



# IRELAND

## FINANCIAL SECTOR ASSESSMENT PROGRAM

### TECHNICAL NOTE ON MACROPRUDENTIAL POLICY FRAMEWORK AND TOOLS

September 2022

This paper on Ireland was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on August 31, 2022.

Copies of this report are available to the public from

International Monetary Fund • Publication Services  
PO Box 92780 • Washington, D.C. 20090  
Telephone: (202) 623-7430 • Fax: (202) 623-7201  
E-mail: [publications@imf.org](mailto:publications@imf.org) Web: <http://www.imf.org>  
Price: \$18.00 per printed copy

**International Monetary Fund**  
**Washington, D.C.**



INTERNATIONAL MONETARY FUND

# IRELAND

FINANCIAL SECTOR ASSESSMENT PROGRAM

August 31, 2022

## TECHNICAL NOTE

MACROPRUDENTIAL POLICY FRAMEWORK AND TOOLS

Prepared By  
**Monetary and Capital Markets  
Department**

This Technical Note was prepared by IMF staff in the context of the Financial Sector Assessment Program in Ireland. It contains technical analysis and detailed information underpinning the FSAP's findings and recommendations. Further information on the FSAP can be found at

<http://www.imf.org/external/np/fsap/fssa.aspx>

# CONTENTS

Glossary	4
<b>EXECUTIVE SUMMARY</b>	<b>6</b>
<b>INTRODUCTION</b>	<b>9</b>
<b>INSTITUTIONAL FRAMEWORK</b>	<b>10</b>
A. Willingness to Act	10
B. Ability to Act	13
C. Effective Coordination and Cooperation	13
<b>SYSTEMIC RISK MONITORING</b>	<b>17</b>
<b>SYSTEMIC RISKS AND MACROPRUDENTIAL TOOLS</b>	<b>19</b>
A. Broad-Based Vulnerabilities	19
B. Vulnerabilities from Residential Housing and the Household Sector	22
C. Vulnerabilities from the Corporate Sector	31
D. Vulnerabilities from Bank Funding and Liquidity	33
E. Vulnerabilities from the Non-Bank Sector	35
F. Structural Vulnerabilities	41
<b>BOX</b>	
1. Housing Policies in Ireland	32
<b>FIGURES</b>	
1. Broad Credit Conditions	21
2. House Prices	23
3. House Prices at Risk	24
4. Mortgages	26
5. Household Balance Sheets	27
6. Mortgage Measures	29
7. NFC Financing	34
8. Bank Funding and Liquidity	36
9. CRE Market	39
10. Property Funds and CRE	40
11. CRE at Risk	43
12. Non-Bank Lending to SMEs	44

13. Structure of the Financial System	45
---------------------------------------	----

**TABLES**

1. Recommendations on the Macroprudential Policy Framework	8
2. Main Macroprudential Instruments Available to the Irish Authorities	14
3. Current Macroprudential Settings	15
4. Mortgage Measures in Ireland	28
5. LTI Allowances Under the Mortgage Measures, 2021H1	30
6. LTV Allowances Under the Mortgage Measures, 2021H1	30

**ANNEX**

I. Growth-at-Risk Models	50
--------------------------	----

References	46
------------	----

## Glossary

BBM	Borrower-Based Measure
BTL	Buy-to-Let
CBI	Central Bank of Ireland
CCyB	Countercyclical Capital Buffer
CCR	Central Credit Register
CRD	Capital Requirement Directive
CRE	Commercial Real Estate
CRR	Capital Requirement Regulation
DoF	Department of Finance
DTI	Debt-to-Income
DSTI	Debt-Service-to-Income
EA	Euro Area
EBA	European Banking Authority
ECB	European Central Bank
EIOPA	European Insurance and Occupational Pensions Authority
ESCB	European System of Central Banks
ESFS	European System of Financial Supervision
ESMA	European Securities and Markets Authorities
ESRB	European Systemic Risk Board
EU	European Union
FMI	Financial Market Infrastructure
FSAP	Financial Sector Assessment Program
FSG	Financial Stability Group
FTB	First-time Buyer
GDP	Gross Domestic Product
GFC	Global Financial Crisis
G-SII	Global Systemically Important Institution
IID	Independently and identically distributed
IMF	International Monetary Fund
LGD	Loss Given Default
LTI	Loan-to-Income
LTV	Loan-to-Value
MMC	Macroprudential Measures Committee
MMF	Money Market Fund
NAMA	National Asset Management Agency
NFC	Non-Financial Corporation
OFI	Other Financial Intermediary
O-SII	Other Systemically Important Institution
PIT	Probability integral transform

REIT	Real Estate Investment Trust
RRE	Residential Real Estate
SME	Small and Medium-size Enterprise
SPV	Special Purpose Vehicle
SRB	Systemic Risk Buffer
SSB	Second and Subsequent Buyer
SSM	Single Supervisory Mechanism

## EXECUTIVE SUMMARY

**Ireland is a small open economy that is part of a monetary union and has a major financial system.** Within the Euro Area (EA), Ireland comprises a relatively small proportion of aggregate GDP (3.4 percent), of which a significant portion is attributable to foreign-owned multinational enterprises (MNEs). Yet, the Irish financial system holds assets of EUR 7.9 trillion, over 18 times GDP. Since monetary policy is carried out by the European Central Bank (ECB) for the entire EA, macroprudential policy has the potential to play a critical stabilizing role for the Irish financial system.

**The Central Bank of Ireland (CBI) is responsible for macroprudential policy in Ireland, sharing some responsibilities with European institutions.** The CBI is the authority for the purposes of ESRB Recommendation 2011/3 establishing the macroprudential mandate of national authorities under the European System of Financial Supervision (ESFS). The EU Capital Requirements Regulation and Directive (CRR/CRD) provides the CBI with certain macroprudential powers as the designated authority. The Central Bank (Supervision and Enforcement) Act 2013 provides the CBI with a broad power to issue regulations. Where it is in the interests of the proper and effective regulation of regulated financial service providers, the regulations may be used to achieve a macroprudential objective, for instance through borrower-based measures.

**The macroprudential policy framework in Ireland has developed significantly since the 2016 FSAP.** Within the CBI, the Financial Stability Directorate was established in 2016 to bring together responsibilities for macroprudential policy, resolution, and crisis management. The Macroprudential Measures Committee (MMC) was also established within the CBI in 2016 to advise on the regular review of macroprudential measures and make recommendations over the calibration of these measures. The Financial Stability Group (FSG), formed in 2017 as a non-statutory, inter-agency coordination mechanism, has improved cooperation at the domestic level.

**The CBI has successfully implemented new macroprudential policy measures, including residential mortgage measures and macroprudential capital buffers.** In February 2015, the CBI introduced loan-to-value (LTV) and loan-to-income (LTI) limits to increase the resilience of banks and borrowers to adverse shocks, as well as to dampen the feedback between credit and house prices. Empirical evidence shows that the measures have been working as intended, and they remain subject to annual review. The CBI has also made active use of its macroprudential toolkit for bank capital, including by introducing an additional buffer for other systemically important institutions (O-SII) in July 2019 and by releasing the countercyclical capital buffer in April 2020 in response to the COVID-19 shock.

**The institutional framework is appropriate for the CBI to be able to act, but some areas can be strengthened.** The CBI has a clear financial stability mandate. Decision-making on tools under the CBI's power is divided between the Central Bank Commission and the Governor under advisement by the MMC. The CBI has broad powers to implement measures as relevant for financial stability, as

well as broad information powers. Nevertheless, opening the MMC to external advisory members would align the committee with international best practice, strengthening diversity of perspectives and acting as a safeguard against the risk of potential future inaction bias.

**The systemic risk monitoring framework is sophisticated and continues to develop but would benefit from closing data gaps and continuing to expand the framework for non-bank monitoring.**

The process for monitoring systemic risks is structured around the bi-annual production of the Financial Stability Review, facilitating an exchange of views at multiple stages of the development cycle. Completion of a dynamic macroprudential stress-testing framework would provide an additional analytical framework for quantifying the appropriate capital stance for the banking system to withstand adverse shocks, thereby informing the calibration of capital buffers. Expanding risk monitoring, including through international coordination, is important to strengthen the assessment of interactions between banks and investment funds, as well as filling gaps in commercial real estate (CRE) investment, including direct cross-border exposures.

**Broad-based vulnerabilities are moderate, and risks from the real estate and non-bank sectors warrant continued attention.<sup>1</sup>**

The financial cycle is currently in a neutral position, but cyclical indicators suggest that the CCyB could be increased in the near term in order to respond to the upswing of the financial cycle. Households have come out of the COVID-19 pandemic with increased liquidity buffers, contributing to upward pressure in the residential real estate (RRE) prices. Irish-resident corporates continue to deleverage, but the withdrawal of policy support in 2022 will likely lead to rising NPLs and insolvencies. Accumulated savings, constrained supply, and accelerating construction costs are likely to intensify the current imbalance between housing supply and demand in the near term, leading to higher RRE prices and possible overvaluation. The CRE market has shown uneven recovery across sectors, with valuations of retail properties still below pre-pandemic levels.

**Risks from non-banks are diverse.** Irish property funds investing in real estate are largely financed by overseas investors, but a cohort of these funds have high levels of leverage relative to EU peers and a moderate liquidity mismatch. Non-bank lending to SMEs has been increasing, but a small share of non-bank lending (peer-to-peer and crowdsourced) is not included in the CCR.

**The CBI has proposed a leverage limit and liquidity management guidelines for property funds, but details must be finalized.**

The CBI should consider counter-cyclical adjustments to leverage limits on property funds, more regular reporting requirements, and the tradeoff between timeliness, in the event that the limit is breached, and the risk of provoking fire sales in returning a fund in breach to compliance. Conditional on policy leakages, the CBI may also consider broader measures to safeguard the resilience of CRE finance and mitigate macro-financial feedback.

---

<sup>1</sup> Since the analysis was concluded, the CBI announced the outcome of its Capital Framework Review, including its intention to increase the CCyB to 0.5% effective June 15, 2023, and subsequently to announce a further increase as risk conditions warrant (CBI, 2022).

**In the absence of an international framework to address non-bank risks, the CBI should continue to work with European institutions.** Various data gaps, including direct cross-border investments into CRE, can only be closed through international coordination. The CBI has also been innovative in proposing the activation of macroprudential measures for non-banks as provided for in the AIFMD regulation, but the lack of reciprocity increases the risk of policy leakage. The CBI should continue to work through European institutions to address cross-border issues and policy leakage, in the context of developing a non-bank macroprudential framework.

**Table 1. Ireland: Recommendations on the Macroprudential Policy Framework**

Recommendations	Agency	Timing*	Priority**
1. Open the MMC to external advisory members to strengthen diversity of perspectives and as a safeguard against the risk of potential future inaction bias. (¶111)	CBI	ST	H
2. Ensure that government policies with potentially material financial stability implications are presented and discussed in the FSG. (¶118)	DoF	C	L
3. Review the relative utility of systemic risk measures, developing and streamlining new indicators as needed. (¶123)	CBI	C	L
4. Prioritize work on the dynamic macroprudential stress-testing framework, including to inform the calibration of cyclical capital buffers. (¶124)	CBI	I	H
5. Enhance systemic risk monitoring to deepen understanding of interconnections between the bank and non-bank sectors. (¶126)	CBI	ST	M
6. Expand monitoring of non-bank lenders beyond those engaged in mortgage activities. (¶127)	CBI	ST	M
7. Build on work undertaken at the domestic and international level to address CRE data gaps and to enhance understanding of the type of financing and ownership of the invested commercial property market in Ireland. (¶129)	CBI, CSO	MT	H
8. Monitor possible leakages from unsecured credit and be ready to expand borrower-based measures to include DTI/DSTI limits. (¶154)	CBI	MT	M
9. Strengthen the resilience of property funds by introducing the proposed macroprudential leverage limit and liquidity management guidance, while adjusting the leverage limit countercyclically. (¶173)	CBI	I	H
10. Broaden the bank, non-bank, and borrower-based macroprudential toolkit aimed at mitigating CRE market vulnerabilities as needed. (¶175)	CBI	MT	M
11. Work with European institutions to develop macroprudential tools targeting risks from non-banks, including for leakages and cross-border issues. (¶181)	CBI, DoF	MT	H

\* C = Continuous; I = Immediate (within one year); ST = Short Term (within 1-3 years); MT = Medium Term (within 3-5 years).  
\*\* H = High; M = Medium; L = Low.

## INTRODUCTION

**1. The CBI is responsible for macroprudential policies in Ireland.** The CBI's macroprudential powers derive from both European and Irish legislation. The CBI is the authority for the purposes of ESRB Recommendation 2011/3<sup>2</sup> establishing the macroprudential mandate of national authorities under the European System of Financial Supervision (ESFS). The EU Capital Requirements Regulation and Directive IV (CRR/CRD IV) and the subsequent CRR II/CRD V<sup>3</sup> (henceforth referred to collectively as "CRR/CRD") provide the CBI with certain macroprudential powers as the designated authority. Finally, the Central Bank (Supervision and Enforcement) Act 2013<sup>4</sup> provides the CBI with broad power to issue regulations. Where it is in the interests of the proper and effective regulation of regulated financial service provider, the regulations may be used to achieve a macroprudential objective. These powers include the ability to introduce borrower-based tools such as loan-to-value (LTV) and loan-to-income (LTI) caps.

