system by increasing competition and offering more options to borrowers. However, since many of these lenders rely significantly on market-based funding rather than stable insured deposits, and do not have access to the liquidity operations of the Eurosystem, the resilience of this supply of financing may be more vulnerable during an economic or financial system downturn.

Property funds play an important role in the commercial real estate market in Ireland. Currently Irish property funds hold a total of €21.5 billion in Irish property and land (or approximately 44 per cent of the estimated 'investable' Irish CRE market). Highly leveraged funds may be more likely to be forced to sell property assets in the event of a shock due to breaching loan-to-value (LTV) and/or debt servicing covenants. The lender may require the fund/s to sell assets or may take ownership of the assets themselves and seek to sell them over a short period of time, amplifying market pressures in periods of stress.

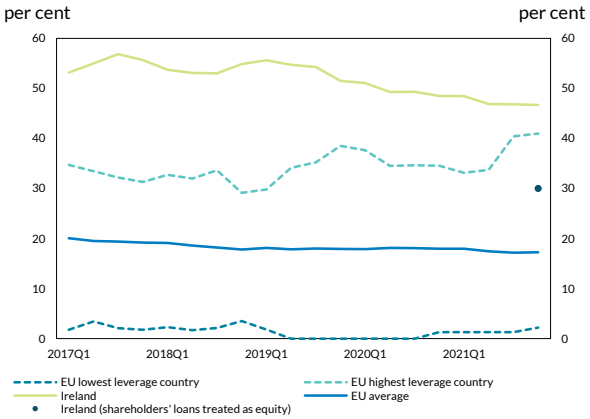
A cohort of Irish property funds have higher levels of leverage, making them more vulnerable to shocks such as a decline in commercial real estate markets. In 2021Q3 aggregate leverage among Irish property funds was 47 per cent, calculated as the ratio of total non-equity liabilities to total assets (Chart 80). This level is significantly higher than the leverage of property funds across other European countries (i.e. 17 per cent, on average, in 2021Q3). Nevertheless, approximately 35 per cent per cent of property funds' debt in 2020Q4, (see FSR2021:I) was in the form of shareholder loans. Shareholder loans may not have the same contractual terms as bank loans (in terms of covenant agreements, collateralisation etc.), thus focusing only on bank and other third party loans would imply an average leverage ratio of approximately 30 per cent rather than 47 per cent (Chart 80).

The average level of leverage can conceal differences in leverage across cohorts of Irish property funds. For example, 37 per cent of assets are held by funds with leverage over 60 per cent (Chart 81). Funds with higher levels of leverage would be most vulnerable to an external shock (for example a future decline in CRE values). Comparing the assets under management in 2017 to 2021 across different buckets of leverage, high leverage funds (i.e., leverage between 80 and 100 per cent) assets under management decreased in size, while assets under management for funds in the other buckets of leverage increased. Given the falls in CRE prices, especially in the retail segment of the market, some funds have also moved into negative equity. As mentioned above, a percentage of this debt consists of shareholders' loans.

The strategy of Irish property funds is typically based on investments in non-residential real estate sectors. The majority of assets within the Irish property fund sector are managed by funds whose 'Principal Strategy' is to invest in 'Non-Residential' real estate (including 'Commercial', 'Industrial', 'Multi-Strategy' and 'Other' real estate, Chart 82).[27] Such funds are managing €16.5 billion in assets, equivalent to 76 per cent of the Irish property assets of Irish property funds. A second category of funds, totalling €2.8 billion in assets, defines its 'Principal Strategy' as 'Residential'. A residual segment of property funds (managing €2.1 billion in assets) does not identify any 'Principal Strategy'.

Chart 80: Irish property funds are more highly-levered than their European peers

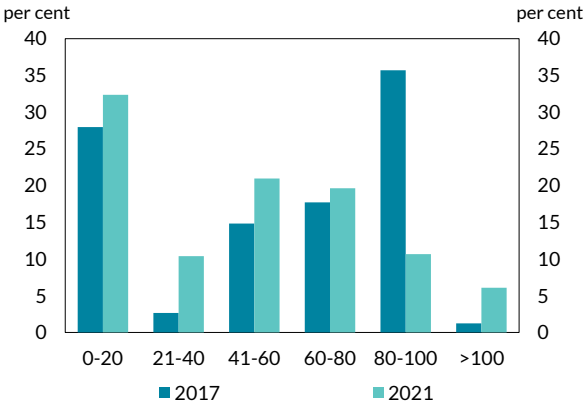
Distribution of leverage in property funds across European countries



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. The latest-data dot represents the value-weighted average leverage of all Irish property funds if all shareholders' loans are treated as equity, assuming the 2020Q4 percentage of shareholder loans in the sector remained constant. '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 definition assumes that shareholder loans are treated as other forms of non-equity liabilities. Data for 2017Q1-2021Q3.

Chart 81: The gradual decrease in leverage has been concentrated among funds with high leverage

Distribution of Irish property funds total assets across leverage classes.



Source: Central Bank MMIF returns.
Notes: The horizontal axis describes six classes of property funds grouped in terms of their financial leverage. The vertical axis describes the share of assets under management of each leverage class relative to total assets under management of all Irish property funds. Data as of 2017 and 2021.

Liquidity mismatches are partly mitigated by low redemption frequencies. Liquid asset holdings (typically in the form of cash, liquid equity positions and deposits) can be used to facilitate funds' execution of normal redemption flows without resorting to the sale of real estate assets (or actions by equity and/or debt-holders). Ninety-six per cent of Irish property funds' asset are illiquid, thus 4 per cent of their assets are held in liquid holdings (Chart 83). The average share of liquid assets among European peers is significantly larger, at 41 per cent. However, when making comparisons consideration should be given to differences in terms of business models, redemption

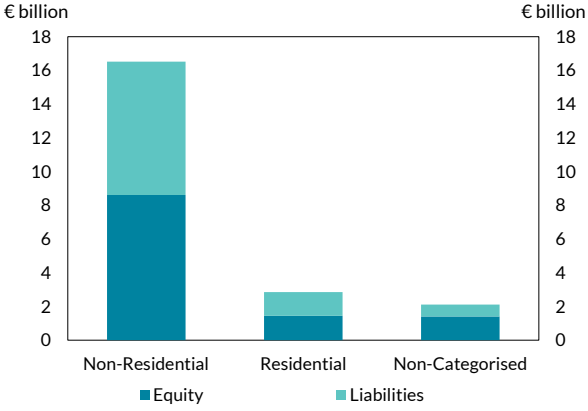
[27] The classification of real estate funds into 'Residential' and 'Non-Residential' is based on the reporting of 'Principal Strategy' by Irish real estate funds under Article 24(1) of the Alternative Investment Fund Managers Directive 2011/61/EU (AIFMD). This directive requires AIFMs to report the 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 primary strategy of the AIF. This primary strategy should be the strategy that best describes the reporting fund's strategies." The categorisation aggregate 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.

policies, investor types and regulatory constraints etc., which contribute to a very wide distribution of liquid assets across European countries. In addition, risks from liquidity mismatch are somewhat mitigated by low redemption frequencies. The majority of Irish property funds give investors at most one opportunity per year to redeem their investments, though there are some funds with more frequent dealing days. Furthermore, many property funds have liquidity timeframes that give the fund time to plan how the redemptions will be settled.[28]

The Central Bank has published a Consultation Paper on macroprudential policy interventions to address both leverage and liquidity mismatch in Irish property funds (CP145). More details on the proposal are provided in *Policy: Market based finance*.

Chart 82: Property fund investments are concentrated in the non-residential sector

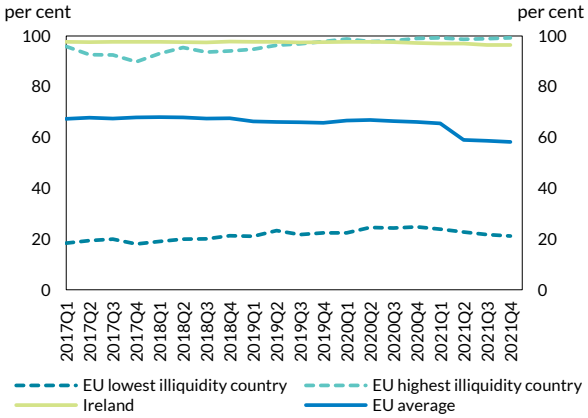
Equity/Liabilities breakdown across categories of Irish property funds.



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. Data as of 2021Q3.

Chart 83: Property funds have less liquid holdings than peers, though European distribution is wide

Distribution of illiquid holdings in property funds across European countries.



Source: Central Bank MMIF returns and European Central Bank.
Notes: Liquid assets are defined as Cash, advanced economies' government debt, euro-zone short-term bank debt, and advanced economies' equities. 'Ireland' and 'EU average' describe the value weighted percentage of liquid holdings for Irish and other European countries, respectively. 'EU lowest leverage country' and 'EU highest leverage country' describe the liquid holdings of property funds in the European country with the lowest and highest liquid holdings (excluding Ireland), respectively. Data for 2017Q1-2021Q3

The economic prospects of Irish SMEs and developments in real estate markets in Ireland are both, to some extent, becoming more reliant on the activities of non-bank entities for debt financing. The presence of non-bank lenders in Ireland can bring significant diversification benefits but it can also increase vulnerability to international risks. The relative use of different funding sources by non-bank lenders varies according to each business model. For example, lenders specialising in leasing have a tendency to use intragroup funding, while those that specialise in property finance tend to raise funds through the financial markets. Overall, relative to bank lending, where funding relies largely on stable deposits insured under the Deposit Guarantee Scheme, non-bank lending has the potential to behave in a more pro-cyclical manner (see Box D below and Gaffney et al., 2022 for further assessment of the risks associated with non-bank lending).

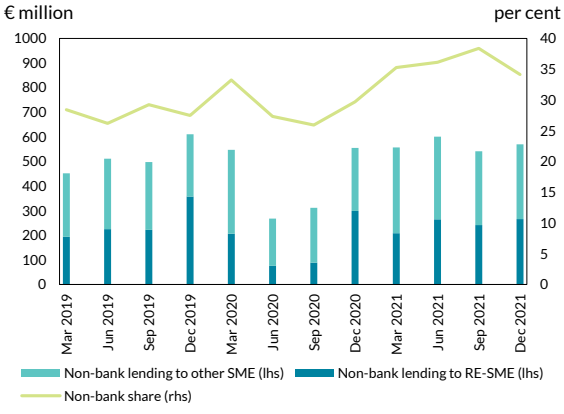
[28] Liquidity timeframes = notice period (the number of days prior to the dealing day before which any redemptions must be requested) + the settlement period (the maximum time available to a fund to settle redemption requests).

Financing of Irish SMEs by non-bank lenders is growing. Using the same methodology as recent analysis of Central Credit Register data by Heffernan et al. (2021), non-banks are estimated to have lent €2.26 billion in 2021 (Chart 84). This has increased approximately €390 million, or 20 per cent, from the yearly average of €1.87 billion in 2019 and 2020. In total, non-bank lenders provided €6 billion in new lending to Irish SMEs between 2019 and 2021. The share of non-bank lending expanded from an average 28 per cent per quarter in the 2019-2020 period to an average 36 per cent per quarter in 2021. Overall Irish SMEs owed non-bank lenders approximately €4 billion in 2021 compared to €18 billion owed to banks.

Credit provided by non-banks to SMEs is significantly focused on real estate and is almost equal to bank lending in that sub-sector. On average 43 per cent of total non-bank lending to SMEs in 2021 related to real estate SMEs (activities and Construction) in 2021 (Chart 84). In comparison, bank lending to real estate SMEs is 29 per cent of total bank lending to SMEs.[29] The largest sectoral lending volume for non-banks was €981 million, which was extended to real estate SMEs in 2021 (Chart 85). This is approximately three times the amount lent to the second largest sector (i.e., wholesale and retail trade). For most SME sectors, non-bank lending remains much smaller than that of banks (see also Heffernan et al., 2021). However, the size of non-bank lending relative to bank lending increased in 2021 for almost all SME sectors. The business models of some of the non-banks – particularly those that are raising funds through the financial markets – underscore potential cyclical risks from non-bank lending (see Box D below also). The Central Bank will continue deepening its analysis on the business models of – and potential vulnerabilities associated with – the growth in non-bank lending in Ireland.