**2. As part of the European System of Financial Supervision, the CBI shares some macroprudential policy responsibilities with European institutions.** The Single Supervisory Mechanism (SSM) Regulation<sup>5</sup> provides the European Central Bank (ECB) with specific tasks on macroprudential policy instruments for credit institutions. The regulation provides the ECB with the power to apply more stringent requirements on macroprudential measures than may be already in place at the national level ("top up" power); such top-up powers encompass the countercyclical capital buffer (CCyB), the systemic risk buffer (SyRB), and capital surcharges for systemically important institutions (SIIs) among others. Under the SSM Regulation, the CBI is required to notify the ECB when implementing or recalibrating a measure under CRR/CRD, with a clear process regarding objections that may be raised. In addition, the CBI must notify the ESRB and, in some cases, the EBA and the European Commission depending on the particular instrument in question, of macroprudential policy actions. For the non-banking sector, absent a formalized macroprudential framework at a European or global level, the CBI coordinates its macroprudential analysis and policy with the ESRB, EIOPA, and ESMA, while also coordinating with institutions outside the ESFS, such as with the FSB, IOSCO, and other bilateral supervisory agencies.

**3. The Irish authorities have made progress on the recommendations from the 2016 FSAP.** Transparency has increased through the publication of the Macroprudential Measures Committee's meeting minutes, and significant efforts have been made to rigorously review national LTI/LTV limits on residential real estate. The CBI has refreshed its Financial Stability Review, to articulate more effectively its judgements around the risks facing the financial system, the resilience of the financial system and the macroprudential policy actions it takes to safeguard financial

<sup>2</sup> [ESRB Recommendation 2011/3](#).

<sup>3</sup> [Directive \(EU\) 2013/36](#) (CRD IV) and [Regulation \(EU\) 2013/575](#) (CRR) were transposed into Irish law via [S.I. No. 159/2014 - European Union \(Capital Requirements\) Regulations 2014](#). To transpose changes in [Directive \(EU\) 2019/878](#) (CRD V) and [Regulation \(EU\) 2019/876](#) (CRR II) into Irish law, the Minister for Finance introduced amendments to the above-referenced national legislation via [S.I. No. 710/2020](#) and [S.I. No. 711/2020](#).

<sup>4</sup> [Central Bank \(Supervision and Enforcement\) Act 2013, section 48](#).

<sup>5</sup> [Council Regulation \(EU\) No. 1024/2013](#).

stability. As part of that, the CBI's Financial Stability Review has continued to develop in breadth and depth, monitoring overall financial conditions and improving non-bank coverage. Additionally, the CBI launched its Market-Based Finance Monitor, an annual review of activity across Irish-domiciled market-based finance, in 2021. The CBI continues to use its position through the ESRB, the EBA, ESMA, the ECB, IOSCO and the FSB to address cross-border issues and develop the international agenda on macroprudential policy action. Some progress has been made in closing data gaps, but some remain, most notably among commercial real estate activities. Additionally, the CCR has been established and is fully operational, although the CBI has not expanded its LTI limit to include non-mortgage debt.

**4. This background note evaluates the domestic macroprudential framework in Ireland, as well as its ability to address emerging vulnerabilities.** It assesses: (i) the domestic institutional arrangements; (ii) the systemic risk monitoring framework; and (iii) the adequacy of the macroprudential policy toolkit. The assessment is conducted based on IMF guidance, which is laid out in the Staff Guidance Note (IMF, 2014a), its background note (IMF, 2014b), and other IMF policy papers. The note also assesses current financial vulnerabilities in Ireland to develop specific policy recommendations.

**5. This note is structured as follows.** Section II reviews the current institutional arrangements for macroprudential policymaking. Section III discusses the systemic risk monitoring framework. Section IV maps an assessment of systemic vulnerabilities into recommendations for macroprudential policy actions. Section V provides recommendations and concludes.

## INSTITUTIONAL FRAMEWORK

**6. Strong institutional arrangements for macroprudential policymaking at the national level are essential for the effective functioning of macroprudential policy.** A strong institutional framework should generate a willingness to act and thereby overcome the inherent tension that renders macroprudential policy more vulnerable to inaction bias: that the cost of policy actions are sooner and more readily observable than their benefits, which are long-term and possibly unobservable. The institutional arrangements also need to foster the ability to act when systemic risk is building up. Finally, the framework needs to promote effective cooperation and coordination between institutions with a financial stability mandate. This section evaluates the current institutional arrangement against these three key principles, which are set out in the IMF [Staff Guidance Note on Macroprudential Policy](#) (IMF 2014a).

### A. Willingness to Act

**7. The Central Bank of Ireland (CBI) has a clear financial stability mandate.** Under Section 6A of the Central Bank Act 1942,<sup>6</sup> the CBI has the following objectives in addition to its price stability mandate: (i) the stability of the financial system overall; (ii) the proper and effective regulation of financial service providers and markets, while ensuring that the best interests of consumers of

<sup>6</sup> [Central Bank Act, 1942 \(amended by the Central Bank Reform Act, 2010\)](#).

financial services are protected; (iii) the efficient and effective operation of payment and settlement systems; (iv) the resolution of financial difficulties in credit institutions; (v) the provision of analysis and comment to support national economic policy development; and (vi) the discharge of such functions and powers as are conferred on it by law.

**8. Decision-making on macroprudential tools under the CBI's power is divided between the Central Bank Commission and the Governor.** The Central Bank Commission is the highest decision-making body at the CBI, chaired by the Governor, and comprising additionally the Deputy Governor for Monetary and Financial Stability, the Deputy Governor for Financial Regulation, the Secretary General of the Department of Finance, and six external members appointed by the Minister for Finance. Whereas the powers of the CBI, as the designated authority for the purposes of CRR/CRD, have been delegated by the Commission to the Governor, the Commission retained its decision-making power over macroprudential tools implemented under Irish law. Specifically, the Commission has decision-making power over mortgage measures that impose caps on LTV and LTI ratios.<sup>7</sup>

**9. The Macroprudential Measures Committee (MMC) advises the Commission and the Governor, in their role as decision makers, on macroprudential policies undertaken by the CBI.** The MMC was established within the CBI in 2016 to advise on the regular review of macroprudential measures and makes recommendations over the calibration of these measures.<sup>8</sup> The membership of the MMC includes the Governor, the Deputy Governor for Monetary and Financial Stability, the Deputy Governor for Financial Regulation, the Director of Economics and Statistics, the Director of Credit Institutions Supervision, the Director of Financial Stability and the Head of the Macro-Financial Division as Secretary. The MMC typically meets twice per quarter in line with its work agenda, which is shaped by: (i) the evolution of the CBI's assessment of the financial stability risk environment; (ii) the statutory requirements that certain macroprudential tools are reviewed at a regular frequency;<sup>9</sup> and (iii) developments in international macroprudential fora. An account of each meeting is published on the CBI's website. Where the MMC considers issues related to non-banks, additional relevant CBI officials with responsibilities in the relevant sectors are invited to attend.

**10. The inclusion of external members as advisors to setting macroprudential measures may guard against inaction bias by strengthening diversity of perspectives.** External members can act to safeguard against the inherent tension in macroprudential policymaking, where the costs of action are sooner and more readily discernable than their benefits, which may accrue over longer horizons and be unobservable. Evidence from monetary policy committee structure suggests that there is heterogeneity in the information set and perspectives of external members relative to internal members (Besley et al., 2008; Hansen and McMahon, 2008; Bhattacharjee and Holly, 2014),

<sup>7</sup> These measures were implemented initially through [S.I. No. 47/2015 – Central Bank \(Supervision and Enforcement\) Act 2013 \(Section 48\) \(Housing Loan Requirements\) Regulations 2015](#).

<sup>8</sup> [Terms of Reference of the Macroprudential Measures Committee](#).

<sup>9</sup> In the context of the statutory requirements for macroprudential measures, the CCyB must be reviewed quarterly, the other systemically important institution (O-SII) buffer must be reviewed at least annually, and Articles 124 and 164 of the CRR must be viewed annually. Furthermore, the CBI has committed to review the mortgage measures annually.

while there is also evidence that external members tend to be more active (Groth and Wheeler, 2008) and that internal members hold more centrist views (Jung and Kiss, 2012; Eijffinger et al., 2018). On the other hand, Hansen et al. (2014) find that the gains from including external members may be offset by lower expertise relative to highly informed internal members, while marginal gains from adding more members decline. Nonetheless, there may be gains that can be accrued from the inclusion of external members in an advisory capacity.

**11. Recommendation 1:** Open the MMC to external advisory members to strengthen diversity of perspectives and as a safeguard against the risk of potential future inaction bias. Due consideration should be given to appointing members outside the Commission in order to avoid conflation of mandates, given the delegation of powers by the Commission to the Governor.

**12. The CBI is accountable to the Minister for Finance and Houses of the Oireachtas.** The CBI must present the Minister with an annual report of its activities and an annual performance statement outlining the objectives of planned regulatory activity for the year and reviewing regulatory performance in the preceding year. The report and the statement are subsequently presented to each House of the Oireachtas. The CBI is also held accountable by formulating—in consultation with the Minister—a strategic plan every three years that is presented to the Houses of the Oireachtas. The Minister may also request, from time to time, that the Governor or the Commission consult with the Minister regarding the performance by the CBI of any of its functions, with the exception of the Governor’s functions under the European System of Central Banks (ESCB). The Governor, a Deputy Governor, or the Registrar may be obliged to attend a Joint Committee of the Oireachtas responsible for examining matters relating to the CBI. Finally, the CBI must arrange at least every four years for the performance of its regulatory functions to be reviewed by another national central bank or another body that the Governor has certified as appropriate, following consultation with the Minister.

**13. Communication by the CBI has continued to improve since the last FSAP.** Clear communication promotes public understanding of the need for policy actions, counters inaction bias, and enhances the legitimacy and accountability of macroprudential policy. The renewed FSR has further contributed to communication by more effective articulation of risks, resilience, and macroprudential policy actions taken by the central bank. The CBI has been publishing minutes of the Commission’s meetings since 2016, as well as accounts of the MMC’s meetings since its inception. The CBI also engages extensively with different stakeholders, including civil society, academia, the public, the media, and market participants in order to enhance the CBI’s understanding of the environment in which macroprudential measures operate, as well as the impact of these measures. This is evidenced most recently by the CBI’s public engagement in relation to the Mortgage Measures Framework Review ([CBI, 2021c](#)), as well as its consultation on proposed macroprudential measures for the property fund sector ([CBI, 2021d](#)).

## B. Ability to Act

**14. The institutional arrangements described above provide adequate powers to ensure the CBI's ability to act.** The CBI has direct (hard) powers over a wide range of macroprudential tools (Table 2), as well as soft powers to issue opinions or warnings. The CBI has the power to initiate and implement tools under CRR/CRD, coordinating with European institutions. Specifically, the CBI must notify the ECB prior to changes in the aforementioned tools, and consider any objections raised. The CBI also notifies the ESRB of its macroprudential policy decisions. The CBI also has powers to change the levels or the regulatory perimeter of macroprudential tools under national law, following consultation with the Minister.

**15. Broad information powers over regulated and unregulated entities complement direct powers over macroprudential measures.** The CBI has broad information-gathering power under the Central Bank (Supervision and Enforcement) Act 2013<sup>10</sup> for the performance of its functions relating to the proper and effective regulation of regulated financial service providers.<sup>11</sup> Additionally, the CBI has powers to collect information from unregulated entities including: (i) securitization and other special purpose entities (SPEs); (ii) unregulated entities' holdings of regulated instruments;<sup>12</sup> (iii) anti-money laundering (AML) data; and (iv) credit information from a range of credit providers for the purposes of the Central Credit Register (CCR). These powers are essential for the CBI to assess the activities of the large non-bank financial sector.

## C. Effective Coordination and Cooperation

**16. The Central Bank of Ireland's broad mandate and its integrated model of financial supervision across different sectors has clear strengths in fostering coordination within the CBI.** Several high-level committees within the CBI provide checks within the institution, as well as formalized structures to coordinate macroprudential and microprudential policies, including the Financial Stability Committee (FSC),<sup>13</sup> the MMC, and the Supervisory Risk Committee (SRC).<sup>14</sup> The establishment of a designated Financial Stability directorate in 2016, bringing together responsibilities for macroprudential policy as well as crisis management and resolution has enabled a sharper focus on financial stability policies and further streamlined the CBI's work.

<sup>10</sup> [Central Bank \(Supervision and Enforcement\) Act 2013, Part 3.](#)

<sup>11</sup> Specifically, Section 34 of Part 3 of the Act provides that "information acquired by the Bank or an authorized officer in the performance of any functions conferred on the Bank or an authorized officer under financial services legislation may be used by the Bank for the purposes of any of its functions under financial services law."

<sup>12</sup> For example, OTC derivatives reported under the European Market Infrastructure Regulation.

<sup>13</sup> The FSC advises broadly on issues related to the CBI's financial stability mandate, including domestic and international economic and financial developments. The MMC was formulated out of the FSC with a narrower objective advising on and reviewing macroprudential measures.

<sup>14</sup> The SRC advises on issues related to the management of supervisory risks, as well as on the development of risk-based supervision.

Table 2. Ireland: Main Macprudential Instruments Available to the Irish Authorities

Instrument	Intermediate Objective	Responsible Authority	EU Legal Basis	Irish Legal Basis
CCyB	Excessive credit growth and leverage	CBI	CRD Article 136	S.I. No.158/2014
SRB	Excessive credit growth and leverage; concentration and interconnectedness	CBI	CRD Article 133	S.I. No.158/2014
G-SII and O-SII buffers	Systemically important institutions	CBI	CRD Article 131	S.I. No.158/2014
Sectoral capital requirements, including higher risk weights and higher loss given default floors for RRE and CRE exposures	Excessive credit growth and leverage	CBI	CRR Articles 124, 164	Directly applicable
Flexibility measures <sup>1</sup>	Excessive credit growth and leverage; funding risk and excessive maturity mismatch; market illiquidity; concentration and interconnectedness; moral hazard	CBI	CRR Article 458	Directly applicable
Limits on LTV ratio	Excessive credit growth and leverage	CBI	-	S.I. No. 47/2015
Limits on LTI/DTI ratios	Excessive credit growth and leverage	CBI	-	S.I. No. 47/2015 Central Bank (Supervision and Enforcement) Act 2013, Section 48
Limits on LDR ratio	Funding risk and excessive maturity mismatch	CBI	-	Central Bank Act 1971, Section 23
Limits on the level of leverage that an AIFM is entitled to employ	Mitigate investment fund leverage	CBI	AIFMD Article 25	S.I. No. 257/2013

Sources: CBI; Grace et al. (2015); and IMF staff.

<sup>1</sup>Possible measures include the level of own funds, large exposure limits, public disclosure requirements, the level of the capital conservation buffer, liquidity requirements (e.g., LCR and NSFR), risk weights for the residential and commercial property sectors, and measures for the intra-financial sector exposures.

**Table 3. Ireland: Current Macprudential Settings**

<b>Instrument</b>	<b>Status</b>	<b>Recent Changes</b>
CCyB	Set at 0%.	Lowered from 1% effective April 1, 2020.
SRB	Inactive.	
G-SII and O-SII buffers	AIB Group: 1.50% Bank of America Europe: 0.75% Bank of Ireland Group: 1.50% Barclays Bank Ireland: 1.00% Citibank Holdings Ireland: 1.00% Ulster Bank Ireland: 0.50%	Phase-in of the O-SII buffer completed as of January 1, 2022.
Sectoral capital requirements	Inactive for sectoral requirements households and corporates.	Application of stricter requirements for certain residential and commercial property exposures, which were introduced in 2006, were removed effective November 2021.
Flexibility measures	CCB set at 2.5%. LCR set at 100%. NSFR set at 100%. Reciprocation of French large exposure limit for highly indebted large NFCs.	As part of a range of flexibility measures in March 2020, the ECB reminded institutions that capital and liquidity buffers were available to withstand potential stress in the context of the COVID-19 pandemic. Applicable until end-2022, the ECB committed to taking a flexible approach to approving capital conservation plans that banks are required to submit if they breach the combined buffer requirement. From January 1, 2022, the ECB expects banks to comply with the general LCR minimum level. NSFR brought into effect June 28, 2021.
Limits on LTV ratio	Restriction in the issuing of high LTV mortgages to a proportion of new lending (see Table 4).	No changes announced November 25, 2021, as part of the annual review.
Limits on LTI/DTI ratios	Restriction in the issuing of high LTI mortgages to a proportion of new lending (see Table 4).	No changes announced November 25, 2021, as part of the annual review.
Limits on LDR ratio	Inactive.	LDR targets for individual banks were replaced in September 2012 by non-core deleveraging targets and requirements to establish an Advanced Monitoring Framework.
Limits on the level of leverage that an AIFM is entitled to employ	Inactive.	The CBI is consulting on applying limits to the leverage of property funds based on Article 25 of AIFMD.

<sup>1</sup> Since the analysis was concluded, the CBI announced the outcome of its Capital Framework Review, including its intention to increase the CCyB to 0.5% effective June 15, 2023, and subsequently to announce a further increase as risk conditions warrant (CBI, 2022).

At the same time, extensive channels of cooperation across the CBI in producing flagship outputs, such as the Financial Stability Review (FSR) and the Market-based Finance Monitor, provide formal and informal channels for coordination across the CBI.

**17. Within Ireland, the formation of the Financial Stability Group (FSG) as an inter-agency coordination mechanism has improved cooperation at the domestic level particularly during crisis episodes.** The FSG was formed in 2017 as the successor to the Principals' Group as a non-statutory forum for senior officials from the Department of Finance (DoF), the CBI, and the National Treasury Management Agency (NTMA) to coordinate on policies and risks that could affect financial stability. Specifically, the FSG has as principal objectives: (i) the monitoring and sharing of assessments of risks to the Irish financial system and the economy; (ii) the coordination of systemic crisis management; and (iii) the discussion of economic or financial policies which have repercussions for financial stability in order to achieve optimal policy outcomes.<sup>15</sup> The FSG typically meets bi-monthly and publishes minutes of its meetings. While the FSG does not have statutory powers, the FSG Crisis Coordination Framework has been invoked three times (twice in response to Brexit and once in response to the COVID-19 pandemic) to successfully coordinate public policy according to the FSG members' individual statutory obligations. Nonetheless, the FSG can further improve on its mandate to assess policies in a forward-looking manner outside of crises.

**18. Recommendation 2:** Ensure that government policies with potentially material financial stability implications are presented and discussed in the FSG.

**19. The CBI is in regular dialogue with multilateral institutions and also cooperates bilaterally with foreign countries.** At the European level, within the ECB and the ESRB, the CBI participates actively in working groups and committees, including the Advisory Technical Committee (ATC) and its Expert Groups: the Analysis Working Group (AWG); and the Instruments Working Group (IWG); the ECB Financial Stability Committee and its Expert Groups: the Macroprudential Analysis Group (MPAG); and the Macroprudential Policy Group (MPPG). Given the large and substantially outward facing non-bank sector domiciled in Ireland, the CBI leads, participates, and collaborates in analytical work with the FSB, IOSCO, ESMA, and the ESRB through involvement in various committees including the FSB Non-Bank Monitoring Experts Group (NMEG), the IOSCO Financial Stability Engagement Group (FSEG), the ESRB Non-Bank Experts Group (NBEG), the ESMA Investment Management Standing Committee (IMSC). Finally, the CBI also has memoranda of understanding (MoU) with various European and third countries for effective coordination. For instance, under the MoU in Cooperation between Financial Supervisory Authorities, Central Banks, and Finance Ministries of the European Union on Cross-Border Financial Stability, "relevant parties stand ready to share available information and assessments necessary to fulfill their respective role in the preparation and management of a cross-border systemic financial crisis." Existing MoUs with third countries, such as the UK, the US, and Switzerland, provide the basis for exchange of information.

---

<sup>15</sup> [Terms of Reference of the Financial Stability Group.](#)

## SYSTEMIC RISK MONITORING

**20. Macroprudential policy must be based on a continuous assessment of evolving risks.** In order to extract appropriate signals where policy action may be appropriate, key indicators must be used as inputs, though decisions should be made with guided discretion. Such judgment requires access to appropriate data and qualitative information, as well as analytical capacity to assess systemic risks in order to effectively map risk assessment into policy recommendations.

**21. The CBI has a sophisticated framework for monitoring systemic risk, combining analytical capabilities and judgment.** The CBI's overall analytical approach to systemic risk assessment employs a range of methods, including: monitoring of a range of macro-financial indicators; developing analytical tools to provide quantitative, forward-looking measures of tail risk and resilience; and conducting additional analysis through "deep dives" into specific areas, especially where structural changes in the economy or financial system might mean that historical data may provide imperfect signals around the magnitude of future risks. These inputs inform the CBI's overall judgement around the risks facing the financial system and the resilience of the financial system, communicated through the Financial Stability Review (FSR)—the CBI's bi-annual report on financial stability. The CBI also maintains a heatmap of indicators of risks to the financial system in the Systemic Risk Pack.<sup>16</sup> Indicators vary from macroeconomic and financial time series that have historically proven to be leading indicators of financial system stress, to outputs from quantitative models covering areas of particular importance in Ireland. The CBI has a broad range of quantitative models that it uses to cover multiple areas including, for example: (i) early warning (O'Brien and Wosser, 2018, 2021); (ii) asset price valuation (Kennedy et al., 2016; Kennedy et al., 2021); (iii) single-institution and sector risk (Wosser, 2017); (iv) contagion risk (Hallissey, 2016; Bianchi et al., 2020; Emter et al., 2021); (v) macro-financial linkages (Parla, 2021); and (vi) bank stress testing (CBI, 2020). Areas of concern are identified for in-depth analysis in the FSR to inform the CBI's judgement on the direction and magnitude of evolving risks.

**22. The CBI has continued to expand its capacity for measuring and assessing systemic risk.** The CBI has maintained an active research agenda in developing appropriate risk indicators and analytical tools, for instance by placing increased emphasis on the distribution rather than mean of risk measurements.<sup>17</sup> As there is no single measure of systemic risk, there is an important role for judgement in interpreting the signals from different measures. For example, the usefulness of the "standard" credit-to-GDP gap, which is a required indicator to be monitored in setting the CCyB under the CRD framework, may be low for assessing the credit stance in Ireland, given the characteristics of the Irish financial system and the implicit assumptions in simplistic filters used internationally. This has led to the development of alternative indicators of cyclical risk by the CBI, as has been done recently through work such as O'Brien and Velasco (2020). As the CBI seeks to mature its macroprudential framework, building on advances in both academic and international

<sup>16</sup> See Central Bank of Ireland (2021b).

<sup>17</sup> For instance, by considering growth-at-risk, CRE growth-at-risk, and house price growth-at-risk; or, in the context of resilience assessments, focusing on the distribution of indebtedness, rather than relying on aggregate measures of indebtedness only.

policy thinking, the CBI should continue to monitor, qualify, and improve on such measures. Additionally, the continued development of a dynamic macroprudential stress test for banks will be critical to improve the impact assessment of vulnerabilities and regulatory measures, for instance by providing useful input into the calibration of the CCyB.

**23. Recommendation 3:** Review the relative utility of systemic risk measures, developing and streamlining new indicators as needed.

**24. Recommendation 4:** The CBI should prioritize work on the dynamic macroprudential stress-testing framework, including to inform the calibration of cyclical capital buffers.

**25. As is the case globally, the framework for bank systemic risk assessment is further advanced relative to that for non-bank financial intermediaries.** Recent and ongoing work on specific issues related to the non-bank financial sector has led to improvements in regular and systematic monitoring. For example, the CBI recently conducted a “deep dive” on the property fund sector in Ireland (Daly et al., 2021) and proposed macroprudential measures to guard against financial stability risks (CBI, 2021c). The CBI has also launched a new, annual publication to monitor developments in the market-based finance sector in Ireland. Finally, the CBI contributes to the non-bank financial intermediation monitoring efforts by the FSB and the ESRB. Nevertheless, this is an area where further advancements will be required. For example, there has recently been growth in certain lending activities to SMEs by non-bank financial intermediaries (Heffernan et al., 2021). At the moment, non-mortgage lending by non-banks does not face the same level of scrutiny as mortgage lending—under the mortgage measures framework—by the same class of institution. In addition, peer-to-peer and crowdsourcing, while currently small, are not included under the CCR and are therefore more challenging to monitor.

**26. Recommendation 5:** Enhance systemic risk monitoring to deepen understanding of interconnections between the bank and non-bank sectors.

**27. Recommendation 6:** Expand monitoring of non-bank lenders beyond those engaged in mortgage activities.

**28. Data quality is generally good, however there remain gaps.** The coming on stream of data sources such as the Central Credit Register (CCR) and AnaCredit will prove invaluable in monitoring and addressing risks emerging from credit issued in Ireland by regulated and unregulated entities.<sup>18</sup> Nonetheless, some gaps relating to the funding and ownership of CRE, a critical sector in the Irish financial system, remain. In recent years, the CBI has made several efforts<sup>19</sup>

---

<sup>18</sup> Phase 1 of the CCR began on June 30, 2017 and included credit to consumers only. Phased 2 expanded the scope of the CCR with an obligation to report credit agreements provided to non-consumers, sole traders, groups of individuals, and legal entities beginning on March 31, 2018. From June 30, 2019, information on hire purchase, leasing, and similar agreements previously excluded from the CCR were also deemed reportable. Mandatory reporting requirements continue to evolve, with planned tightening of reporting requirements through 2024 increasing the granularity and quality of information that will be available to the CBI.

<sup>19</sup> See Daly et al. (2021) and Coates et al. (2019).

to reconcile CRE asset holdings and lending both from banks and non-banks using multiple data sources. Consistent with similar data gaps internationally, residuals in coverage remain, as the CBI does not currently have complete sight of all investment in Irish CRE. For instance, a portion of Irish commercial property is held by foreign counterparties which are regulated elsewhere (either within or outside the EU). Similarly, there may be Irish CRE which is held by domestic counterparties (e.g., private individuals/developers, syndicates or non-financial firms), which are not regulated by / or not required to report to the CBI. In the case of the former, increased co-operation/data-sharing at the European / international level will help improve the current situation. To this end, the CBI has actively engaged with initiatives such as the ESRB Recommendation on the closing of Real Estate Data Gaps, which aims to gather data on the funding/holding of CRE assets by both banks and “non-bank” entities. Similarly at a domestic level the CBI has liaised/should continue to liaise with other stakeholders working to address shortcomings in CRE data.

**29. Recommendation 7:** Build on work undertaken at the domestic and international level to address CRE data gaps and to enhance understanding of the type of financing and ownership of the invested commercial property market in Ireland.

## SYSTEMIC RISKS AND MACROPRUDENTIAL TOOLS

**30. This section provides an assessment of systemic vulnerabilities in Ireland and aims to map these into recommendations for the macroprudential toolkit.** Systemic vulnerabilities are assessed based on developments in multiple signaling indicators and are informed by the results of the risk analysis carried out by the FSAP; see the technical notes on Stress testing and Systemic Risk Analysis and Interconnectedness. Recommendations are subsequently based on the assessment of each type of risk identified.

### A. Broad-Based Vulnerabilities

**31. Credit developments point to a moderate level of broad-based risks** (Figure 1). Various measures of the financial cycle point to a loose-to-neutral position that is showing early signs of momentum in credit growth. Three credit gaps are used: i) the credit-to-GDP gap estimated via a one-sided HP filter using the BIS methodology; ii) the credit-to-GNI\* gap estimated using the BIS methodology;<sup>20</sup> and iii) the alternative measure of the credit-to-GDP gap from O’Brien and Velasco (2020) that uses a multivariate filter with stochastic volatility to better capture financial cycle dynamics and asymmetries that are not captured by other methods. Both the credit-to-GDP and the credit-to-GNI\* gaps are significantly negative while gradually reversing trend and increasing, respectively. The alternative gap measure has remained stable around zero since 2019Q1, indicating a neutral stance on cyclical risks.