Chart 84: Increased significance of new non-bank credit to SMEs

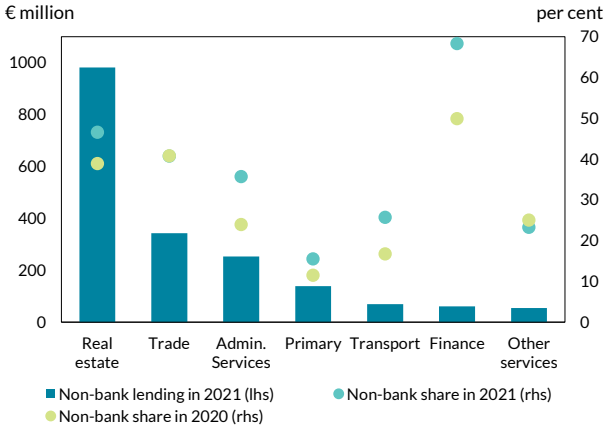
Quarterly total new lending to SMEs by non-banks.



Source: Central Credit Register, CRO, Register of Affiliates and Assets Database and Central Bank of Ireland calculations.
Notes: Non-bank lending to two broad sectors of SMEs in millions of euro is depicted as stacked columns against the left axis. The two broad sectors are RE-SMEs (i.e., related to real estate sectors) and Other SMEs. The RE-SMEs include SMEs in Real estate activities and Construction. The Other SMEs include: Trade, Administrative services, Primary, Transport, Finance, Other services, Accommodation and food, Manufacturing, and other NACE sectors. The right axis shows the share of non-bank SME lending relative to the sum of bank and non-bank lending to SMEs.

Chart 85: Real estate-SMEs received nearly half their lending in 2021 from non-banks

Non-bank share of new lending from all credit providers by sector



Source: Central Credit Register, CRO, Register of Affiliates and Assets Database 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. The right axis shows the share of non-bank SME lending relative to the sum of bank and non-bank lending to SMEs in each main sector in 2020 and 2021

[29] Bank Balance Sheets data, https://www.centralbank.ie/statistics/data-and-analysis/credit-and-banking-statistics/bank-balance-sheets, table-a-14-1.

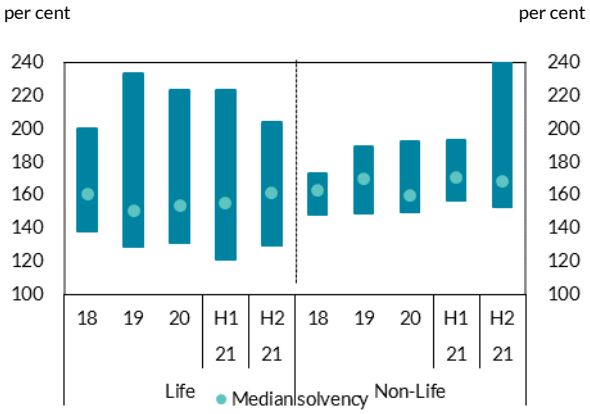
Insurance firms

The solvency position of (re)insurers based in Ireland rose marginally over 2021, remaining well above regulatory requirements and returning to pre-pandemic levels. The sector as a whole entered 2022 with a strong capital base. While the majority of (re)insurers have limited business or investment exposure to Russia, Ukraine and Belarus, all potentially face the secondary effects of the conflict on economic and financial market conditions, both in Ireland and globally. The emergence of high levels of inflation (and a parallel economic slowdown) could particularly affect non-life firms. The adverse impact of inflation on some firms and on insurance costs may, however, be mitigated in part by the positive effects of higher interest rates alongside changes to the domestic personal injuries claims environment.

The solvency position of insurers based in Ireland rose marginally over 2021, with solvency coverage ending the year at 187 per cent, well above regulatory requirements and back to pre-pandemic levels. Solvency coverage movements continue to be widely dispersed reflecting the diverse nature of the industry and capital distributions made by some firms during the year.[30] At an industry level, solvency coverage rose at 52 per cent of firms over 2021, while it fell at the remaining 48 per cent. The median SCR coverage ratios of the subset of life and the non-life insurers that are active in the Irish domestic market[31] rose in 2021 with available capital continuing to exceed firms' SCRs (Chart 86).

Chart 86: Domestic insurers' solvency positions remain robust and are above regulatory requirements

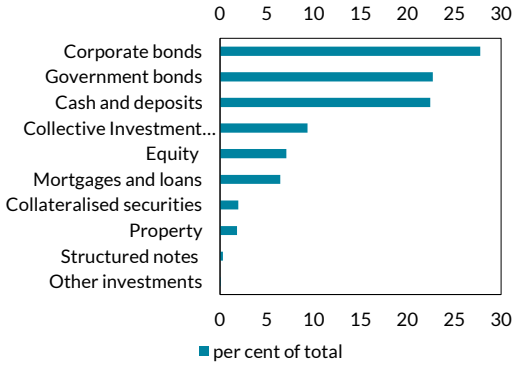
Solvency coverage of domestic life and non-life insurers



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 2021Q4.

Chart 87: 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: Non-linked investments which exclude those which life insurers hold to back their unit-linked policies. Last observation 2022Q1.

The majority of (re)insurers have limited business or investment exposure to Russia, Ukraine and Belarus. Based on an analysis of Solvency II data, Irish (re)insurers' exposure to Russia, Ukraine and Belarus in terms of the geographical footprint of their assets, gross written premiums and

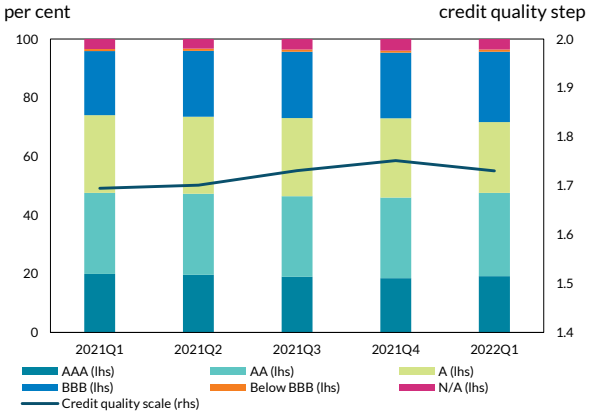
[30] Solvency coverage is measured as a firm's available capital (known as "own funds" under Solvency II) as a percentage of its Solvency Capital Requirement (SCR).
[31] This relates to firms prudentially regulated by the Central Bank of Ireland. More than 200 insurers authorised in EEA members states 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.

technical provisions, is limited. Russia, Ukraine and Belarus accounted for around €675m of (re)insurers' investments at the end of 2021, equating to 0.15 per cent of their total investments. The majority of exposure was via investment funds held in respect of unit-linked savings business. Under unit-linked policies, investment risk is borne by policyholders rather than the life insurance company. From an insurance risk perspective, Solvency II data show that those insurance policies or reinsurance treaties that are linked to Russia, Ukraine or Belarus typically relate to specialist lines of business written in material volumes by only a small number of Irish firms, for example, marine, aviation and transport, and credit and suretyship insurance.

However, all (re)insurers will potentially face the secondary effects of the conflict on economic and financial market conditions, both in Ireland and globally. The Ukraine crisis has served to heighten the risks that were already faced by (re)insurers as we entered 2022. These included the risks posed by stretched asset valuations and the possibility of sudden market corrections, potential exogenous economic shocks, inflationary pressures and the general financial and operational risks associated with an increasingly volatile and uncertain world. Regulatory capital requirements are designed to ensure that (re)insurers can absorb significant financial shocks, but some firms could be more vulnerable than others depending on the nature and severity of the shock (or shocks) that may crystallise, their business model and their ex-ante level of solvency coverage.

Exposure to market risk varies across the sector and depends on an individual firm's asset mix, which will reflect the duration, nature and currency profile of their liabilities plus their risk appetite. Fixed interest securities comprise the majority of insurers' investments, accounting for 52 per cent of non-linked investments at 2022Q1, with a spread of country of issue and currency denominations (Chart 87). Exposure to Irish sovereign and corporate debt remains low and accounted for only 4 per cent of bond holdings at 2022Q1. Across the industry, the credit quality of the bond holdings backing non-linked business deteriorated very slightly over 2021, with the weighted average broadly equating to a Standard & Poor's AA-/A+ rating at 2022Q1 (Chart 88).

Chart 88: The credit rating of insurers' corporate and sovereign bond holdings deteriorated slightly in 2021
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.

High levels of inflation over a prolonged period would have more of an adverse impact on non-life (re)insurers (including health insurers) than life (re)insurers due to differences in the way claims are indemnified. Non-life firms typically indemnify the policyholder for incurred losses which are set in real terms, whereas life insurance claims are usually expressed in nominal terms. Higher rates of inflation are already affecting the cost of settling some non-life claims due to rising labour and materials costs (for example, motor vehicle or property damage repairs). The impact of inflation on liability policies presents the greatest risk to profitability levels as claims may be settled many years after the premiums are paid. Some (re)insurers may need to revise upwards the reserves they hold to reflect a more up-to-date estimate of the cost of settling incurred (but not yet paid) claims allowing for higher rates of inflation (and similarly adjust the reserves they hold for claims that might be expected in respect of the unearned proportion of premiums already received). The longer term consequences of inflation on profitability (and ultimately a firm's capital position) will depend, amongst other things, on the extent to which (re)insurers can pass on its higher costs to consumers via premium rate increases, which itself will depend on competitor pressures and the effect of the anticipated economic slowdown on demand.

Within the Irish domestic market, the revised Judicial Guidelines on personal injury award levels that were approved by the Judicial Council in March 2021 appear to be having an impact on personal injuries claims settled through the Personal Injuries Assessment Board (PIAB). The latest statistical report published by the PIAB shows that personal injuries award values have fallen materially following the implementation of the Guidelines, with the average award made by the PIAB in respect of all awards, excluding fatal claims, from 24 April to 31 December 2021 being reduced by 42 per cent from 2020 levels.[32] However, the report goes on to note that over the period the proportion of awards that were accepted by the parties was 37 per cent which was lower than the overall acceptance rate of 51 per cent of awards issued in 2020. Those PIAB awards that are not accepted will go to litigation and it is yet to be seen at what level cases that proceed via the courts will settle. It will, therefore, take some time to see the full effects of the Judicial Guidelines. Although it is too early to determine the long term effects of the Guidelines as they are still bedding in, a more stable claims environment in Ireland could contribute positively over time to the availability of insurance in some sectors and to premium levels.

Higher interest rates may provide respite to some (re)insurers that could partly mitigate the impact of inflation on non-life claims settlement costs and general operating expenses. Ultra-low interest rates particularly affect the limited number of life insurers offering longer term guaranteed products and act as a drag on non-life insurer profitability through the lower investment income they can generate. The prospect of a period of interest rate increases will lead to a changed operating environment for firms. This could result in the value placed on a firm's liabilities falling (due to increases in the discount rates used to calculate the present value of the firm's estimate of its future obligations) by relatively more than the impact of higher rates on the value of assets and, other things being equal, lead to improved levels of future investment income.

The COVID-19 pandemic is still affecting many parts of the world with implications for insurance companies. COVID-19 resulted in increased levels of some non-life claims, notably business interruption, travel and event cancellation. Contractual ambiguity associated with certain business interruption policy wordings resulted in test cases being brought to the Irish Commercial Court. The subsequent Court rulings removed some uncertainty by clarifying insurers' obligations

[32] PIAB Personal Injuries Award Values report published 11 April 2022.

under the contested policies, although some residual issues regarding the quantum of claims remain outstanding. The global footprint of some life reinsurers based in Ireland meant that they have been affected by higher levels of death claims in some countries, while no material impact was seen by domestically focused firms. However, "long COVID" and well publicised delays in the diagnosis and treatment of non-COVID conditions could still flow through to higher mortality and morbidity rates over the longer term, although the potential impact on the insurers is likely to be mitigated by the reinsurance protection they have in place.

The insurance sector has proved to be resilient during the pandemic and entered 2022 strongly capitalised at an industry level. However, the rapid escalation of the crisis in Ukraine, coming itself on the tail of a pandemic, reinforces the need for firms and regulators alike to have a risk focus that goes beyond a small number of well-defined risks and scenarios to take in broader questions of resiliency, including in the face of the increasingly visible impact of climate change.

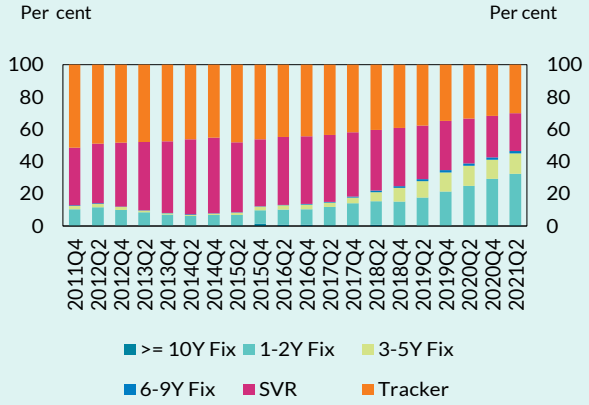
Box C: The impact of higher interest rates on borrowers and lenders

By Paul Lyons, Joe Morell and Frances Shaw (Macro-Financial Division)

Europe's inflation outlook has deteriorated considerably in 2022, with the war in Ukraine exacerbating pre-existing price pressures. Irish Inflation, for example, is now forecast to be 6.5 per cent for 2022, but with considerable upside risk to this projection. This is also significantly higher than in 2021 (2.4 per cent).[1] Against the backdrop of growing inflationary pressures, the ECB has responded by gradually normalising monetary policy, including signalling interest rate increases. Interest rate increases affect the economy – and therefore the resilience of borrowers and lenders – through a number of channels. This Box focuses on the direct impact of higher interest rates on households, firms and banks.

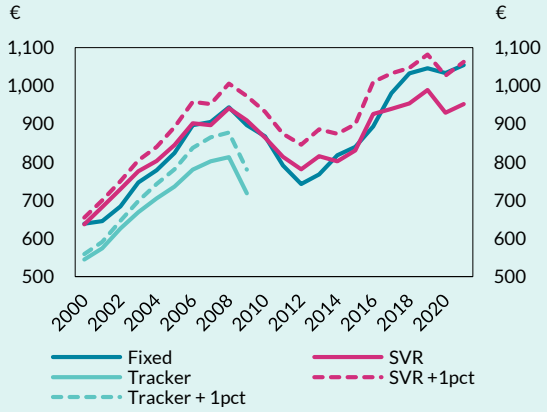
Households: The aggregate indebtedness of Irish households is at its lowest level since before the global financial crisis. This means that the household sector as a whole is in a better position to absorb interest rate increases than it was fifteen years ago. In addition, in more recent years, there has been a growing shift away from variable rate mortgages, towards fixed-rate mortgages (Chart A).[2] Still, around 54 per cent of outstanding mortgage balances are on a variable type mortgage (SVR or Tracker), which would likely see an immediate increase in mortgage interest costs when interest rates rise. In addition, even for fixed-rate mortgages, fixation periods are relatively short, meaning borrowers would be refinancing at higher interest rates after a relatively short period of time.

Chart A: Interest rate type – Mortgages



Source: Central Bank of Ireland loan-by-loan level data.
Notes: Data refers to per cent of outstanding balances (EUR) of the 5 Irish retail banks by interest rate type. Fixed interest rate buckets show the amount outstanding according to the residual maturity of the fixed contracts (and not the original fixed maturity). SVR stands for standard variable rate mortgage type, Tracker mortgages track a reference rate directly.

Chart B: Monthly Instalment Changes by year of mortgage origination and interest rate type



Source: Central bank of Ireland, June 2021 loan-by-loan level data
Notes: Data includes the 5 Irish retail banks. The chart shows the median current instalment by current interest rate type and by origination year. Performing, never-modified, PDH loans only with a minimum of 100,000 drawdown at origination. A 100bps rate rise scenario is not a forecast but rather used here to illustrate the increase in monthly repayment burdens with higher rates.

Chart B shows the median current monthly instalment (as at June 2021) by current interest rate type and by year of origination. In addition, to illustrate the impact of higher rates on repayment burdens, we apply a hypothetical instantaneous 100bps increase in mortgage rates to both types of variable mortgages (tracker and SVR). No increase is applied to fixed rate contracts as, by fixing their mortgage repayments, these borrowers 'lock in' a fixed monthly repayment for a period of time. Across the population of borrowers on SVR mortgages, the immediate impact of a 100bps increase in mortgage rates could be €65, with the median monthly instalment rising from €862 to €927. While all variable rate borrowers would experience a rise in their monthly instalments were rates to rise, those originated in more recent years and those originated between 2005 and 2009 will continue to face the largest repayment burdens. For recent originations, the median monthly instalment for mortgagors on fixed rates is currently above that of mortgagors on SVRs, but – if rates were to rise by 100bps – SVR borrowers with mortgages originated recently will pay more than fixed rate borrowers. For borrowers on tracker rates issued before the

financial crisis, the monthly repayment burden would increase upon an interest rate rise, but would remain below the equivalent monthly repayment burden of SVR customers.

SMEs: Similar to households, at an aggregate level, the indebtedness of Irish SMEs is at its lowest level since the period before the global financial crisis. In terms of exposure to interest rate risk, approximately half of SME outstanding loan balances are on a variable rate (see Table A and *Resilience: Non-financial corporations*). But the split between fixed and variable is heterogeneous across sectors. Table A shows the share of fixed rate loans by sector along with the interest rates by sector for fixed and variable term SME loans respectively. Sectors with a greater proportion of variable interest rate loans include Agriculture, Education and Administrative and Support Services. Compared to mortgages, the maturity profile of SME lending is relatively short. This means that interest payments make a smaller proportion of total loan repayments. For example, if variable rates were to increase by 100bps, an SME in the accommodation and food sector on a variable rate loan with the median outstanding balance of €46,000, an interest rate of 4.5 per cent and remaining term of 4 years could see their monthly instalment increase from €1,049 to €1,070. Additionally, as fixed rate loans mature, SME's could be required to refinance at higher rates.

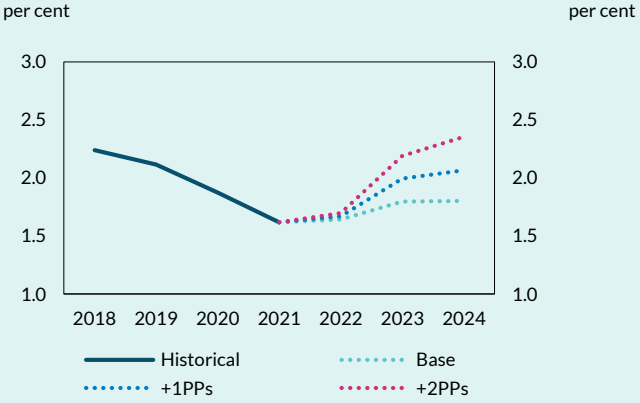
Banks: For banks, the prospect of higher rates brings both challenges and benefits. On the one hand, higher rates may precipitate greater provisioning as the cost of servicing debt increases, which could lead to repayment challenges by borrowers. On the other hand, higher rates may improve the profitability outlook for Irish banks, given their relatively greater dependence on net interest income than other banks in Europe. This characteristic of Irish banks places them in a relative stronger position to benefit from higher interest rates, particularly where the pass-through to lending rates is greater than the pass-through to deposit rates.[3] In Chart C, we perform a simple scenario analysis to illustrate the expected improvement in Irish bank's net interest margins under different (hypothetical) interest rate scenarios. We only consider the impact of rate rises on commercial and residential lending. On aggregate, higher rates, would improve Irish bank's outlook for lending margins. There are other channels through which higher interest rates can directly affect the banking system. For example, a higher-interest environment could have negative effects through the valuation of holdings of debt securities.

Table A: SME lending – Fixed shares and interest rates

Sector	Fixed rate share (%)	Fixed interest rate (%)	Variable interest rate (%)
Accom. & Food	53	5.9	4.5
Admin./support	47	6.3	6.3
Agriculture	30	5.4	5.5
Arts/Ent./Rec.	67	3.6	4.0
Construction	49	5.6	6.3
Education	22	7.0	4.6
Human health	62	4.9	5.0
Manufacturing	65	5.1	4.9
Prof./sci./tech.	56	7.0	4.6
Trans./storage	71	5.1	6.3
Wholesale &retail	52	5.3	5.0
All	48	5.4	5.5

Source: Central bank of Ireland, loan-by-loan level data.
Notes: Data includes Irish SME term loans for the 5 Irish retail banks. The table shows the median interest rates for by NACE category on Irish SME term loans at June 2021. Select sectors shown, 'All' contains all NACE sectors except real estate.

Chart C: NIM Projections* - illustrative scenarios



Source: Authors' own calculations.
Notes: *The "Base" scenario considers the baseline forecast for the 3M euribor rate. The "+1PPs" and "+2PPs" scenarios assume an additional 1 and 2 percentage point increases of the 3M euribor rate over that projected in the Base scenario. We assume that the NII on all other portfolios increase by the same amount to that estimated for the household and NFC portfolios considered in this analysis.

[1] See Central Bank of Ireland Quarterly Bulletin Q2, 2022 for latest forecasts.
[2] In the past 9 months the share of new mortgages originated on fixed rates longer than 3 years increased from 54% to 66% (Central Bank of Ireland Statistics – Table B.3.1)
[3] Of course, higher interest rates would be expected to negatively affect banks bond portfolios, we focus on their lending portfolios in this Box.

Box D: Financing of the mortgage market from outside the retail banking sector

By Edward Gaffney and Fergal McCann (Macro-Financial Division)

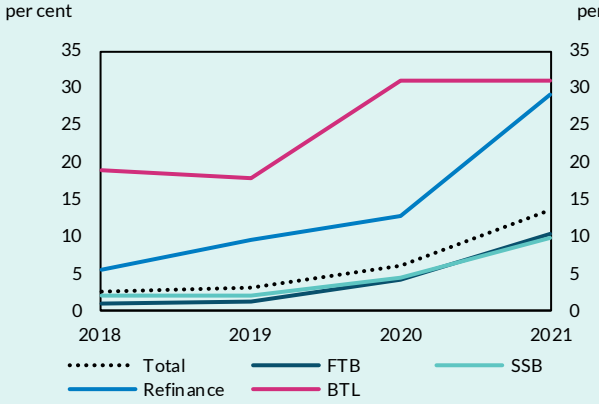
In line with developments in the global economy, Non-Bank Financial Intermediaries (NBFIs) have been playing an increasingly important role in the financing of domestic households and businesses in Ireland in recent years. Previous international research has shown that NBFI credit supply is more cyclical in all parts of the economic cycle.[1] This heightened cyclicality is of relevance to macroprudential regulation in the banking sector, and increases the need to understand NBFI lending activity in detail. Recent research from the Central Bank of Ireland (Gaffney et al, 2022) outlines the range of economic benefits and potential financial stability risks that come with the growth in this form of mortgage financing.[2]

Heffernan et al. (2021) have previously outlined the importance of NBFI lending to Irish SMEs, showing that this source of financing is particularly important in the real estate and wholesale & retail sectors. In many other sectors, NBFI shares are lower, pointing to the specialist business models of many NBFI providers, many of whom issue leasing and asset-based financing targeted at specific types of business borrowers. Analysis in *Resilience: Non-bank financial sector* shows that this share has since grown to 35 per cent across all SME sectors, and is close to 50 per cent in real estate SME lending (Chart 85).

This Box highlights two key features of NBFI lending in the Irish mortgage market based on a recent *Financial Stability Note* (Gaffney et al., 2022). NBFIs have increased their share of new lending from 3 per cent in 2018 to 13 per cent for full-year 2021 (Chart A). This growth has been driven by expansion to almost one third of new lending in the refinancing and buy-to-let segments of the market. By contrast, in the FTB and SSB markets, NBFIs account for 10 per cent of lending. NBFIs are also shown in the research to lend to an almost identical type of borrower as banks in these latter segments.

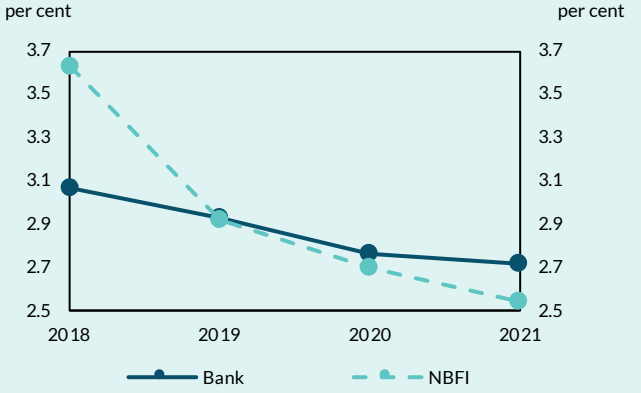
NBFIs have also been reducing interest rates more rapidly than banks since 2018, and were charging a lower average rate to FTBs than retail banks in 2021 (Chart B). This same pattern holds across all four market segments outlined in Chart A. The *Note* highlights that, due to structural balance sheet risks, NBFIs are more likely than retail banks to respond to tighter global financial conditions with increases in interest rates for prospective new mortgage borrowers.