<sup>20</sup> Modified gross national income (GNI\*) and modified total domestic demand are designed to measure the size of the Irish economy by excluding possible effects of globalization from the expenditure and income approach. For instance, modified total domestic demand excludes imports, exports, and large transactions of foreign corporations that do not impact the domestic economy in a significant way, while GNI\* subtracts the net factor income of redomiciled PLCs, the depreciation of intellectual property, and the depreciation of leased aircraft from GNI. Further details on the measure are provided by the Irish [CSO](#).

**32. Credit growth remains subdued but increasing, given historically low and steady borrowing costs and a shift toward household credit in the aggregate portfolio.** Scarring from the GFC and gradual deleveraging from the exceptionally elevated levels of indebtedness have led to negative (or subdued) credit growth. Banks have shifted away from NFC to households, and especially to mortgages, though credit growth across all sectors remains weak despite historically low and steady borrowing costs.

**33. Tightening external financial conditions and gradually increasing credit growth have contributed to an increase in downside risks.** Ireland is susceptible to spillovers from tightening global financial conditions, as evidenced by the strong correlation between the Irish FCI (computed based on a dynamic factor model of spreads and other indicators, see IMF, 2018) and external measures of volatility for the S&P 500 index (VIX) and the Euro Stoxx 50 index (VSTOXX). A recent deterioration in financial conditions abroad and domestically, as well as the momentum in credit growth, have contributed to a slight increase of tail risks as measured by growth-at-risk.<sup>21</sup>

**34. The CBI examines a range of cyclical indicators when deciding how to set the countercyclical capital buffer (CCyB).** Relevant indicators for the CBI include those related to the macroeconomy and labor market, credit (e.g., credit growth, credit gap), risk premia, the position of the banking sector, Residential (RRE) and Commercial Real Estate (CRE) developments, as well as output from early warning and other models. Furthermore, the CBI is developing a dynamic stress test for the banking sector, where feedback between the macroeconomic scenario and banks' balance sheets will inform the appropriate capital stance and provide an informative signal into setting the CCyB. The CBI intends to build the CCyB to 1.5 per cent when risk conditions are deemed to be neither elevated nor subdued. The strategy acknowledges the inherent uncertainty in assessing the degree of risk facing the banking system, as well as the time lags in implementing the CCyB. Should cyclical risk conditions reflect emerging imbalances or an elevated risk environment, the CCyB is expected to be above 1.5 percent.

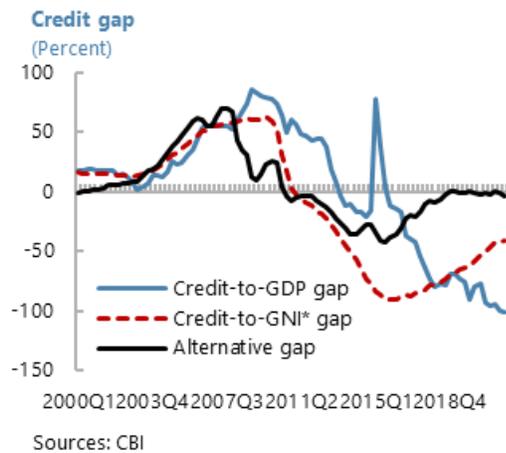
**35. Re-activation of the CCyB in the near term may prove appropriate as the cycle phase is confirmed.** In response to the Covid-19 pandemic, the CBI decided to release the CCyB in March 2020, reducing it from 1 percent to 0 percent as of April 2, 2020. The rate remains at 0 percent currently, an appropriate stance given the neutral position of the financial cycle and subdued broad-based risks to the financial system. Going forward, it may soon be opportune to re-activate the CCyB to address the accumulating risks early in the financial cycle, or additionally to set a neutral position, thereby creating macroprudential policy space to address broad-based risks in the medium term.

---

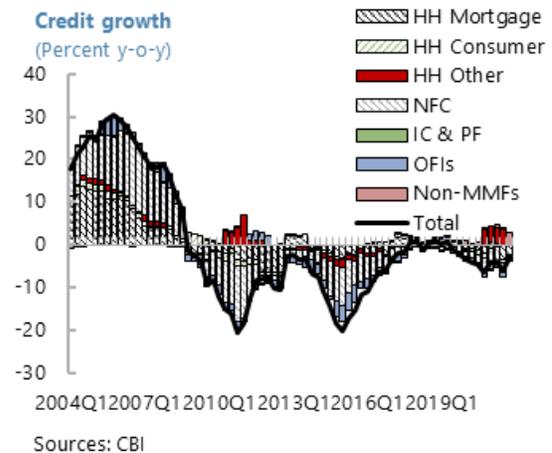
<sup>21</sup> For our computation, we use GNI\* as the indicator of economic growth and include several indicators domestic financial conditions, external financial conditions, and leverage. For reference, see Adrian et al. (2019) and Elekdag et al. (2019).

**Figure 1. Ireland: Broad Credit Conditions**

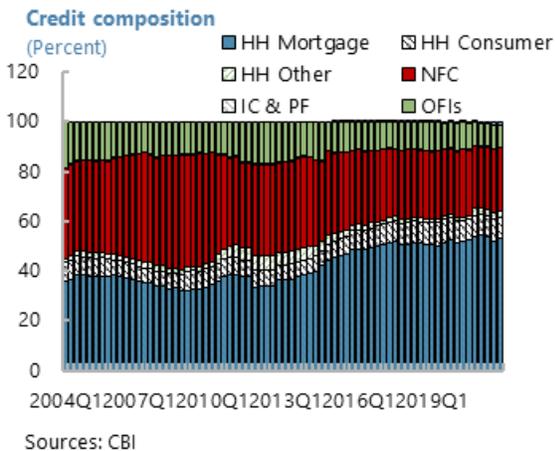
*The financial cycle is gaining momentum.*



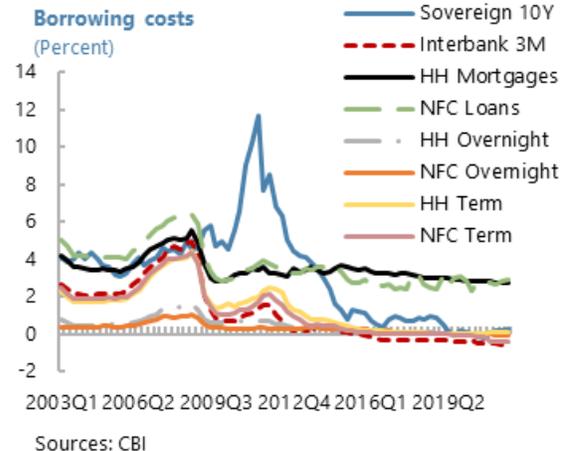
*Negative credit growth is beginning to reverse.*



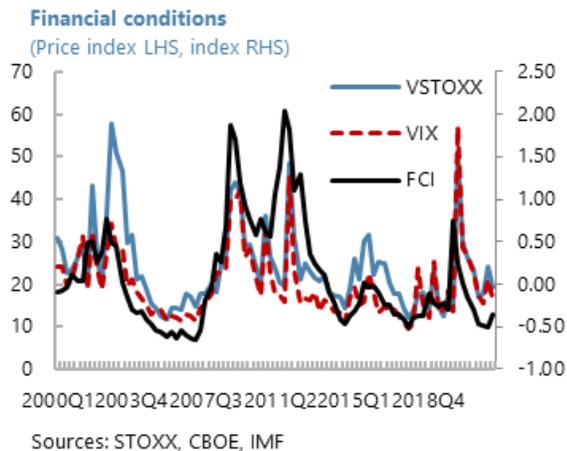
*Total credit has been skewed towards mortgages.*



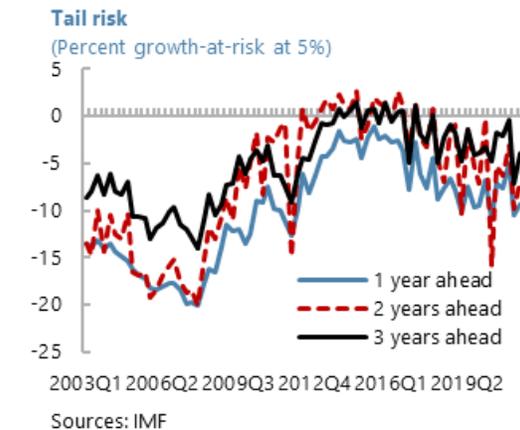
*Credit growth has been subdued despite low borrowing costs.*



*Global financial conditions tightened recently, slowly spilling over to domestic financial conditions as well.*



*Increased tightness of financial conditions has raised tail risks to 1-year-ahead growth.*



## B. Vulnerabilities from Residential Housing and the Household Sector

### 36. **Following several years of recovery from the GFC and housing market crash, constrained supply relative to demand has been the primary issue of the Irish housing market.**

Demand for housing stock since 2012 has increased with new household formation, leading to a sustained rise in valuation indicators such as price-to-income (PTI) and—to a lesser extent—price-to-rent (PTR) (Figure 2). Alternate explanations for the inability of housing stock to keep up with demand include increasing construction costs with insufficient economies of scale, availability and price of developed land, and diminished capacity in the construction sector, following construction firm liquidations in the aftermath of the GFC.<sup>22</sup>

**37. RRE prices have accelerated in recent months.** Strong demand in the aftermath of the COVID-19 pandemic, pre-existing constraints in housing construction and availability of second-hand stock for sale, and new constraints from diminished housing construction during the pandemic have led to a tight housing market, with housing prices increasing 8 percent in real terms year-on-year in 2021Q4 (14.2 percent in nominal terms). Completions are recovering and commencements (lagged by 1 year) indicate that the estimated new housing demand of approximately 33,000 units per year (Conefrey and Staunton, 2019; Bergin and Garcia-Rodriguez, 2020) will be met by 2023. It is expected, however, that 15,000 fewer units will be available over 2020-2023 as a result of the pandemic (CBI, 2021a), suggesting sustained pressure on house prices. Added supply shocks have further increased house price pressures, with construction costs rising 8.5 percent and materials costs rising 15.7 percent y-o-y in 2021Q4.

**38. Despite rapid growth in house prices, these are not estimated to be significantly misaligned currently, but market conditions point to potential risks of overvaluation going forward.** House prices have grown faster than income and rent since 2012, following the strong correction in the aftermath of the GFC, though they have remained below their average between 2000 and 2021. Growth in house prices has been stronger outside of Dublin since 2018 as prices catch up to the capital, a trend that has persisted throughout the pandemic; price growth outside Dublin y-o-y in 2021Q4 (9.1 percent real, 15.3 percent nominal) has outpaced growth in Dublin (6.9 percent real, 12.9 percent nominal). On a historical basis, house prices are slightly elevated compared to incomes (1.8 percent deviation from average), whereas they remain relatively in line with rents (0.1 percent deviation from average); both indicators compare favorably to peers.<sup>23</sup>

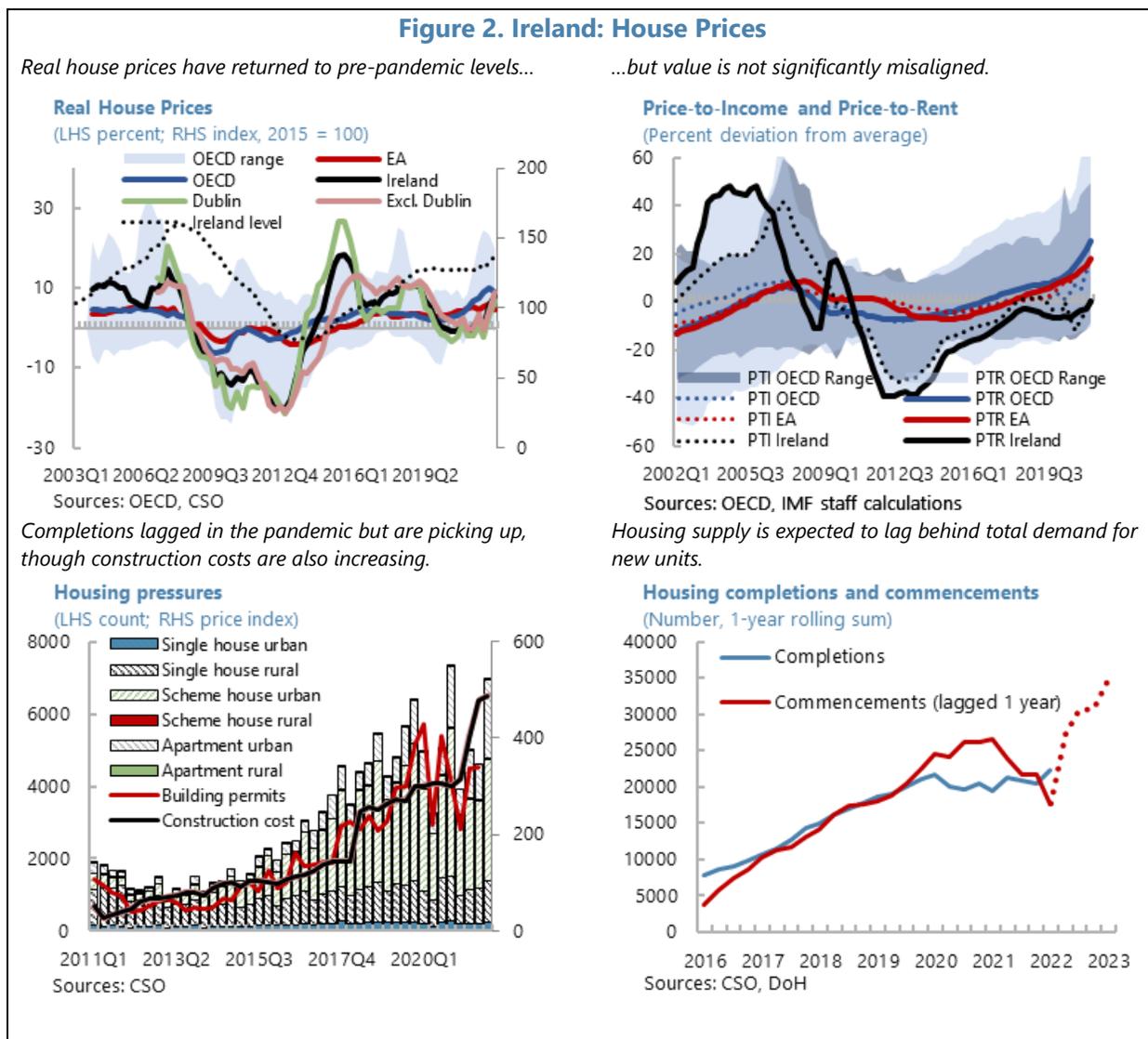
**39. The FSAP carried out an assessment of tail risks to house prices by estimating a statistical model linking real RRE prices to their various determinants.** The team followed the quantile regression framework in Adrian et al. (2019) and Elekdag et al. (2019) in order to assess not only the drivers for average house prices, but also drivers at the lower tail.<sup>24</sup>

<sup>22</sup> A detailed analysis of recent trends in the Irish housing market is available in Kennedy and Myers (2019).

<sup>23</sup> The CBI estimates show house prices to be relatively higher compared to incomes and rents than estimated in the current analysis. This occurs because we use a shorter sample spanning 2000Q1 through 2021Q4.

<sup>24</sup> For further details, see Annex I.

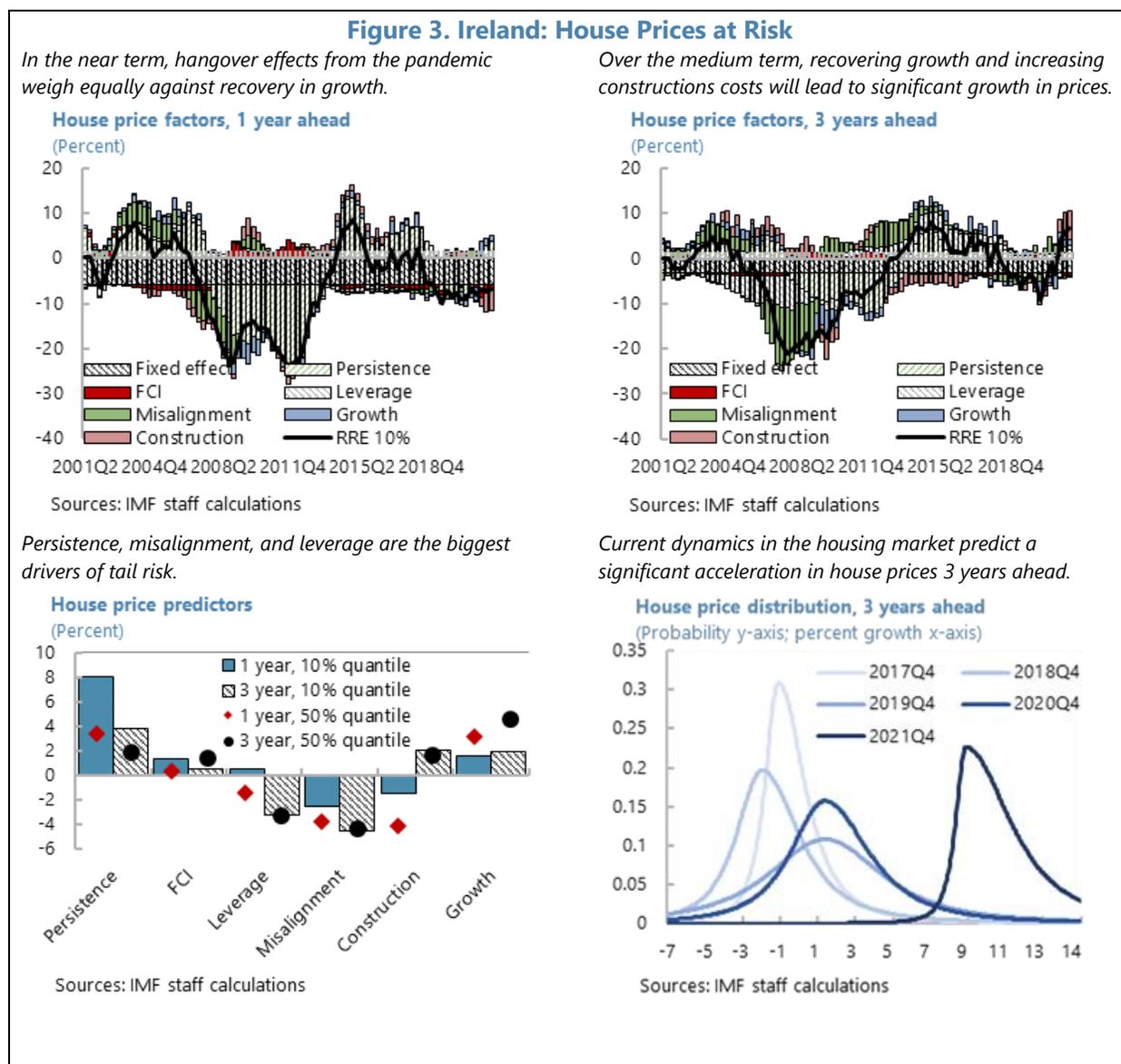
The literature points to current prices, financial conditions, leverage, valuation misalignment indicators, economic growth, and construction costs as potential predictors. Each predictor can have a varying level of significance for varying conditional quantiles of house prices.



**40. At the median, house prices are driven by economic growth, misalignment, construction costs in the near term, while leverage becomes increasingly important in the medium term** (Figure 3). In the near term (1-year ahead), construction costs and misalignment point to a negative impact on the median of house prices. For construction costs, the impact changes sign in the medium term (3-years ahead), suggesting a lag in transmission. For misalignment, the impact becomes stronger in the medium term, suggesting that the price correction cycle is drawn out. Leverage exerts downward pressure on house prices in the medium term without having an impact in the near term, consistent with debt-deflation following price

corrections. Economic growth predicts upward pressure at all horizons, growing stronger in the medium term.

**41. At the 10th percentile, misalignment and growth have a strong impact, while prices display significant persistence.** Higher misalignment predicts a stronger correction to house prices at the 10th percentile, while persistence (i.e.: the impact of current house prices) is much stronger than at the median quantile. The result supports the view that downside risks to the housing market, once materialized, are difficult to overcome. Of course, this is driven by the presence of the post-GFC price correction in housing.



**42. Tail risks to real RRE prices are estimated to be low in the near term, while current market conditions point to the risk of significant price appreciation over the medium term.** In the near term, tail risks to house prices at the 10th percentile are mild, weighed down by structural

factors and hangover from the pandemic. Over the medium term, however, as growth and construction costs feed through, house prices are expected to accelerate significantly to almost 7 percent at the 10th percentile, effectively eliminating downside risks to house prices as estimated under this modelling approach. This raises other potential risks, as a rapid acceleration in house prices has the potential to outpace incomes and potentially create feedback with credit, increasing damage if an adverse shock were to materialize. These results highlight the importance of effective macroprudential tools—the mortgage measures framework—that can contain risks to and from the housing sector.<sup>25</sup>

**43. A sustained acceleration in house prices can lead to increased indebtedness and to a buildup of debt vulnerabilities.** As valuations relative to income and rent continue to expand, there is a risk of higher indebtedness that would magnify debt vulnerabilities for households once a correction takes place. Debt vulnerabilities are partially offset because households have taken advantage of the low-rate environment by increasingly taking out mortgages with longer terms of fixed rates (Figure 4); 60 percent of new mortgages and 30 percent of all existing mortgages have fixed rates for longer than 3 years. Increased indebtedness from the acceleration of house prices can be managed through the mortgage measures introduced by the CBI; their effectiveness at managing household indebtedness and house price growth is discussed subsequently.

**44. Total outstanding mortgage balances continue to decline, while new mortgage loans have resumed their upward trend on the back of strong housing demand.** Despite the overall decline in mortgage volumes following the GFC, recovering housing demand since 2012 has translated into a steady trend of rising mortgage originations, driven primarily by first time buyers (FTB). At the same time, the large overhang of legacy vulnerabilities has diminished through restructuring but has not yet been fully resolved. The overwhelming majority of mortgages in arrears (80 percent) involves loans that have been in arrears longer than two years, of which non-banks currently hold the largest share (60 percent of accounts in arrears over two years). Banks continue to hold the larger share of outstanding mortgage loans, but non-banks' share has risen to almost 20 percent, mainly driven by sales of mortgage loans issued before the GFC.

**45. Household resilience has also continued to increase** (Figure 5). Government support directly to households and to corporates, as well as mortgage payment breaks, have helped cushion the financial impact of the COVID-19 pandemic on households' balance sheets, compensating for the reduction in labor income through social transfers. Overall, households' net worth has increased since 2012, driven by an increase in financial assets (such as currency and deposits) and housing assets. Household indebtedness relative to GDP and disposable income has continued to decrease since 2012, as has the ratio of interest payments to disposable income. These trends are driven alternately by more prudent lending, income growth, and attitudes toward debt since the GFC. NPL flows increased slightly in 2020Q3 but have declined even after the expiry of payment breaks.

---

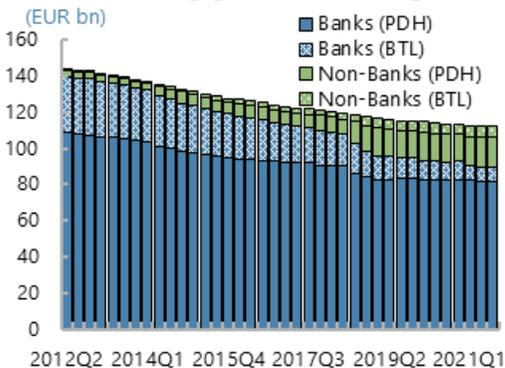
<sup>25</sup> The latest projections are made based on data from 2021Q4 and assume no policy changes or other developments. Rises in interest rates after 2021Q4 may have a cooling effect on credit demand and thereby contain some of the growth in house prices.

**Figure 4. Ireland: Mortgages**

The stock of mortgages has continued to decline, and non-banks have been purchasing restructured loans.

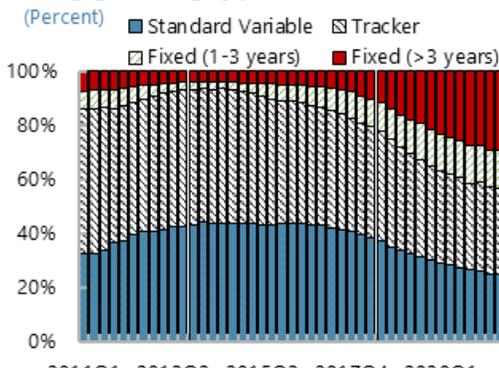
Borrowers have taken advantage of the low-rate environment by an expansion of fixed-rate mortgages.

**Residential mortgage loans outstanding**



Sources: CBI

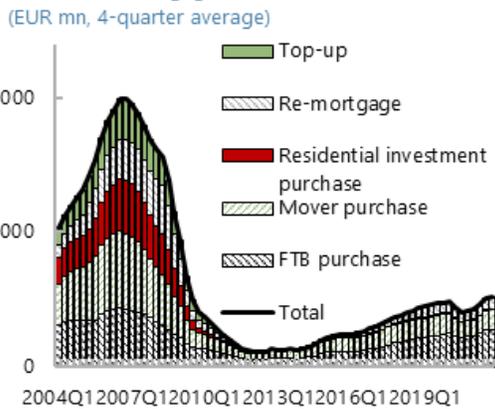
**Mortgage lending by product**



Sources: CBI

Mortgage drawdowns crashed in the aftermath of the GFC and have been recovering slowly.

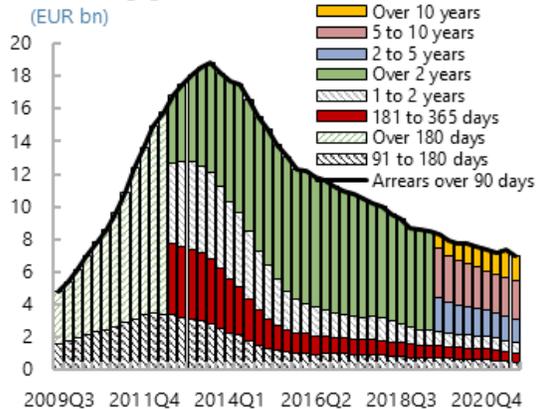
**Residential mortgage drawdowns**



Sources: CBI

Legacy loans continue to form the bulk of mortgage arrears for PDH mortgages...

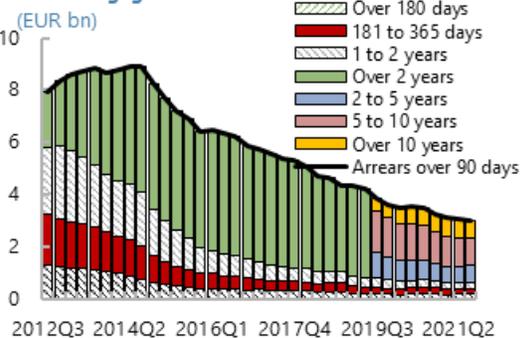
**PDH mortgage loans in arrears**



Sources: CBI

...as well as for BTL mortgages.

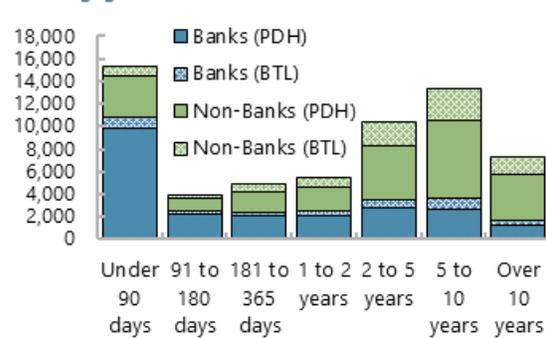
**BTL mortgage loan arrears**



Sources: CBI

Legacy loan issues are increasingly handled by non-banks.