Chart A: NBFI market share has grown in all segments



Source: Gaffney et al. (2022).
Notes: share of total new mortgage lending in each market segment accounted for by NBFIs.

Chart B: NBFIs have been reducing mortgage interest rates



Source: Gaffney et al. (2022).
Notes: Average interest rate on mortgages to First Time Buyers, 2017-2021

1 Fleckenstein, Gopal, Guttierez, Hillenbrand (2020). Nonbank lending and credit cyclicality, available on SSRN.
2 Gaffney, Hennessy, McCann (2022). Non-bank mortgage lending in Ireland – recent developments and macroprudential considerations. Central Bank of Ireland Financial Stability Notes, Vol. 2022, No. 3

Box E: Risk weights (IRB) on Irish Non-Financial Corporate Exposures

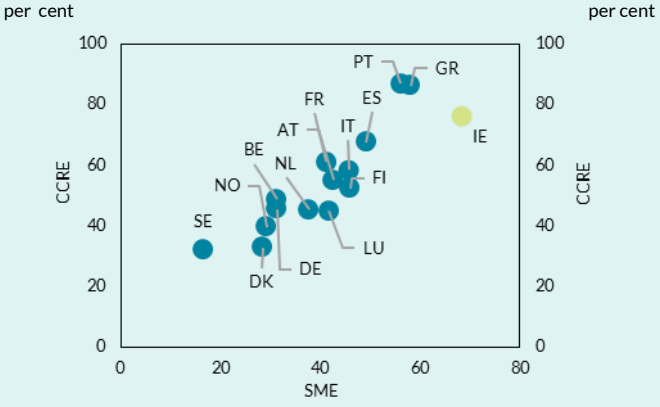
By Paul Lyons & Jonathan Rice (Macro-Financial Division)

This box compares the risk weights on non-financial corporate (NFC) exposures of the Irish retail banks to those of other European banks, as well as discussing some key factors for the relatively higher Irish NFC risk weights. [1] This analysis has formed an input into the Central Bank's review of its macroprudential framework for bank capital.

Risk weights are calculated under global rules established to ensure that banks with riskier assets have more capital to be able to absorb higher potential losses on these assets. NFC lending represents the largest component of total credit RWAs of the main Irish banks. This box focuses on the 57 per cent of Irish NFC RWA treated on the IRB based approach (whereby banks formally model certain risk parameters). The remaining 43 per cent is treated on the standardised basis for regulatory capital quantification (meaning that banks do not estimate risk weights using their own models). Chart A compares the risk weights for Irish banks domestic IRB SME lending portfolios (SME, x-axis) and corporate and commercial real estate exposures (CCRE, y-axis) with those in other countries. Irish IRB SME risk weights (IE) are the highest among all countries in our European sample, while the risk weights associated with CCRE are third highest.

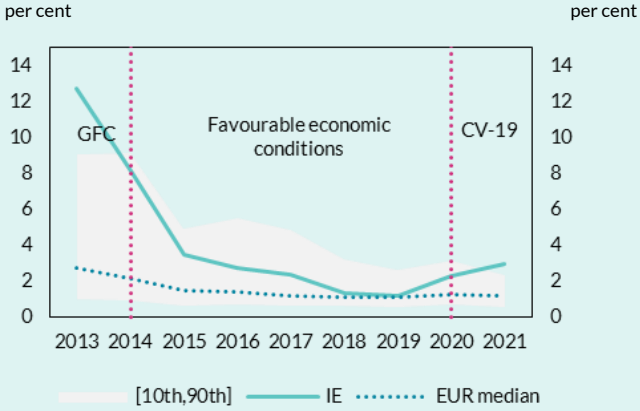
One of the key drivers of the higher risk weights on Irish NFC lending is the higher bank-estimated Probability of Default (PD) for the purposes of deriving RWAs under the IRB framework. The key requirement for banks (per European legislative requirements) is that PDs must be estimated from long-run, one-year default rates and that the historical series must include both good and bad years.

Chart A: Average performing IRB NFC RWDs for Ireland and Europe (June-2021)



Source: EBA Transparency Data June 2021 and CBI Loan Level Database. Performing and domestic exposures only.

Chart B: Average historical default rates for NFCs in Ireland and other European countries.

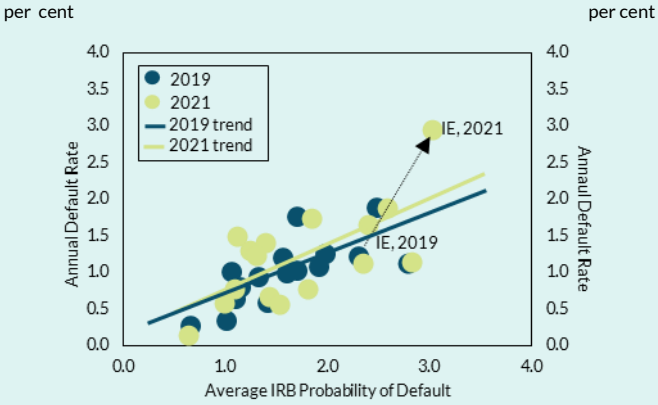


Source: Source: EBA Risk Dashboard Data and banks regulatory returns. Average annual default rates for IRB NFC portfolios in Irish retail banks and a broad sample of European countries. [10th, 90th] denotes the 10th and 90th percentiles of the European sample.

Chart B shows the times series of Irish NFC defaults relative to other European countries. Defaults during the Global Financial Crisis, a period that had been preceded by a period of rapid credit growth, were very high, above the 90th percentile in our sample of European countries. Between 2014 and 2020, Irish default rates fell, towards the European median by 2019 amid favourable economic conditions, before increasing again above the 90th percentile during the COVID-19 pandemic period. To better understand how bank estimated-PDs that input into RWAs reflect underlying default risk, Chart C shows the relationship between actual default rates and bank-estimated PDs in 2019, before the pandemic (a period of relatively strong economic performance), and in 2021, during the pandemic

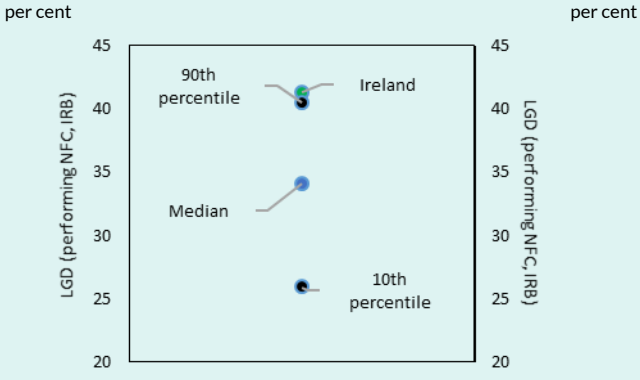
(a period of increased distress). Chart C shows that higher PDs for Irish NFC lending is consistent with the higher observed default rates for these exposures. In the pre-pandemic period, the relationship between bank-estimated PDs and actual defaults was broadly in line with the relationship observed across other European banking systems. During the pandemic, where the default experience of Irish NFCs was higher than elsewhere in Europe, bank-estimated PDs, if anything, appear below what would be implied by the equivalent relationship across other European banking systems. Together Charts B and C highlight that Irish NFC default rates are consistently at the higher end of a European range over a long run period, and they also display a higher level of cyclicality, which is a key driver of bank-estimated PDs, feeding through to higher risk weights.

Chart C: Average annual NFC default rates and average IRB PDs for Ireland and other European countries (before and during CV-19).



Source: EBA Risk Dashboard Data and Irish banks regulatory returns. Annual default rate shown is for 2019 and 2021, and PDs are the average across the first three quarters of 2021 for domestic and performing exposures only. Certain countries excluded due to data quality. Sample includes AT, BE, CZ, DK, FI, FR, DE, HU, IE, LU, NL, NO, PL, RO, ES, SE.

Chart D: Foundation IRB NFC average Loss Given Default rates for Irish and other European banks.



Source: EBA Risk Dashboard data at Sept 2021 and retail banks regulatory returns. Shown are the 90th and 10th percentiles of NFC IRB LGDs for the sample of European countries and the Irish NFC IRB LGD.

Another dimension of higher risk weights is higher LGDs for Irish NFCs. As can be seen in Chart D, the average Foundation IRB (F-IRB) LGD for Irish banks' NFC portfolios is just over 41 per cent, which is above the 90th percentile of the European sample. The majority (88 per cent) of Irish banks' NFC IRB exposure is treated on an F-IRB basis. In contrast, the majority of the NFC portfolios for IRB-compliant banks in European countries are treated on an Advanced IRB (A-IRB) basis.[2] Under the Basel framework, the F-IRB approach is a constrained approach that prescribes some parameters (in particular, the LGD), while allowing discretion to banks to model other components such as PD.[3]

Finally, we note that Irish banks, similar to other European banks, can have regulatory or self-detected adjustments applied to their modelled parameters for some of their NFC IRB models. These adjustments, which are common across the EU (see ECB TRIM, April 2021), lead to higher risk weights than the banks estimated risk weights since they account for deficiencies identified in banks' underlying models. Over time, as banks' models are redeveloped and are calibrated to better reflect the underlying risk, these adjustments may no longer be required, subject to supervisory review.

Overall, the evidence suggests that current risk weights on Irish NFC lending are reflecting the relatively higher risk of these exposures.

[1] See Lyons and Rice (2022) for further details of NFC risk weights.
[2] EBA Transparency data, (https://www.eba.europa.eu/risk-analysis-and-data/eu-wide-transparency-exercise).
[3] The BIS report https://www.bis.org/publ/bcbs256.pdf notes that AIRB banks tend to have lower risk weights than FIRB banks for corporate exposures on average with much of this difference explained by the lower LGDs AIRB banks assign to corporate exposures as compared with FIRB banks – 33% versus 40% on average. Basel IV proposals suggest that unsecured non-retail FIRB LGDs will be reduced from 45% to 40%.

Macroprudential policy

The Central Bank's approach to macroprudential policy is to build resilience when times are good, so that this resilience can be used when times are bad. In doing so, the aim is to ensure the domestic financial system can absorb, rather than amplify, adverse shocks. 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 under consultation for property funds). Table 1 provides an overview of the Central Bank's policy stance on its active macroprudential policy instruments.

Across the three pillars of its framework, the Central Bank has been considering its overall policy approach to the use of macroprudential instruments. This provides an opportunity to reflect on international best practice, lessons-learned from the operation of the macroprudential framework over the past decade, including during the COVID-19 shock, and the evolving nature of the global economy and financial system. This should ensure that the frameworks remain fit for purpose and appropriate in the face of a rapidly-evolving operating environment.

Table 1 | Summary of active macroprudential policies

	Mortgage Measures	O-SII	CCyB
Objective	(i) Increase resilience of lenders and borrowers to negative economic and financial shocks (ii) Dampen pro-cyclicality of credit and house prices.	Increase resilience of systemically important banks, defined as those institutions whose failure would have a large impact on the financial system.	Increase banking system resilience to cyclical risks to facilitate a sustainable flow of credit to the economy in good times and bad.
Rate	LTV: 70% - 90% depending on borrower type LTI: 3.5 times A proportion of new lending above the limits is allowed *See Table 2 for more detail*	0.5% - 1.5% depending on the institution	0.5% (announced)
Exposures in scope	Proportion of newly originated mortgage exposures	All exposures	Irish exposures
Effective from	February 2015	July 2019 on a phased basis	June 2023
Next review	Framework review to conclude in H2 2022	Q4 2022	Q3 2022

The Central Bank is now updating its strategy for deploying macroprudential capital tools and beginning the re-building of macroprudential buffers.[33] In arriving at its new strategy, the Central Bank considered the interactions between macroprudential capital buffers and other parts of the prudential regime (see, for example, Box E of this *Review* for an assessment of RWAs on loans to businesses). It also considered both the macroeconomic benefits and macroeconomic costs of different levels of capital. The updated strategy also incorporates the emerging lessons from the pandemic internationally, including on the value of releasable capital buffers to better enable the banking system to support the economy when shocks hit. Reflecting the new framework, and

[33] See The Central Bank's Framework for Macroprudential Capital, June 2022.

consistent with previous guidance in light of the shift in the risk environment, the Central Bank is beginning the gradual re-building of macroprudential capital buffers through an increase in the CCyB rate to 0.5 per cent.

This chapter also contains updates on the other pillars of the macroprudential framework where policy conclusions arising from the respective reviews are expected later in the year.

Macroprudential capital buffers

The Central Bank is updating its approach to the implementation of its macroprudential capital buffer toolkit. The Central Bank has previously outlined how structural characteristics of the Irish economy increase the magnitude of macroeconomic 'tail' risks, relative to larger, more diversified economies. Due to its openness, Ireland is more sensitive to developments in the global financial cycle as well as being more prone to structural macroeconomic shocks. This is a structural characteristic of the Irish economy, which manifests as greater cyclical macro-financial volatility. While this remains the case, the Central Bank is updating its policy strategy regarding the mitigation of these risks. The Central Bank no longer intends to implement a SyRB for this purpose – instead it plans to utilise the CCyB to do so. This strategy reflects the emerging lessons from the pandemic internationally on the value of releasable capital buffers to better enable the banking system to support the economy when shocks hit. It is also consistent with the Central Bank's aim of ensuring resilience while reducing complexity in the macroprudential capital framework.

As part of its updated strategy, the Central Bank expects to build the CCyB rate to 1.5 per cent when risks are neither subdued nor elevated. The calibration of the buffer which would prevail in such a standard risk environment has been informed by the analytical work underpinning the Central Bank's review of its framework for macroprudential capital buffers. This has considered the macroeconomic costs and benefits of different levels of capital in an environment where risks are neither elevated, nor subdued (Box G). It has also considered the interactions of macroprudential capital buffers with other parts of the prudential framework. In addition, the development of a macroprudential stress testing framework has enhanced the toolkit available to inform the setting of the CCyB (Box F).

The setting of a positive CCyB rate when macro-financial risks are neither elevated nor subdued reflects the Central Bank's view on the appropriate level of system-wide capital for the Irish banking sector. As part of its review of macroprudential capital, the Central Bank has taken a holistic view of bank capital. Such an approach allows for in-depth consideration of the interactions of macroprudential capital buffers with other elements of the prudential framework and balances both the macroeconomic benefits and costs of capital levels (Box G). Informed by these elements, the Central Bank judges that a Tier 1 capital range of between 14 and 18 per cent would act as an overarching guide for the implementation of macroprudential capital buffers when risks are neither elevated nor subdued. The width of the range reflects the fundamental uncertainty in quantifying appropriate capital levels. In reaching a judgement around macroprudential buffers, when risks are neither elevated nor subdued, the Central Bank has taken into account other elements of the prudential capital framework, including interactions with the risk weighting regime and the resolution framework. A 1.5 per cent CCyB rate would imply Tier 1 regulatory capital demand for the banking sector in aggregate at the lower part of the 14 to 18 per cent range, when risks are neither elevated, nor subdued. While serving as a guide to the use of macroprudential capital buffers across the system, the range does not imply a target capital level

for individual institutions.[34] In addition, as is always the case, regulatory requirements are not substitutes for risk management and capital planning by individual firms, which need to be robust and consistent with firms' own risk appetite.

Macroprudential capital buffers will vary in line with the risk environment. The CCyB remains the Central Bank's primary macroprudential buffer for ensuring that the banking sector is resilient to the risks it faces. Consistent with the objective of the CCyB, a rate above 1.5 per cent will be required in cases where those risks are deemed to be more elevated. Similarly, should risks crystallise, the CCyB rate would be released or reduced accordingly, to mitigate the scope for amplification of a downturn via the banking system. The Central Bank will continue to monitor and assess the need for macroprudential policies should new risks be identified. The SyRB remains part of the Central Bank's macroprudential toolkit and is available should additional risks be identified as warranting mitigation via this instrument in the future.

Countercyclical capital buffer

The Central Bank is increasing the CCyB rate from 0 per cent to 0.5 per cent. This move reflects the evolution of the macro-financial environment with the policy stance shifting to build buffers against future shocks. Tail risks faced by the banking sector arising from the pandemic have continued to subside. At the same time, emerging cyclical vulnerabilities are evident in some sectors. Hence, the rebuilding of buffers at this time is deemed in line 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. In line with the outcomes of its broader review of the macroprudential capital buffer framework, the Central Bank intends to build the CCyB rate to 1.5 per cent when risk conditions are neither elevated nor subdued. The current decision is a first step toward the gradual rebuilding of the CCyB which, conditional on macro-financial developments, would see a CCyB of 1.5 per cent announced by mid-2023.

The Central Bank's primary objective for the CCyB is to promote resilience in the banking sector, proportionate to the risk environment.[35] In meeting this objective, as part of the refreshed strategy for the CCyB, the Central Bank intends to build up the CCyB rate to 1.5 per cent when risk conditions are deemed to be neither elevated nor subdued. Setting a positive buffer rate early in the cycle has been a key element of the Central Bank's strategy for the use of the CCyB from its introduction.[36] The approach acknowledges the inherent uncertainty in measuring cyclical systemic risk and looks to ensure an appropriate buffer is available to release as and when required. In addition, by moving early in the cycle authorities potentially have the scope of implementing policy changes in a gradual manner, where necessary and appropriate, with a view to minimising unwanted impacts on the real economy.

The Central Bank' strategy around the CCyB reflects evolving thinking internationally, drawing on lessons learned from the pandemic shock. Across Europe, the limited macroprudential policy space available to authorities at the onset of the COVID-19 pandemic has motivated an appraisal of the

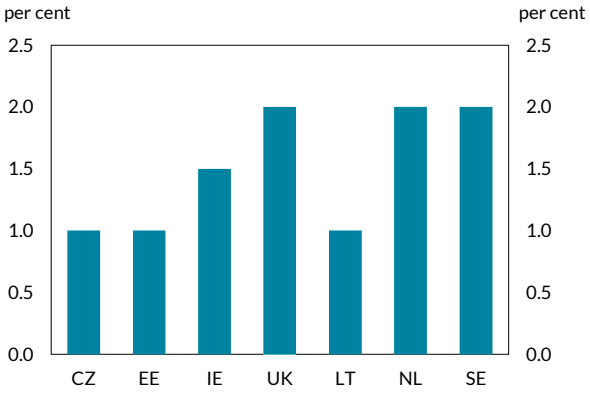
[34] Individual elements of the prudential capital framework will be determined by the respective competent authorities in accordance with their mandates and the appropriate legal frameworks. Institution-specific considerations, reflecting the specific risk profile of that institution and including forward looking capital planning will continue to be captured through supervisory assessments.
[35] The Central Bank's strategy for the CCyB is outlined in The Central Bank's Framework for Macroprudential Capital.
[36] See Measuring and mitigating cyclical systemic risk in Ireland: The application of the countercyclical capital buffer, Central Bank of Ireland, Financial Stability Notes, Vol. 2018, No.4.

benefits of larger releasable buffers – seen for example in the increasingly common approach of looking to have a positive CCyB rate in place in normal risk conditions (Chart 89). By being explicit about its expectation for the CCyB when risk conditions are neither elevated nor subdued, the Central Bank aims to provide greater clarity to external participants on the implementation of the CCyB, strengthening transparency and predictability.

Overall, the Central Bank's framework for the CCyB aims to take a forward-looking approach with a view to facilitating a sustainable flow of credit to the economy through the financial cycle. A stylised representation of the framework across the cycle is shown in Chart 90. Should cyclical risk indicators across credit, the domestic economy, asset prices (including real estate), risk appetite and global conditions reflect emerging imbalances or an elevated risk environment, the buffer rate is expected to be above 1.5 per cent. The use of macroprudential stress tests provides a tool for assessing the resilience required across the cycle, where the choice of input scenario can reflect the level of imbalances present within the system. The CCyB rate would be partially or fully released in cases where a materialisation of cyclical systemic risk or downturn is identified, to a level consistent with mitigating economic risks associated with pro-cyclical bank behaviour.

Chart 89: Increasing number of authorities in Europe are adopting strategies where a positive CCyB rate would be maintained in a normal risk environment

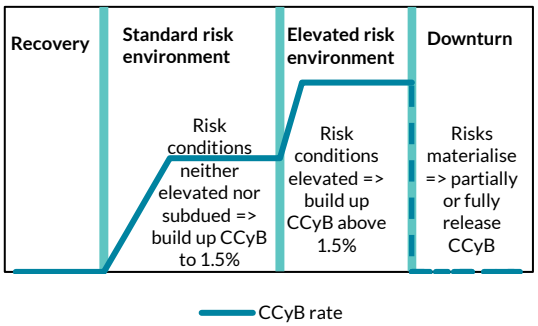
Stated references rates for the CCyB in standard risk conditions



Source: Czech National Bank, Danish Risk Council, Eesti Pank, Bank of England, Lietuvos Bankas, De Nederlandsche Bank, Norges Bank, Sveriges Riksbank.
Notes: In addition to the above, authorities in DK and NO have the stated intention of setting a positive CCyB rate early in the cycle but do not have an explicit reference rate in this regard.

Chart 90: The CCyB rate will vary over the cycle in accordance with the systemic risk environment

Stylized representation of Central Bank's strategy for the CCyB



Source: Central Bank of Ireland.

Consistent with its strategy and reflecting the evolution of macro-financial conditions, the Central Bank is increasing the CCyB rate to 0.5 per cent.[37] The decision to increase the CCyB rate comes on the back of previous guidance that the Central Bank expected to begin gradually rebuilding the CCyB in 2022.[38] The move is consistent with the shift in the risk environment since the depths of the pandemic shock. As discussed in *Resilience: Domestic retail banks*, the tail risks faced by the banking sector arising from the pandemic have continued to subside. At the same time, the economy has been approaching its productive capacity on the back of the strong pandemic recovery, with pockets of emerging cyclical vulnerabilities now evident. While the conflict in Ukraine has translated into downward revisions to growth forecasts, and an increase in uncertainty, overall the growth outlook remains positive – see *Risks: Domestic macro-financial*.

[37] The rate increase is subject to a 12-month phase in and will apply from 15 June 2023.
[38] See FSR 2021:II and CCyB announcement March 2022.

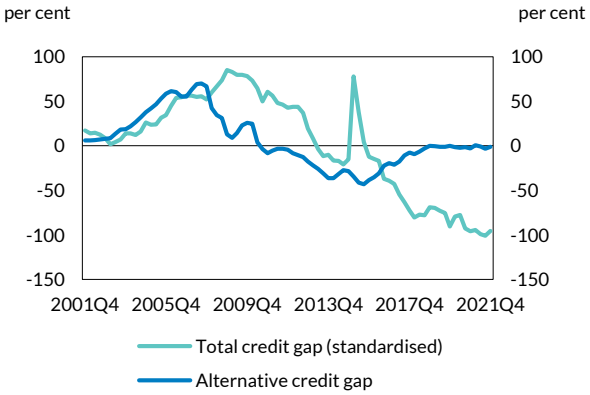
Credit expansion has recovered from pandemic lows, albeit it has been uneven across sectors (see *Overall Risk Environment*). As of end-2021, the alternative credit gap was close to zero (Chart 91).

The move to 0.5 per cent is seen as a first step in moving to a rate of 1.5 per cent, which the Central Bank judges is an appropriate level for the CCyB rate when the risk conditions are neither elevated nor subdued. Given the prevailing capital headroom within the banking sector (Chart 60) and the outlook for the sector (see *Resilience: Domestic retail banks*), a gradual rebuilding of buffers at this time is not anticipated to have a material impact on credit supply and economic activity.[39] Should macro-financial conditions evolve consistent with the central outlook for the economy, a 1.5 per cent rate would be expected to be announced in mid-2023. In general, rate increases are subject to a 12-month phase-in. Nonetheless, the path for the CCyB will ultimately be state-dependant and the speed of build-up could be quicker or slower depending on developments in the interim. Should it be required, based on a crystallisation of risk, the Central Bank would reduce the CCyB rate with immediate effect.

Across Europe, authorities are rebuilding buffers through the (re-)introduction of the CCyB. Many countries are now seen to be building or re-building buffers in light of the evolution of cyclical risks as countries have emerged for the impact of the pandemic (Chart 92).