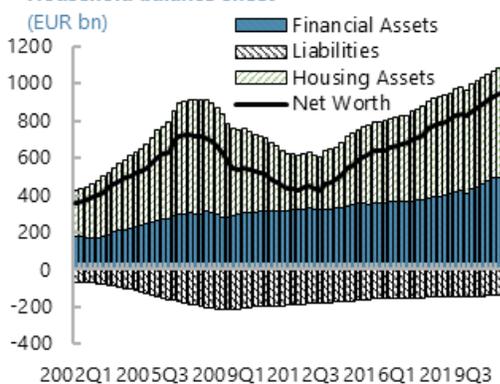
**Mortgage accounts in arrears**



Sources: CBI

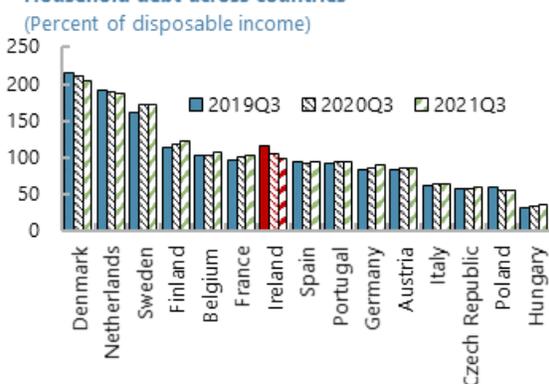
**Figure 5. Ireland: Household Balance Sheets**

An increase in financial and housing assets has driven the rise in household net worth.

**Household balance sheet**

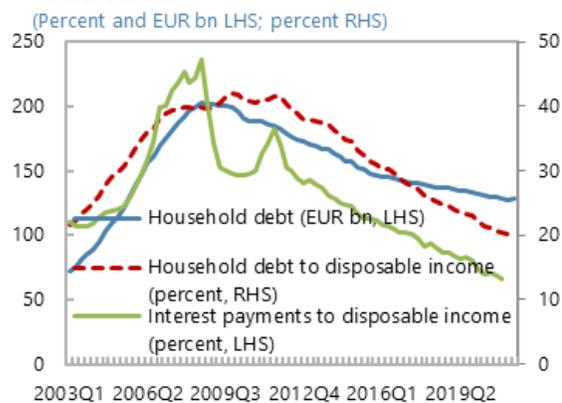
Sources: CBI

...but remains above the median of EA peer countries.

**Household debt across countries**

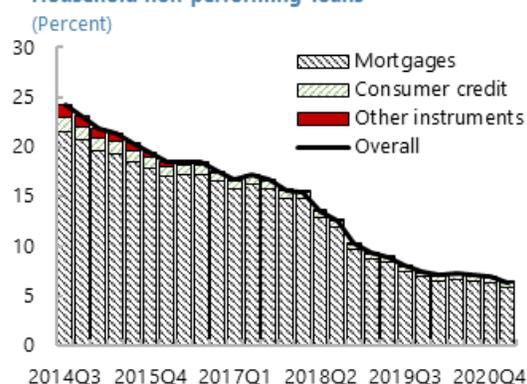
Sources: CBI

The household debt burden has continued to decline since the GFC and through the COVID-19 pandemic...

**Household debt**

Sources: CBI

NPL flows increased slightly during the COVID-19 pandemic but have since resumed their downward trend.

**Household non-performing loans**

Sources: CBI

**46. Macroprudential measures were introduced in February 2015 for residential mortgages** (Table 4). The CBI introduced LTI and LTV limits for residential mortgages in 2015 in order to increase the resilience of banks and borrowers to adverse shocks, as well as to dampen the feedback between credit and house prices. The measures cover all new mortgage lending with exceptions for borrowers in negative equity (from LTV limit), Buy-to-Let (BTL) borrowers and lifetime mortgages (from LTI limit), and refinanced and restructured mortgages (from both limits).<sup>26</sup> The CBI assesses data on new mortgage lending biannually and reviews the operation and calibration of the mortgage measures annually to guarantee that the measures are working as intended; this has led to revisions in the measures since their introduction.

<sup>26</sup> In 2021H1, 10 percent of new mortgage lending qualified for an exception, with 96 percent of those mortgages constituting refinancing with no increase in loan size.

**Table 4. Mortgage Measures in Ireland**

Date	Tool	Description
February 2015	LTV	For FTBs, 90% LTV limit applied to first EUR 220,000 of value of residential property and 80% LTV limit on value thereafter. For SSBs, 80% LTV limit applied. For BTL borrowers, 70% LTV limit applied. Borrowers in negative equity, those switching mortgages, and those restructuring mortgages are excluded. Allowances above these limits are constrained to 15% of the value of new lending for FTBs and SSBs.
	LTI	For all mortgage borrowers, 3.5 LTI ratio limit applied. Borrowers for investment properties, those switching mortgages, and those restructuring mortgages are excluded. Allowances above this limit are constrained to 20% of new lending.
January 2017	LTV	For FTBs, 90% LTV limit applied to entirety of mortgage and allowances above LTV limit constrained to 5% of new lending. For SSBs, allowances above LTV limit constrained to 20% of new lending. For BTL borrowers, allowances above LTV limit constrained to 10% of new lending.
January 2018	LTI	For FTBs, allowances above LTI limit constrained to 20% of new lending. For SSBs, allowances above LTI limit constrained to 10% of new lending.
July 2019	LTI	Lifetime mortgages exempted from LTI ratio.
January 2022	LTI/LTV	Unused allowances can be carried over in first half of subsequent year for loans already approved.

**47. Since the introduction of the mortgage measures, new loans have increasingly been originated in clusters around the limits** (Figure 6). The average LTV for FTBs (Second and subsequent buyers, SSBs) in 2021H1 was 80.8 (66.8) compared to 81.7 (67.9) in 2020H1, in part reflecting larger down payments from the accumulated savings of households in the pandemic. Among mortgage loans to FTBs in 2021H1, 42.7 percent had an LTV of 89-90 percent and 43.8 had an LTI of 3.25-3.5. For SSBs, 31 percent of mortgage loans had an LTV of 79-80, and 24 percent of loans had an LTI of 3.25-3.5. The bimodality of the LTV distribution for SSBs reflects the flexibility in allowances.<sup>27</sup>

**48. Loans with allowances that exceed the LTI and LTV limits have declined as a share of new lending and are primarily used to purchase more expensive properties in Dublin** (Tables 5-6). The share of mortgage loans with allowances has varied around 20 percent since the introduction of the measures in 2015 but has recently declined to 17 percent in 2020 and 12 percent in 2021H1. Loans with allowances for FTBs were granted to borrowers with higher incomes in order to purchase higher-priced properties in Dublin. For FTBs (SSBs), loans with LTI allowances had an LTV of 83.5 (73.4) and an LTI of 4.1 (4.0) relative to average ratios of 80.6 (66.5) and 3.0 (2.6) for loans

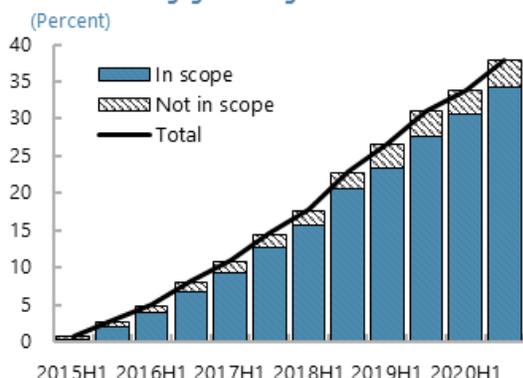
<sup>27</sup> Further review of residential mortgage market developments since the introduction of the mortgage measures is available in Gaffney and Kinghan (2021) and CBI (2021d).

without an LTI allowance. Loans with LTV allowances for SSBs had an LTV of 88.5 and an LTI of 2.9 relative to average ratios of 65.1 and 2.6 for loans without an LTV allowance.

**Figure 6. Ireland: Mortgage Measures**

An increasing share of total mortgages now is in scope.

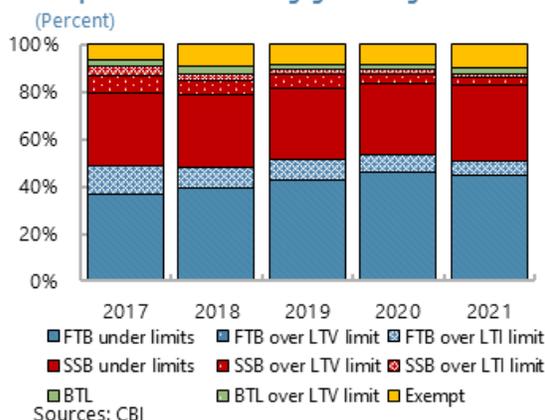
**Share of mortgage lending under measures**



Sources: CBI

Allowances and exemptions have decreased in 2021.

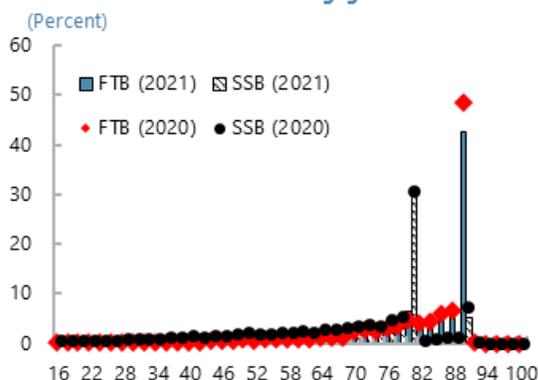
**Composition of new mortgage lending under measure**



Sources: CBI

The mortgage measures led to concentrations in LTV...

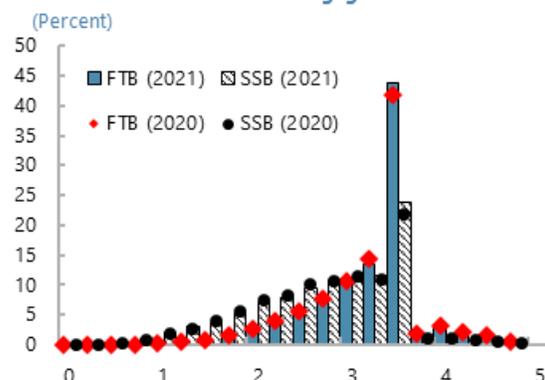
**LTV distribution for new mortgages**



Sources: CBI

...as well as in LTI ratios for FTBs.

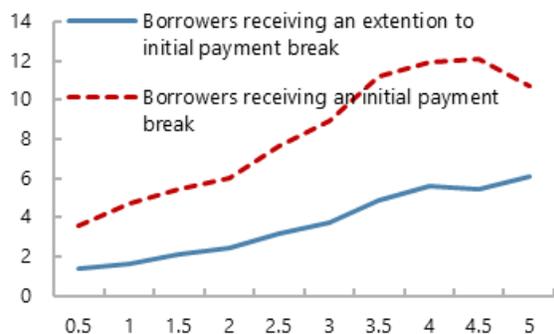
**LTI distribution for new mortgages**



Sources: CBI

LTI's correlate positively with lower probability of payment breaks and extensions.

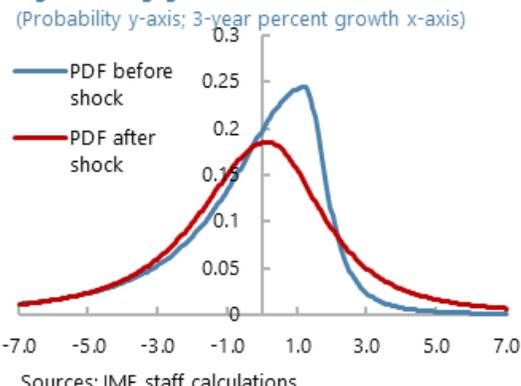
**Mortgage payment breaks by originating LTI**



Sources: CBI

A shock to LTI and LTV of 10 percent in 2018Q4 has a cooling effect on real house prices in 2021Q4.

**Tighter mortgage measures**



Sources: IMF staff calculations

**Table 5. Ireland: LTI Allowances Under the Mortgage Measures, 2021H1**

Loan characteristics	FTBs		SSBs	
	Without allowance	With allowance	Without allowance	With allowance
Loan size (EUR)	229,368	357,702	291,653	474,590
Value (EUR)	289,855	431,333	451,169	657,312
Income (EUR)	77,179	88,197	118,577	119,054
LTV	80.6	83.5	66.5	73.4
LTI	3.0	4.1	2.6	4.0
Loan term (years)	29	32	24	29
Interest rate	2.7	2.6	2.6	2.6

**Table 6. Ireland: LTV Allowances Under the Mortgage Measures, 2021H1**

Loan characteristics	SSBs	
	Without allowance	With allowance
Loan size (EUR)	286,970	433,323
Value (EUR)	455,365	489,863
Income (EUR)	115,709	155,398
LTV	65.1	88.5
LTI	2.6	2.9
Loan term (years)	24	27
Interest rate	2.6	2.7

**49. While the current origination of loans under the allowances remains prudent, there is no hard upper limit on LTV and LTI ratios, which could lead to significant tail risk, particularly in a context of accelerating house price growth.** However, the CBI monitors development in new mortgage lending biannually, and should be well-positioned to react to risks should these begin to emerge.