Chart 91: While the standardised credit gap remains negative the alternative gap has been close to zero recently

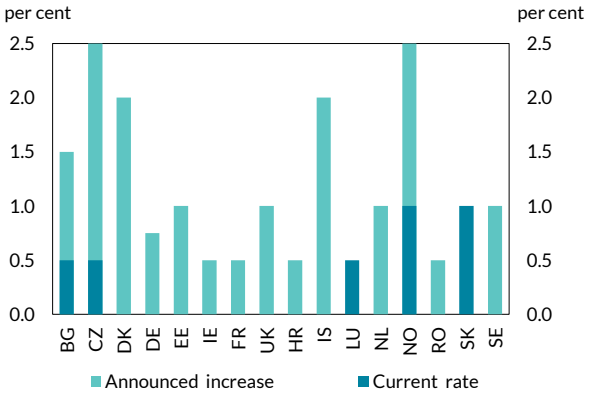
Credit gaps



Source: Central Bank of Ireland calculations.
Notes: The standardised gap measure is based on the HP-filter methodology applied by the BIS and shows the deviation of the total credit-to-GDP ratio from its long-term trend. The alternative credit gap is computed as in O'Brien, O'Brien and Velasco (2018) appended with last observation 2021 Q4 based on a revision of O'Brien and Velasco (2020).

Chart 92: Reflecting the evolving risk environment in many countries, the CCyB is being built up

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



Source: ESRB, Systemic Risk Council, Banque de France, Bank of England, De Nederlandsche Bank.

[39] Insights from Lozej & O'Brien (2018) point to the resilience benefits of a timely activation of the CCyB without substantially reducing economic expansion. The macroeconomic impact of an increase in capital requirements is found to be smaller the further above banks' actual capital ratios are from their regulatory minimum requirement. The cost of incorrectly timing the tightening of the CCyB is found to be small.

Macroprudential Mortgage Measures

Mortgage measures

The Central Bank's mortgage measures consist of loan-to-value (LTV) and loan-to-income (LTI) limits. The measures were first introduced in 2015 with the objectives of increasing the resilience of both lenders and borrowers and dampening the pro-cyclicality of credit and house prices. The 2021 annual review did not result in any changes to the calibration of the measures.

The Central Bank is currently undertaking a detailed review of the mortgage measures framework. The framework review is considering the overarching approach to the mortgage measures to ensure that they remain fit for purpose, in view of the evolution of the financial system and economy since the measures were first introduced. This framework review will conclude in the second half of 2022.

The Central Bank is currently undertaking a review of the policy framework of the mortgage measures. The framework review of the mortgage measures is considering the objectives of the measures, the macroprudential tools used, and the factors that are taken into account when calibrating the measures. This is to ensure that the mortgage measures continue to remain fit for purpose, in light of changes to the financial system and economy since the measures were first introduced in 2015. The framework review will conclude in the second half of 2022.

Public engagement has been a key component of the framework review. The most recent phase of this public engagement included a public consultation and the hosting of an international conference. These elements follow on from an online survey and a series of listening events which took place in July 2021.[40] The public consultation, launched in December 2021, invited interested stakeholders to provide feedback on a range of specific questions relating to the mortgage measures framework.[41] The key areas considered in the consultation paper included the objectives of the mortgage measures, the role of dual or multiple instruments, the choice of income-based instrument, the role of allowances and the use of differential limits by borrower type. The consultation closed in March 2022. The Central Bank also hosted a conference on macroprudential mortgage measures in April 2022, which benefitted from input from external experts in the area.[42] The feedback from the consultation paper, insights from the conference along with ongoing research and analysis conducted by the Central Bank, will inform the conclusions of the framework review (in H2 2022). As part of the outcome of the framework review the Central Bank will publish a feedback statement based on the responses to the public consultation.

As the framework review is taking place over a two year period, the 2021 annual review of the mortgage measures concluded that the existing calibration of the mortgage measures (Table 2) would remain in place. An assessment of the mortgage market found no evidence of deteriorating lending standards and no evidence of an increased role for credit dynamics in explaining recent house price trends. The review indicated a reduction in pandemic-related uncertainty and a robust recovery in the mortgage market.

[40] The Summary Report and Detailed Results of the Online Public Engagement Survey provides further information on these events.
[41] Consultation Paper 146: Mortgage measures framework review
[42] See "Macroprudential mortgage measures: lessons on design, implementation and effectiveness" for details of the conference.

Table 2| Details of the LTV and LTI Regulations

LTV Limits	**For primary dwelling homes (PDHs):**	First-time buyers (FTBs): 90% Second and subsequent buyers (SSBs): 80%	5% of new lending to FTBs allowed above 90% 20% of SSB new lending allowed above 80%
	For buy-to-let borrowers (BTLs):	70% LTV limit	10% of new lending allowed above the BTL limit
LTI Limit	**For PDHs**	3.5 times income	20% of new lending to FTBs allowed above 3.5 limit 10% of SSB new lending allowed above 3.5 limit
Exemptions	**From LTV Limit** Borrowers in negative equity	**From LTI Limit** BTL borrowers Lifetime mortgages	**From both limits:** Switcher mortgages Restructuring of mortgages in arrears

Since the conclusion of the 2021 review, data on new mortgage lending for the full year of 2021 confirm the trends seen in the first half of that year. Table 3 provides an overview of new lending in 2021. A total of €10.8 billion of new lending was originated by reporting institutions in 2021. This represents a 27 per cent increase in the value of new lending compared to 2020 and an 11 per cent increase on lending values in 2019, illustrating the recovery in new lending following the COVID-19 pandemic.[43]

FTB lending continues to be the largest proportion of new lending, at almost 60 per cent of in-scope PDH loans, and with a value of €5.7 billion. Lending to SSBs was valued at approximately €3.9 billion. Shares of lending to BTL borrowers and shares of lending exempt from the mortgage measures remained consistent at 2 per cent and 9 per cent of total lending, respectively. Lending exempt from the mortgage measures was primarily comprised of refinances without an increase in capital.

The mortgage measures continue to incrementally improve the resilience of the overall stock of loans, with increasing shares of lending in-scope of the mortgage measures. As of end-2021, 45 per cent of outstanding mortgage lending at Irish retail banks had been issued since the introduction of the Central Bank's mortgage measures, 41 per cent in scope of the measures and 4 per cent not in scope (Chart 93).

[43] Detailed data on new lending is available here

Table 3| Overview of New Mortgage Lending, January 1 to December 31, 2021

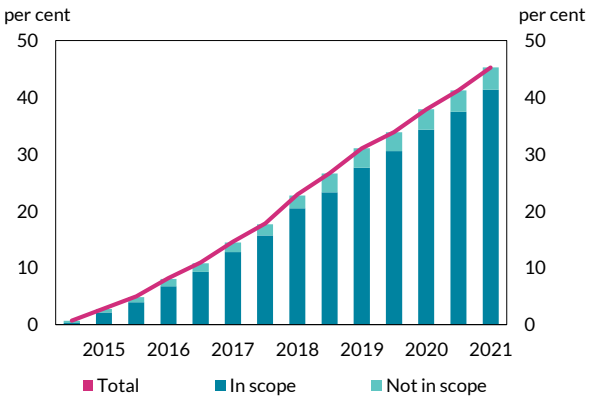
	Total Value 2021 (€M)	No. of Loans 2021	% Value 2021	Total Value 2020 (€M)	% Value 2020
Total Lending	10,758	42,980	100	8,475	100
In-Scope of Regulations	9,748	38,999	91	7,738	91
of which:					
PDH Lending	9,583	37,864	98	7,584	98
FTB Lending	5,689	22,895	59	4,507	59
of which FTB over LTV Limit	1	6	0	4	0
*of which FTB over LTI Limit**	873	2,468	15	576	13
SSB Lending	3,894	14,969	41	3,077	41
of which SSB over the LTV Limit	366	950	9	355	12
*of which SSB over the LTI Limit**	226	549	6	165	5
BTL Lending	165	1,135	2	154	2
BTL over the LTV Limit	2	10	1	3	2
Exempt from Regulations	1,010	3,981	9	737	9
of which:					
Refinance	981	3,809	97	699	95
Negative Equity	7	26	1	12	2
Other Exemption	22	146	2	25	3

Notes: In-Scope Lending excludes negative equity loans which are in-scope for LTI purposes only. These loans are included in the calculation of SSB loans over the LTI limit. Where multiple loans are originated on the same date to the same borrower(s), these are counted as one single 'housing loan' on this date. The individual amounts advanced are aggregated together.

The share of new lending above the LTV and LTI limits has recovered slightly from pandemic lows, but remains below pre-pandemic levels. Chart 94 illustrates the value of PDH lending with an allowance in each year from 2016 to 2021. The share of PDH lending with an allowance was 14 per cent in 2021, a small increase compared to 2020 but below levels observed in 2018 and 2019, where the share of PDH lending with an allowance was 17 per cent.

Chart 93: The mortgage measures continue to improve resilience of the stock of lending, albeit incrementally

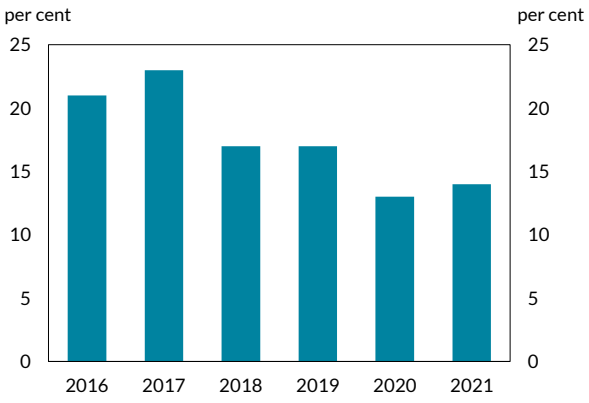
Share of Irish retail bank mortgage lending issued under the mortgage measures framework



Source: Central Bank of Ireland calculations using Loan Level 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.

Chart 94: Allowance lending remains below pre-pandemic levels

Share of PDH lending with an allowance



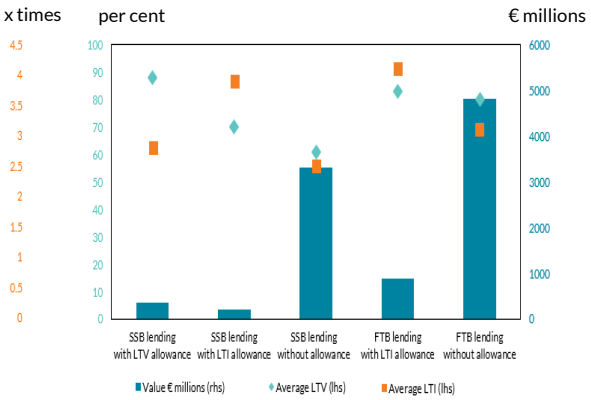
Source: Central Bank of Ireland Monitoring Templates Data.
Notes: PDH Lending with an allowance. A small share of loans will have both an LTV and LTI allowance.

The 2021 review of the mortgage measures saw the introduction of a 'carry-over' system for allowances .The 'carryover' system permits lenders who have allowance lending which has not been allocated in a given year to utilise this in the first half of the following year, on the condition that such allowances were fully approved in the given year. This provides scope for institutions to facilitate the drawdown of additional above limit loans, fully approved and underwritten in 2021, in the first half of 2022. Aggregate amounts available for carryover are approximately €265 million for FTB LTI allowances, €164 million for SSB LTI allowances and €413 million for SSB LTV allowances.[44] As the 'carry-over' facilitates lending over the first half of the year, data are not yet available on how the system has functioned overall.

While the mortgage measures have become more binding over time as house prices have increased relative to incomes, a deterioration in overall lending standards, including in allowance lending, has not been observed. Based on 2021 lending, for FTBs with an LTI allowance, the average LTV was 83 per cent and the average LTI was 4.1 times gross income (Chart 95). For SSBs the average LTI was lower than that of FTBs, at 2.8 for those without an allowance and 3.9 with an LTI allowance. The average LTV for an SSB with an LTV allowance was 88 per cent. As noted in *Resilience: Households*, the level of lending taking place at high LTIs has declined substantially since 2007. FTB lending above the 90 per cent LTV limit or lending with both allowance types is rarely originated.

Chart 95: Average LTV and LTI are conservative across both allowance and non-allowance groups

Average LTV and LTI for FTBs and SSBs with and without an allowance and value of lending in each cohort



Source: Central Bank of Ireland Monitoring Templates Data.
Notes: Insufficient observations to report FTB LTV and LTI Allowance, FTB LTV Allowance, and SSB LTV and LTI Allowance. The variables i.e. value € millions, LTI and LTV are colour co-ordinated to match their relevant axes.