**50. The macroprudential mortgage measures have been effective at containing mortgage lending and guarding against an adverse feedback between credit and house price growth.**

Various indicators demonstrate the effectiveness of the mortgage measures at containing risks to financial stability. In the context of the COVID-19 pandemic, Gaffney and Greaney (2020) show that mortgages with higher LTIs were more likely to have received payment breaks, as well as an extension to such payment breaks. Acharya et al. (2021) show that house price growth and expectations of growth were reduced in regions more acutely affected by the measures. By examining a counterfactual PTI ratio under a scenario with mortgage measures, CBI (2019) conclude that house prices may have been 13 to 25 percent higher in 2019 had the measures not constrained lending standards.

**51. Tighter policy appears to reduce the likelihood of rapid appreciations in house prices, lessening the risk of sharp corrections.** While tighter measures have been shown to affect house price growth on average, such policies also may affect downside risks to house prices. We carry out an analysis based on the quantile regression framework outlined in Annex I, generally following IMF (2019) which introduced housing-at-risk (HaR). HaR measures the magnitude of house price declines that can occur at different quantiles. Figure 6 shows that a 10 percent tightening in both the LTV and LTI limits reduces the 5 percent HaR from -7.2 percent to -6.4 percent. This suggests that mortgage measures are an effective tool to mitigate downside risks in the event of price corrections, mitigating the impact on financial stability.

**52. Government housing policies may have implications for financial stability and price effects should continue to be monitored.** The Irish government has launched an ambitious plan to mitigate housing market pressures and sustainably raise supply of housing, in part by investing EUR 4 bn per year up to 2030 (Box 1). Under the “Housing for All” plan, various supply-side schemes are introduced to increase new housing stock and increase use of existing housing stock. Some affordability schemes, however, including the “First Home Scheme,” where the State backed scheme provides funding for up to 30 percent of new homes in exchange for a corresponding equity stake, resemble demand-side policies that may increase pressure on housing prices. While the First Home Scheme is small relative to the size of the mortgage market and includes features such as regional price caps on individual homes to align median prices paid by FTBs across regions, it potentially creates a floor for prices. The authorities plan to review these price caps to ensure they are aligned with regional medians, but they should also carefully monitor the price impact that such schemes further lifting demand are likely to have in a supply-restricted housing market.

**53. Overall household vulnerabilities are currently low but the potential for increasing unsecured credit extension and the acceleration of the financial cycle may lead to vulnerabilities in the medium term.** Indicators of household debt burden show that household debt is comparable to peer countries but declining; debt service burdens are low. Nonetheless, should increase unsecured credit, particularly from non-banks, and increased demand for credit in the upswing of the financial cycle materialize, this may lead to increased non-mortgage debt that would be uncovered by macroprudential measures.

**54. Recommendation 8:** Monitor possible leakages from unsecured credit and be ready to expand borrower-based measures to include DTI/DSTI limits.

## C. Vulnerabilities from the Corporate Sector

**55. High corporate debt in Ireland is driven by foreign-owned NFCs and it does not represent a significant debt burden for the domestic economy** (Figure 7). Foreign-owned NFCs constitute multinational corporations that account for a significant portion of Irish GVA, while also accounting for the high level of corporate debt;<sup>28</sup> foreign financing accounts for 65 percent of total

<sup>28</sup> Between 2015 and 2016, new legislation came into effect reducing the tax rate on profits derived from intangible assets. This led to a large transfer of capital assets to Ireland, resulting in the outlier observed in the data.

NFC financing. Nonetheless, even with increased levels of debt, the debt burden—measured relative to the aggregate size of NFC balance sheets—remains on a declining trend.

### Box 1. Government Housing Policies in Ireland

**To address structural issues in housing supply, the Irish government announced its “Housing for All” plan to 2030 in September 2021.** The plan aims to support homeownership by increasing the affordability of housing, social housing and inclusion, new housing supply, and make efficient use of the existing housing stock. To achieve these goals, the government initially committed over EUR 4 bn per annum between 2021-25, continuing through 2030, funding various supply-side schemes under the plan.

**The plan aims to develop 300,000 new homes over the next decade.** Bergin and Garcia-Rodriguez (2020) estimate an annual demand of 33,000 housing units per year divided between new private ownership homes (11,800), new private rental homes (6,500), new affordable homes (4,100), and new social housing homes (10,300).

**The Affordable Housing Act of 2021 passed in July, created a local and national affordable housing scheme for FTBs.** The Local Authority Affordable Purchase Scheme, available from January 2022, will provide affordable housing to FTBs by taking equity stakes in public developments. Newly built homes will be available at reduced prices in areas where affordability constraints are most acute. Support will take the form of an equity stake corresponding to the difference between the market value of a home and the maximum mortgage available to borrowers under the CBI’s mortgage measures. Another nationwide scheme that will become available from July 2022, the First Home Scheme, will provide FTBs with support to purchase newly built homes in private developments. Under the First Home Scheme, the government will partner with banks and pay up to 30 percent of the cost of a new home in exchange for an equity stake. Under both schemes, buyers have the option but not the obligation to purchase the equity stake. Upon the sale of a home, returns will accrue to all shareholders proportional to their equity.

**The First Home scheme comprises a relatively small share of the total mortgage market but may lead to price pressures.** The First Home affordable purchase scheme corresponds more to a demand rather than a supply measure. Over the period between 2022-26, EUR 400 million will be allocated to the First Home scheme with a target of 8,000 homes and an expected average equity payout of EUR 50,000 per household, which corresponds to approximately 1,600 households per year on average. On aggregate, this corresponds to 8 percent of all FTBs (6 percent of new mortgages by FTBs as of 2021Q4). Limits on the maximum value of homes that may be purchased should attenuate but not eliminate price pressures that will be created by the scheme. On the other hand, the Local Authority Affordable Purchase scheme will see local authorities contracting for the construction of new homes on public land, delivering approximately 28,000 homes and more closely resembling a supply-side intervention

**56. Irish-resident NFCs continue to deleverage with cash holdings and deposits increasing faster than new credit origination.** Irish corporates have increasingly met working capital needs out of profits, leading to an overall decline in the level of credit. Reasons for the declining level of credit to Irish NFCs include more risk-sensitive credit supply from banks to SMEs, (muted demand from SMEs (Department of Finance, 2021), and increased internal funding and equity issuance by larger firms (Klein, 2016). At 2019Q1, less than 50 percent of Irish SMEs had some form of credit.

**57. Government support and forbearance from the tax authority and creditors through the pandemic have prevented insolvencies thus far, but the withdrawal of policy support may**

**lead to a deterioration of NFC credit.** Profitability of SMEs dropped sharply during the pandemic and is recovering very gradually; while 50 percent of SMEs were loss-making in the six months leading to October 2020, 20 percent of SMEs remained loss-making in the six months leading to March 2021 (CBI, 2021b). Despite this, cash holdings among SMEs and large corporates have increased, reflecting the impact of government support, loan guarantees, tax forbearance, precautionary cash hoarding, as well as strong trading conditions for some businesses. Corporate insolvencies have remained low and NPLs have increased only modestly in 2021, particularly in sectors most affected by the pandemic, but both measures are expected to increase in the near term. Despite the small rise in NPLs, NFC loans exhibiting increase in credit risk (stage 2) have increased significantly and remain high at 34.4 percent in 2021Q2 relative to 10 percent in 2019Q4, indicating near-term vulnerabilities from the corporate sector.

#### **D. Vulnerabilities from Bank Funding and Liquidity**

**58. The banking system has ample aggregate liquidity, but vulnerabilities remain.** The LCR in total currencies is well above the regulatory requirement of 100 percent and the loan-to-deposit ratio (LDR) has been on a strong declining trend since the GFC and standing at 86 percent in 2021Q3 (Figure 8), despite the absence of a specific limit. The NSFR, which has recently become binding, is also fully met by banks on aggregate.

**59. The international banks operating in Ireland are exposed to foreign currency risks.** While retail banks maintain a USD and GBP LCR at or above 100 percent, international banks in aggregate have a USD LCR of 68.8 percent. This leaves the international banks segment potentially exposed to dollar liquidity shocks with the potential to spill over into the domestic financial system. Nevertheless, temporary relief from the total currency LCR requirement that was provided during the pandemic<sup>29</sup> was not used by any of the international banks and there was continuous availability of USD, CAD, and GBP liquidity from parent groups. The CBI currently monitors, but does not implement, any foreign currency liquidity requirements.

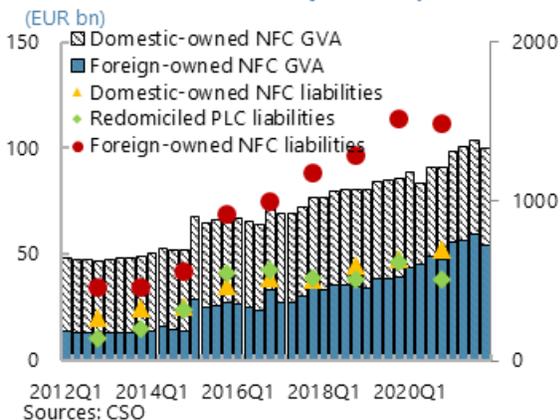
**60. The reliance of international banks on unsecured wholesale funding, largely parent funding, and their exposures to contingent credit lines also raises potential liquidity concerns.** Over-reliance on unstable sources of funding can squeeze liquidity and increase pro-cyclicality. International banks rely on a parental and corporate deposit funding base that is generally more stable than other forms of wholesale funding but remains susceptible. Contingent credit lines and off-balance sheet exposures are material, and drawdowns are monitored regularly. Despite an adequate NSFR on aggregate for international banks, the CBI should continue monitoring funding risks carefully.

<sup>29</sup> [ECB press release, July 28, 2020.](#)

**Figure 7. Ireland: NFC Financing**

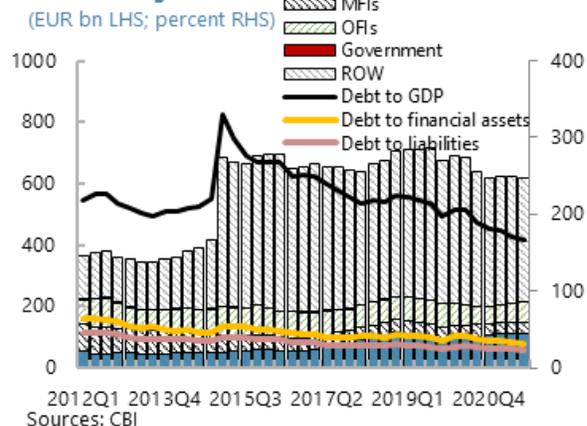
Foreign-owned NFCs account for a large portion of Irish growth and debt.

**GVA and liabilities of NFCs by ownership**



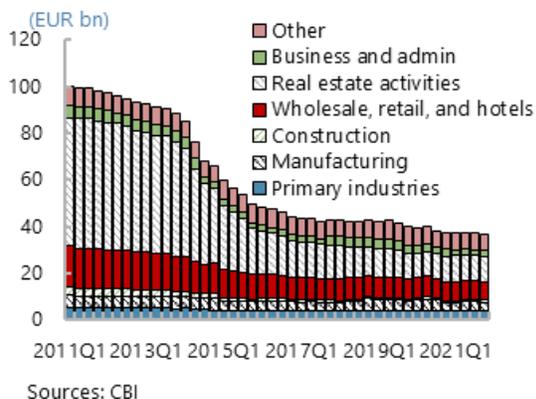
Despite increases in the debt level, the debt burden has remained on a decreasing trend over time.

**NFC financing**



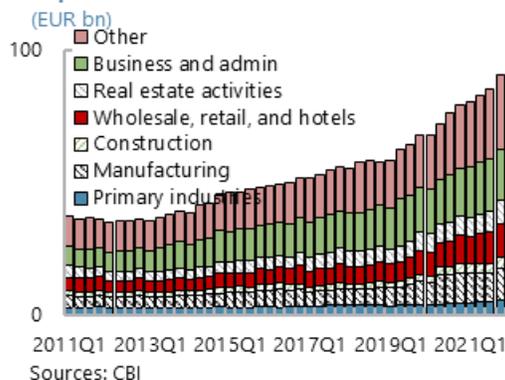
Irish-resident NFCs have continued to deleverage since the GFC...

**Credit to Irish-resident NFCs**



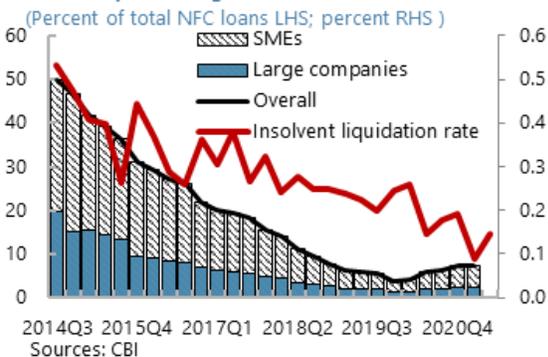
...with deposits rising faster than new credit origination, resulting in net reductions in credit.

**Deposits from Irish-resident NFCs**



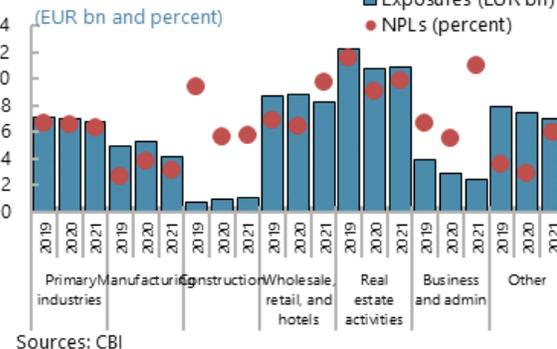
NPLs and corporate insolvencies have been on a long-term downward trend but may rise after the pandemic...

**NFC non-performing loans**



...while NPLs have already begun to rise in sectors most affected by the pandemic.

**NPLs for Irish-resident NFCs**



## E. Vulnerabilities from the Non-Bank Sector

**61. Market-based finance has expanded significantly in Ireland.** In general, investment funds hold assets overseas and there are limited connections to the domestic Irish economy, with the notable exception of property funds invested in the Irish CRE market.