The share of new lending from non-bank lenders has increased from less than 3 per cent in 2018 to 13 per cent in 2021. Non-bank lenders play a relatively greater role in lending in the buy-to-let and refinance[45] segments of the market, relative to the home-buyer segments of the market (Box D). Gaffney *et al* (2022)[46] note that this appears to be changing over time and further increases in non-

[44] The actual level of carry-over lending available to each institution will depend on their own levels of allowance lending in 2021. Compliance with allowances is assessed on an individual basis. Figures used above provide an aggregate view across each allowance type of the potential for carry-over. FTB LTV allowances have been omitted due to the small take-up of this allowance type by lenders. Carry-over is not expected to increase the share of FTB LTV allowances originated by lenders.
[45] Refinance refer to loans both with and without an increase in capital.
[46] Non-bank mortgage lending in Ireland: recent developments and macroprudential considerations, Central Bank of Ireland, Financial Stability Notes, Vol. 2022 No.3.

bank lenders' penetration into the purchase markets (FTB and SSB) may follow from the exits of two retail banks. In these home-buyer segments of the market, non-banks and retail banks seem to lend to an almost identical type of borrower albeit with an important difference in intermediation methods where non-bank lenders rely almost uniquely on mortgage brokers.

Macroprudential policy in market based finance

Macroprudential measures for property funds

Property funds have become a key participant in Irish CRE markets, with potential benefits for macroeconomic and financial stability. However, this development raises the potential that new macro-financial vulnerabilities could emerge, so it is important the regulatory framework adapts accordingly. In response, in November 2021, the Central Bank proposed new macroprudential policy measures aimed at safeguarding the resilience of the Irish property fund sector, so that this form of financial intermediation is better able to absorb – rather than amplify – adverse shocks to the CRE market. The Central Bank ran a public consultation on the proposed measures over a period of 12 weeks from 25 November 2021 to 18 February 2022. The Central Bank is currently preparing a feedback statement and is in the process of finalising the policies outlined in the consultation paper. It is expected that a final policy will be communicated over the coming months.

Property funds have become a key participant in Irish CRE markets, with potential benefits for macroeconomic and financial stability. Property funds have increased the proportion of equity financing in the Irish CRE market relative to the period before the financial crisis, which has had risk sharing benefits for the market. In addition, as property funds are primarily financed by foreign investors, this growing form of financial intermediation also provides diversification benefits.

However, this change raises the potential that new macro-financial vulnerabilities could emerge, so it is important the regulatory framework adapts accordingly. The analysis outlined in *Resilience: Non-bank financial sector*, in addition to the research previously undertaken by the Central Bank, illustrates that there is a cohort of property funds that have high levels of leverage and, to a lesser extent, liquidity mismatches.[47] Absent policy interventions, these vulnerabilities have the potential to grow or become more widespread in the future. Even absent such growth, in the presence of such vulnerabilities, the property fund sector could respond to future adverse shocks through sales of property assets over a short period of time. This type of selling behaviour has the potential to amplify adverse shocks to the commercial real estate market and the wider economy.

In response, the Central Bank proposed new macroprudential policy measures in November 2021 aimed at improving the resilience of the Irish property fund sector, so that this form of financial intermediation is better able to absorb – rather than amplify – adverse shocks to the CRE market. Specifically, the Central Bank proposed the introduction of leverage limits and liquidity guidance around notification periods for property funds investing over 50 per cent of their assets directly or indirectly in Irish property (see Consultation Paper 145 and FSR 2021:II for further details). These

[47] See Financial Stability Review 2021:I, Financial Stability Review 2021:II and Daly et al., (2021), "Property funds and the Irish commercial real estate market", Central Bank of Ireland, Financial Stability Notes, Vol. 2021, No. 1.

proposed measures aim to better equip the sector to serve its purpose as a valuable and sustainable source of funding for economic activity.

The Central Bank ran a public consultation on the proposed measures over a period of 12 weeks from 25 November 2021 to 18 February 2022. The Central Bank received a number of responses from stakeholders, including alternative investment fund managers (AIFMs), fund investors, alternative investment fund (AIF) service providers, and a range of industry bodies. The feedback was insightful, and provided additional insight into the complexities and potential impacts of the proposed measures.

The Central Bank is carefully considering the feedback received in order to finalise the exact specifications of the proposed measures outlined in the consultation paper. Key issues that emerged in the responses, and are informing the Central Bank's current deliberations, include the proposed calibration of the leverage limit and the approach to funds with an existing level of leverage above the proposed limit. It is expected that the final policies and a feedback statement will be communicated in the second half of 2022.

Recognition of macroprudential measures taken by other countries

The reciprocation of macroprudential measures enhances the effectiveness and consistency of macroprudential policy in the EU. Macroprudential policy measures taken in one country are likely to have external effects on financial stability in other countries through cross-border linkages. In order to ensure the effectiveness of macroprudential measures, the ESRB has established the process of reciprocation whereby a Member State applies the same or equivalent macroprudential measure that is activated in another Member State in order to address a risk related to a specific exposure. The Central Bank's reciprocation framework has two distinct processes; responding to ESRB reciprocation recommendations and conducting an annual review of outstanding reciprocation recommendations.[48]

Since mid-2021, authorities across Europe have implemented a number of macroprudential policy measures for which reciprocation has been recommended by the ESRB. The mitigation of risks emanating from the real estate sector has been a common theme for many of these measures with authorities utilising a range of policy instruments including risk weight measures (NO, NL), sectoral systemic risk buffers (LT, BE) and LTV limits (LU). Unlike the CCyB, where rates are subject to automatic reciprocity, these measures may require voluntary reciprocity.[49] The Central Bank conducted an assessment of the ESRB's recommendation to reciprocate each of these measures. In each case, the assessment found the Irish banking system did not have material relevant exposures, and hence reciprocation of the measures was not warranted.[50]

The Central Bank continues to reciprocate a French macroprudential measure under Article 458 of Regulation (EU) No 575/2013 ("CRR").[51] The conditions for ongoing reciprocation of this measure were confirmed in a re-assessment of this measure arising from a revision to the measure in 2021. The Central Bank also conducts an annual review of outstanding reciprocation

[48] The Central Bank has laid out a framework in line with ESRB/2015/2 and undertakes an assessment of all ESRB recommendations for reciprocation and where appropriate may comply with the recommendation to reciprocate the measures taken. See Central Bank of Ireland (2016) Macro Financial Review 2016:1, Pg. 50 for details.
[49] Voluntary reciprocity refers to measures recommended for reciprocation by the ESRB under recommendation ESRB/2015/2.
[50] See details of each of the measures in ESRB recommendation ESRB 2022/3.
[51] See decision by the Central Bank to reciprocate a French measure under Article 458 of Regulation (EU) No 575/2013 ("CRR").

recommendations. This annual review found that the conditions for non-reciprocation continued to be met for a Belgian (subsequently expired) and Swedish measure.[52]

[52] See Public Account of Macroprudential Measures Committee November 22, 2021.

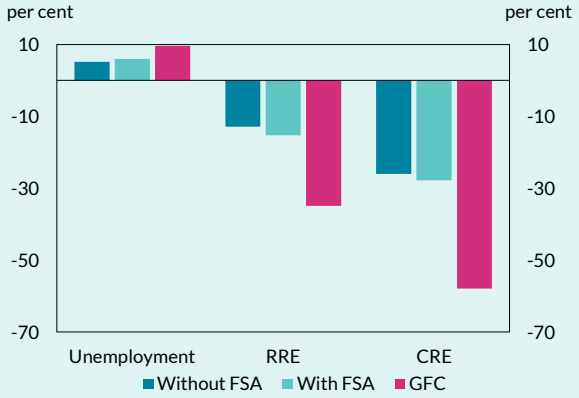
Box F: Macroprudential Stress Testing as an input to the CCyB Decision

The Central Bank continues to develop and broaden its analytical toolkit used to inform the setting of the CCyB. One particular innovation is the development of a macroprudential stress test model. This extends the traditional stress testing toolkit to incorporate the modelling of shock amplification mechanisms (such as deleveraging and credit crunches).

This box sets out how the macroprudential stress test, in conjunction with the Central Bank's macroeconomic models, can help inform the decision on the level of the CCyB rate. Consistent with the objective of the CCyB, the focus of the application relates to domestic credit exposures. As such, it is not a full balance sheet stress test, which would cover a wider range of exposures, including domestic and international credit risks, market risks or even more idiosyncratic risks such as those related to pension liabilities. Rather, it focuses on the potential impact on capital from a macro-financial shock through the banking sector's domestic exposures. Capital depletion stemming from items such as the wind-down of transitionary regulatory arrangements is also not considered for CCyB calibration purposes.

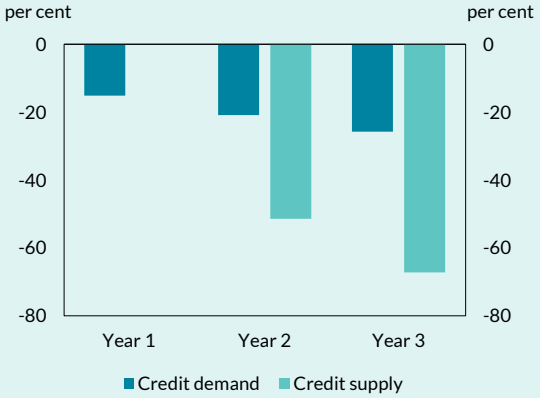
As with any stress test, the initial input to the stress test is an adverse macroeconomic scenario. The adverse scenario is estimated primarily using the Central Bank's macroeconomic models.[1] The scenario has been calibrated to reflect the cyclical position of the Irish economy, and is consistent with the risk narrative presented in this Review (*see Risks Section*). The risk narrative includes a global macroeconomic slowdown triggered by an increase in energy prices leading to high inflation internationally, a tightening of global financing conditions accompanied by significant asset price declines, a decline in domestic economic activity due to lower consumer spending and investment as well as a fall in output in the MNE-dominated traded sector.

Chart A: The impact of financial sector amplification on the adverse scenarios



Source: Central Bank of Ireland.
Notes: The chart shows the impact of financial sector amplification (FSA) on unemployment, residential real estate prices (RRE) and commercial real estate prices (CRE). For the unemployment series, the difference between the 2021 value and maximum value over the scenario is reported, while the cumulative 3 year growth rate is reported the real estate price series. We omit the amplification for inflation since this is negligible. The chart also presents comparable metrics observed over the first three years of the GFC (2009-2011).

Chart B: New lending in the adverse scenario



Source: Central Bank of Ireland.
Notes: The chart shows the credit demand and credit supply paths over the scenario. Numbers are cumulative, i.e. by year 3, credit supply is approximately 65 per cent lower than lending in year zero (the reference year). There is no credit supply response in the first year of the scenario as it is assumed that banks react with a lag to changes in the macroeconomy. Actual lending volumes in each year are determined in the model as the minimum of the estimated demand and supply paths.

Chart A presents the evolution of macroeconomic variables in the adverse scenario and compares these to paths observed during the Global Financial Crisis (GFC). Relative to the adverse scenario considered in this exercise, the GFC is significantly more severe, indicative of the heightened level of cyclical risk built up in the years prior to the GFC. Therefore, the scenario – and its associated insights around the setting of the CCyB – reflects the current macro-financial environment. In future, if cyclical risks to the Irish economy were to grow, this would be reflected in future macroprudential stress tests through greater severity of the underlying shocks in the adverse scenario.

A key feature of the macroprudential stress test is that banks are assumed to respond to these adverse conditions by deleveraging through contracting lending and raising lending interest rates to defend their capital positions. Consequently, a tightening of credit conditions worsens the initial scenario through financial sector amplification (Chart A). The extent of deleveraging is captured in Chart B, which presents changes in credit demanded and supplied over the horizon. The former reflects the demand-side of the economy which declines in line with the deterioration in the macroeconomic environment. The latter is driven by banks retrenching on new lending to preserve capital.

Given that the CCyB rate set by the Central Bank relates only to Irish exposures, only Irish exposures are included in this exercise. Bank capital is assumed to be available to absorb losses on Irish assets in equal proportion to the share of Irish assets in each lender's total RWA. Chart C decomposes the cyclical drivers of the CET1 capital depletion arising from the macroprudential stress test. In the adverse scenario, credit risk impairments are the main driver and contribute 8.5 percentage points of capital depletion. The increase in unemployment and decreases in property prices over the course of the scenario are key drivers of the credit risk losses. These losses are somewhat mitigated by net income which contributes positively to the capital ratio, boosting it by 270 bps over the scenario.

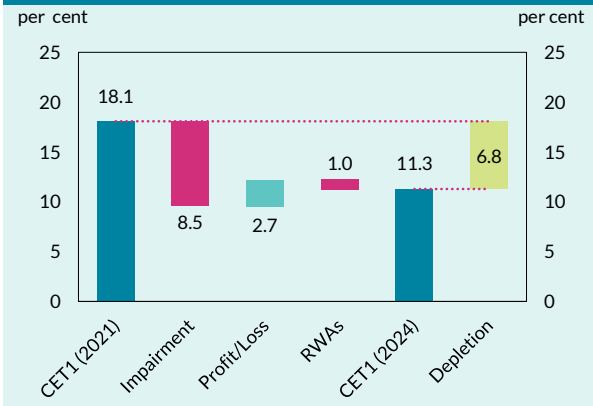
There are two drivers behind the movement in RWAs in the model. In the model, RWAs fall as banks defend their capital positions by deleveraging, but this is offset by an increase owing to the drawdown of existing credit lines by corporate and SME borrowers in response to the adverse scenario, and higher risk weight densities due to the adverse macroeconomic environment. The latter effect dominates, therefore RWAs contribute negatively on aggregate to capital over the scenario.

Taken together, the role of credit risk impairments, net income and expenses, and RWAs leads to a cyclical capital depletion of 680bps. Chart D illustrates the size of the estimated capital depletion relative to the macroprudential capital buffers already in the system. Beyond the CCyB, the banking system already has regulatory buffers in place that allow it to absorb losses in a stress. These include the Capital Conservation Buffer (CCoB) of 250bps and the Other Systemically Important Institutions (O-SII) buffer, which at a system-wide average equates to around 120bps. This means that – on average across the system – additional capital of around 310bps, relative to relevant RWAs, would be required to absorb losses from the domestic loan portfolios in the stress.

In judging the appropriate level of the CCyB (when risks are neither elevated nor subdued), the Central Bank has taken into account that there are also bank-specific recommendations around the level of capital that supervisors expect banks to maintain, in the form of Pillar 2 Guidance. The aim of the CCyB is to support lending in periods of stress and evidence shows[2] the supply of lending to be impacted in advance of capital depletion reaching regulatory requirements. This is consistent with calibration of the CCyB for cyclical depletion in excess of 680bps. However, the Central Bank has taken into account additional factors and their application in an Irish context, including the assessment of macro-economic costs and benefits of different levels of capital outlined earlier as well as interactions of

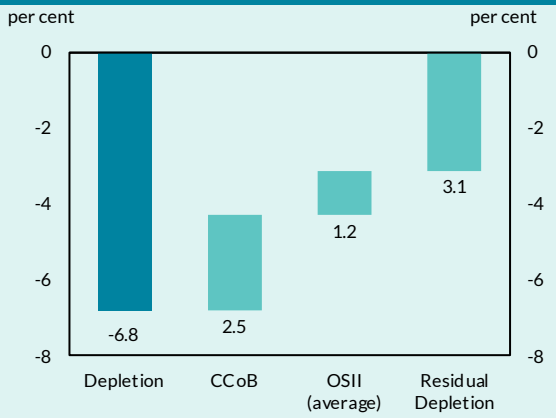
macroprudential buffers with other parts of the prudential regime. Like all analytical inputs, this approach is one input into an overall judgement around the CCyB and there is no mechanistic link between stress testing outputs and the CCyB. Taking all these factors into account, the Central Bank judges that a CCyB of approximately 150bps would be appropriate in an environment when risks are neither elevated, nor subdued. Further details on the macroprudential stress test model and how its insights can support the setting of the CCyB can be found in The Central Bank's Framework for Macroprudential Capital.

Chart C: Waterfall, CCyB-relevant RWAs



Source: Central Bank of Ireland.
Notes: The chart presents the cyclical drivers of CET1 depletion over the adverse scenario. "Profit/Loss" denotes other cyclical items on the profit/loss statement impacted over the scenario and "RWAs" denotes the contribution from risk weighted assets. On aggregate, the cyclical drivers amount to 6.8 percentage points of CET1 depletion (Depletion).

Chart D: Capital depletion and buffers



Source: Central Bank of Ireland.
Notes: CCoB denotes the capital conservation buffer, OSII denotes the weighted average buffer requirements for other systemically important institutions.

[1] The NiGEM model was used to generate the global shocks with the COSMO model used to estimate the impact of the global shocks on the Irish economy and to incorporate the Irish specific elements of the scenario. NiGEM is a global economic model developed by the National Institute of Economic and Social Research in the UK. The model documentation can be found at: https://nimodel.niesr.ac.uk/ COSMO is a model of the Irish economy used by the Central Bank (see Bergin et al (2017) and Conefrey, O'Reilly and Walsh (2018).
[2] See Article in ECB Financial Stability Review Issue 2, 2021

Box G: Analytical work informing the Central Bank's macroprudential capital strategy

This box summarises the approach taken by the Central Bank to reach a judgement around the capital range that will act as a guide to the Central Bank's implementation of macroprudential capital buffers, in an environment when risks are neither elevated nor subdued.

In conducting its review around its macroprudential buffer strategy, the Central Bank has sought to consider the interactions between macroprudential capital buffers with other elements of the capital regime. It has also incorporated an assessment of both the macroeconomic benefits and costs of capital to inform its overall judgement.

The baseline analytical framework for considering the balance between macroeconomic costs and benefits of different levels of capital is outlined in McInerney *et al*, (forthcoming)[1]. The macroeconomic benefits of additional capital arise from the associated lower probability of a systemic banking crisis, which leads to a reduction in the expected macroeconomic banking crisis-related costs. The macroeconomic costs of additional capital are measured in terms of a reduction in output, which arises from higher interest rates on bank lending. This analytical approach – which has been used by a number of regulatory authorities internationally, including the Basel Committee for Banking Supervision - can provide a framework for considering the level of capital at which the net macro-economic benefits of bank capital are maximised.

These is inherent uncertainty around analytical estimates of the appropriate level of bank capital. This uncertainty stems from fundamental factors. Examples include the low frequency of banking crises internationally (which means there is a limited sample of data to assess the likelihood and/or implications of banking crises) or the challenges in measuring with precision the magnitude of 'tail' macro-financial risks facing the banking system. As with any analytical approach, therefore, the quantitative estimates of the costs and benefits of different levels of capital are sensitive to underlying assumptions. In this analytical set up, such choices include how long the negative impact of banking crises lasts, the discount factor used to estimate the present values of lost future economic activity and capital costs to be offset via the so-called Modigliani-Miller channel.[2]

Table 1 summarises the Tier 1 capital levels implied by the analytical framework associated with different combinations of these model inputs/assumptions. The importance of these model inputs is illustrated in the variation in the estimated capital level (which ranges from 12-20 per cent). In each case, the estimate for the capital ratio relates to that applicable to a typical advanced economy when risks are neither elevated, not subdued. The same modelling approach has also been used to show that countries with certain macro-financial structural characteristics, like those of Ireland, may require additional capital, over and above that of a typical advanced economy, to mitigate the higher risks associated with these characteristics (O'Brien and Wosser, forthcoming[3]). The analysis suggests additional capital of around 1 per cent to account for structure-related systemic risk, when risks are neither elevated, nor subdued.

The review also considered the interaction of bank capital with other elements of the prudential framework. Specifically:

- **Risk weighted assets:** The Central Bank has considered the interaction between risk weighted assets (RWAs) and macroprudential buffers. The objective of risk weighting is to reflect the underlying risk of banks' portfolios. The Central Bank has considered the drivers of RWAs for key lending portfolios in Ireland to assess the extent, if any, of potential overlap between minimum requirements and macroprudential capital buffers (see Lyons & Rice, *Financial Stability Notes, No.s 1 and 4 (2022)*). The outcome of this assessment is that the RWA regime broadly

captures the risk facing Irish banks' main loan books appropriately. Thus, risk weight densities in Ireland are higher than in other countries because the underlying risk of current lending exposures is higher. There is one area where the Central Bank judges there to be potential overlap between risk weighting and the buffer framework. Consistent with the regulatory requirement to model 'downturn' LGDs, the high modelled LGD in the mortgage market is partly a reflection of the very severe crisis that Ireland experienced from 2008 (Lyons and Rice, 2022), as well as the challenges to realise mortgage collateral through repossession. That crisis, in turn, was a function of the very large credit-driven housing boom that preceded the financial crisis which would now typically be captured through buffers like the CCyB. The Central Bank judges the potential overlap between this LGD channel of the RWA regime and macroprudential buffers to be small, in the range of 25-50 basis points (bps) of Tier 1 capital.

- **Resolution frameworks and 'gone concern' loss absorbing capacity:** All else equal, effective resolution frameworks would be expected to reduce the macroeconomic cost of a bank failure – something which would result in a lower estimate for the appropriate level of 'going concern' capital within the analytical framework outlined above. Nonetheless, the quantification of this effect is particularly challenging, not least because there remains a lack of experience with the implementation of recovery and resolution regimes, particularly in the context of a systemic banking crisis. While precise quantification of the extent to which the implementation of recovery and resolution regimes reduce the appropriate level of capital for Ireland is challenging, the Central Bank judges that this an important factor that would justify lower 'going concern' requirements relative to what the baseline analysis above would indicate. Some of these factors have been taken into account in the assumptions regarding the cost of crisis in the modelling approach, which uses an average cost of crisis rather than an Irish specific one.
- **Mortgage measures:** The mortgage measures strengthen lending standards by banks. This is already reflected in the capital framework through risk weighting. For example, loans that have been issued since the financial crisis – under more prudent lending standards than before – have significantly lower risk weights than loans issued before the financial crisis. The introduction of the mortgage measures has also reduced the probability of credit-fueled housing booms from re-emerging and, through that channel, the likelihood of experiencing housing shocks in the future as severe as those seen during the financial crisis. Through their role in dampening this cyclical dynamic, the mortgage measures are also likely to reduce the severity of residential real estate declines in future adverse scenarios applied to macroprudential stress tests (pointing to a lower amplitude of the CCyB than would be the case in the absence of the mortgage measures).

Judgements based on the factors outlined above inform the decision regarding the range of 14 – 18 per cent and the calibration of the CCyB rate in a standard risk environment, which brings the overall capital demand into the lower part of this range. While serving as a guide to the use of macroprudential capital buffers across the system, the range does not imply a target or appropriate capital level for individual institutions. In addition, as is always the case, regulatory requirements are not substitutes for risk management and capital planning by individual firms, which need to be robust and consistent with firms' own risk appetite.

Table 1: Model calibration and estimated capital level for a typical advanced economy

Combination of modelling assumptions	*Appropriate T1 Capital*
MM offset: 0% Discount factor: 3% Crisis effects: Temporary (5 yrs)	12%
MM offset: 0% Discount factor: 3% Crisis effects: Permanent	16%
MM offset: 50% Discount factor: 1% Crisis effects: Permanent	20%

Source: Rightsizing bank capital for small, open, economies, Central Bank of Ireland, Research Technical Paper, forthcoming.

[1] Rightsizing bank capital for small, open economies, Central Bank of Ireland, Research Technical Paper, forthcoming.
[2] The Modigliani-Miller theorem states that in a perfectly competitive and frictionless economy, the value of a firm is independent of how it is financed. The empirical evidence on the Modigliani-Miller theorem however is mixed.
[3] Assessing structure-related systemic risk in advanced economies, Central Bank of Ireland, Research Technical Paper, forthcoming.

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
CRD	Capital Requirements Directive
CRE	Commercial real estate
CRO	Companies Registration Office
CSO	Central Statistics Office
EA	Euro area
EBA	European Banking Authority
ECB	European Central Bank
EEA	European Economic Area
EM	Emerging market
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
EU	European Union
EWSS	Employment Wage Subsidy Scheme
FSR	Financial Stability Review
FTB	First-Time Buyer
GDP	Gross domestic product
GFC	Great Financial Crisis
GNI	Gross national income
HH	Households
HICP	Harmonised index of consumer prices
IFRS	International Financial Reporting Standards
IMF	International Monetary Fund
KBC	Kredietbank ABB Insurance CERA Bank
LGD	Loss given default
LTI	Loan to income ratio
LTV	Loan to value ratio
MSCI	Morgan Stanley Capital International
NBFI	Non-bank financial intermediary
NFC	Non-financial corporation
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
ROE	Return on equity
RRE	Residential real estate
RWA	Risk-weighted asset
SCR	Solvency capital requirement
SCSI	Society of Chartered Surveyors of Ireland
SME	Small and medium enterprise
SSB	Second and subsequent buyer
SSM	Single Supervisory Mechanism
SyRB	Systemic risk buffer
SVR	Standard variable rate
UBI	Ulster Bank Ireland
WEO	World Economic Outlook

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