**62. CRE is systemically important in Ireland and a disruption could have broader consequences for the financial system.** The invested CRE market in Ireland at end-2020 is estimated to have a total value of EUR 53 billion. Banks have exposures to the CRE market and commercial property is also widely used by corporate borrowers as collateral to secure leverage. A sudden correction in asset prices—alternatively due to changes in investor sentiment or withdrawal of foreign investment—can, therefore, entail adverse macro-financial implications, including for the real economy. The resilience of CRE financing thus critically important from a financial stability perspective.

**63. The financing of the CRE market has diversified away from domestic to international investors.** Prior to the GFC, CRE investment was primarily financed by domestic investors borrowing from domestic banks, creating multiple levels of feedback between credit and asset prices. Increasingly since then, a larger share has been financed by foreign investment up to 79.3 percent in 2021 (Figure 9). Foreign funds are channeled through Irish property funds or through direct cross-border investment. Property funds are financed equally by equity—73 percent of investors are overseas—and debt from domestic and international banks (53 percent of debt financing), though shareholders and OFIs also provide debt financing. Irish retail banks are significantly exposed to the CRE market alternatively through loans to property funds (EUR 3.2 billion) and through other investments (EUR 7.3 billion), though these exposures are far below exposures prior to the GFC. The main ultimate beneficiaries of Irish property funds are European OFIs, insurance companies, and NFCs (Figure 10).

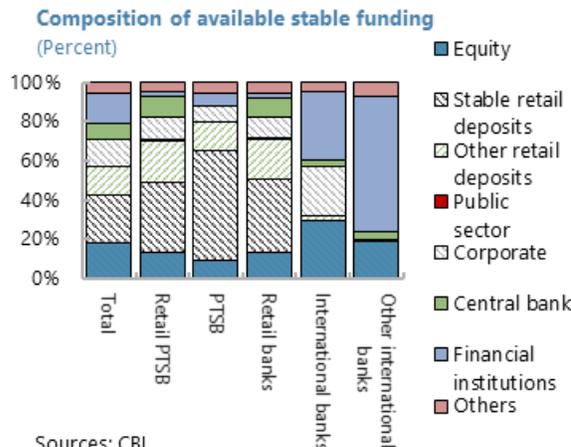
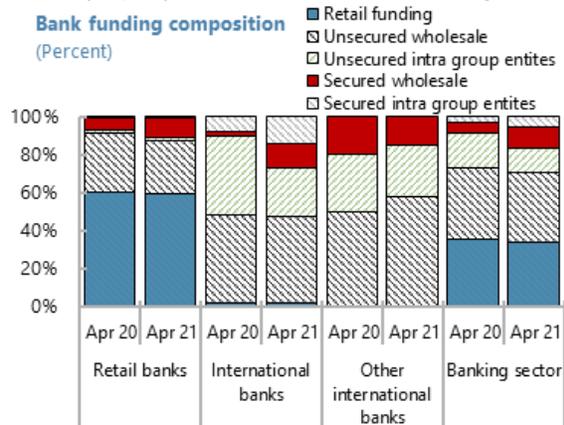
**64. Data gaps in direct cross-border exposures to CRE prevent a complete accounting of potential risks.** Of the estimated total invested CRE market, 43 percent of assets are held by property funds, 8 percent by investment companies, and 5 percent by REITs. The counterparts of the remaining 44 percent of funding are not known, partly owing to the lack of available data on cross-border exposures. Without a full account of funding for the entire invested CRE market, it is impossible to account for the scope of potential risks (see Recommendation 7).

**65. CRE values declined during the COVID-19 pandemic but are set for a mixed recovery as vacancies fall** (Figure 9). Capital value and rent growth for CRE turned negative in 2020 as weak demand raised vacancies. Across sectors, however, there has been notable variation in performance. Whereas vacancies for industrial properties have begun to decline and capital values have recovered strongly, the retail market—most affected by the COVID-19 pandemic and subject to structural trends in consumption—has continued to stagnate, with vacancies rising and capital values continuing their decline. The impact on the office sector has been more muted, though values and rents have not yet recovered. Property funds are most highly exposed to office (37 percent) and retail (26 percent) properties where the effects of the pandemic are still acutely felt.

**Figure 8. Ireland: Bank Funding and Liquidity**

Domestic retail banks rely on deposits, while international banks rely equally on unsecured wholesale funding...

...from other financial institutions.

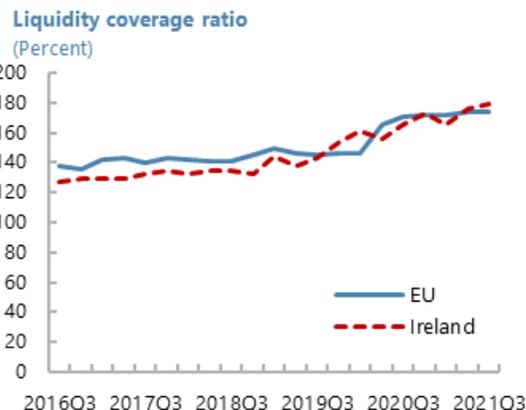
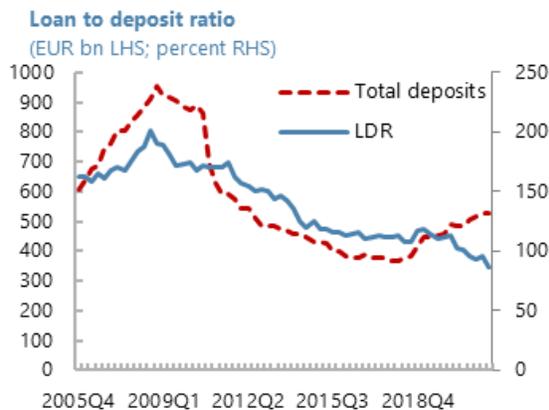


Sources: ECB, CBI

Sources: CBI

Increased deposits and overall sustained decline in credit since the GFC has led to a sustained drop in the LDR.

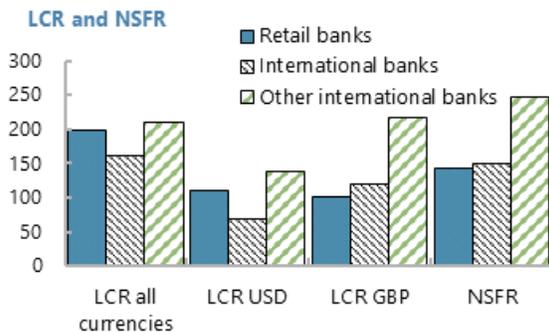
The total currency LCR is above the regulatory minimum in Ireland.



Sources: ECB, CBI

Sources: ECB, CBI

Liquidity ratios are above regulatory requirements, but USD liquidity remains a risk for international banks.



Sources: ECB, CBI

**66. Misalignment of values from fundamentals varies across sectors, reflecting structural trends and the aftermath of the COVID-19 shock.** In order to assess whether properties are appropriately valued, we compute a range of indicators including CRE capital values to rents, CRE capital values to modified total demand, CRE capital values to consumption, and CRE capital values to employment—broadly following Kennedy et al. (2021) and ECB (2011). On average, these indicators do not suggest overvaluation in the CRE market, but a disaggregation by sector tells a different story. Industrial properties appear to be presently overvalued relative to their historical average, whereas office properties are not significantly misaligned from their fundamental value. Retail properties seem to be undervalued, yet capital values relative to rent had been in decline already prior to the pandemic, possibly reflecting the transition toward online retail. Going forward, lower (higher) vacancy rates in the industrial (retail) segment may put upward (downward) pressures on sticky rents, thereby mitigating the current misalignments in valuations.<sup>30</sup>

**67. The FSAP’s assessment of CRE returns shows that current returns, misalignment shocks, leverage, and financial conditions are significant predictors of tail risks.** The FSAP employed the quantile regression framework as before for house prices, using current returns, financial conditions, leverage, valuation misalignment indicators, and economic growth as potential predictors.<sup>31</sup> At the 10th percentile, misalignment shocks have the strongest predictive power and the same sign as financial conditions: an over-valuation (under-valuation) shock will lead to a strong negative (positive) correction in CRE values, and tighter financial conditions will also weigh on CRE values across all horizons. Current CRE returns show significant persistence, while higher leverage inflates CRE values strongest over the medium term once the credit cycle matures.

**68. At the median quantile, CRE values are driven by economic growth and misalignment shocks in the medium term.** Predictors at median quantile of CRE values are relatively weak, but importantly growth and misalignment shocks have strong predictive power over the medium term; that is, over a sufficiently long horizon, CRE values are driven by fundamentals.

**69. Tail risks to CRE returns have recovered since 2020, but current market conditions predict strong price appreciation** (Figure 11). Following the shock from the COVID-19 pandemic, average CRE returns are slowly recovering, as are downside tail risks: 1-year ahead tail risks at the 10 percent level have declined from -10.1 percent in 2020Q4 to 0.1 percent in 2021Q4, while 3-year ahead tail risks at the 10 percent level have declined from -7.5 percent to -4.3 percent. At the same time, the distribution of returns shifted markedly to the right. Whereas the 1-year (3-year) ahead median return stood at -1.2 (-1.1) percent in 2020Q4, as of 2021Q4 it stands at 10.1 (12.3). The rightward distributional shift in expected returns at both the 1-year and 3-year horizons is driven mainly by the misalignment in CRE values. Misalignment indicators currently suggest slight undervaluation on average, and historically there has been a strong negative correlation between misalignment and CRE returns. Thus, strong appreciation is predicted by the model, bringing CRE

<sup>30</sup> See valuation differences across CRE segments in Figure 9 above.

<sup>31</sup> For further details, see Annex I.

values in line with fundamentals. The extreme skewness of the predicted density suggests also that downside tail risks (i.e., negative CRE returns) are increasingly unlikely.

**70. A cohort of property funds have high levels of leverage relative to EU peers.** One third of assets are held by property funds with LTVs exceeding 70 percent, while 58 percent of assets are held by funds with LTVs exceeding 50 percent; by comparison, REITs are required to maintain leverage below 50 percent. For a sufficiently large downward revision to CRE values or rents, property funds may violate LTV thresholds under loan agreements with banks, a situation that may lead to forced selling. A complicating feature in the measurement of leverage of Irish property funds, however, is that some of the debt is provided by shareholders, and these shareholder loans are likely to behave differently to typical loans from third parties in times of stress.

**71. Property funds are also exposed to liquidity mismatch, though this constitutes a lower risk.**<sup>32</sup> Liquidity timeframes<sup>33</sup> of Irish property funds are typically 180–210 days in normal times, yet 58 percent of assets are held by property funds with liquidity timeframes under 200 days (Daly et al., 2021); under periods of stress, the liquidity mismatch becomes more acute. Property funds hold 5 percent of total assets in liquid assets, meaning that redemption requests of this size can be met. Faced with larger redemption requests, there exists a first mover advantage in selling assets to obtain a higher price. However, Irish property funds are less susceptible to this risk as most are closed-end funds or open-ended funds with limited dealing frequency (most deal annually).

**72. The CBI has proposed to implement leverage limits and provide liquidity management guidelines for property funds, but several details need to be finalized.**<sup>34</sup> The CBI has consulted on using its powers under Article 25 of the AIFMD to implement a total loan to total asset value limit on leverage and granting a transition period for funds above this limit to comply, while funds continue to report their positions annually. The CBI should consider allowing counter-cyclical adjustments to this leverage limit, both preserving incentives to comply and addressing risks over the cycle. The CBI should also require a higher reporting frequency—for instance, quarterly—to enforce compliance. Finally, the CBI should clarify a timeline for funds to comply in the case that the leverage limit is breached in the future.

**73. Recommendation 9:** Strengthen the resilience of property funds by introducing the proposed macroprudential leverage limit and liquidity management guidance, while adjusting the leverage limit countercyclically.

---

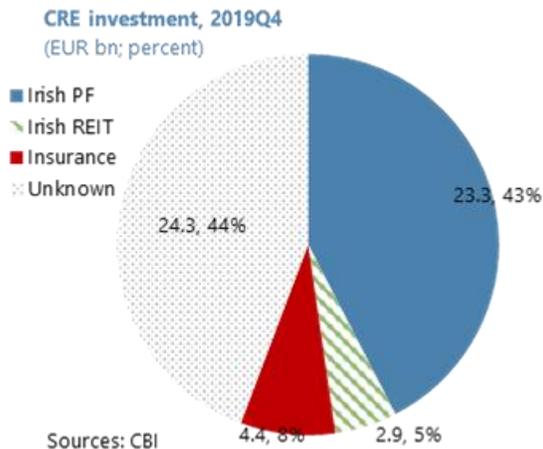
<sup>32</sup> See also the FSAP technical note on Oversight of Market-based Finance for a discussion of liquidity management tools available to funds.

<sup>33</sup> This is the sum of the standard notice and settlement periods to settle redemption requests.

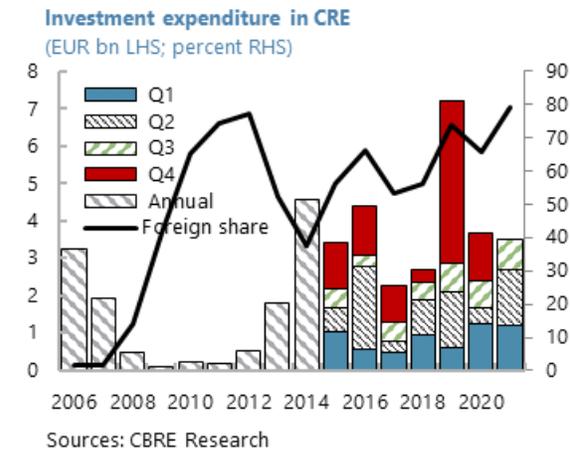
<sup>34</sup> [CBI \(2021c\)](#).

**Figure 9. Ireland: CRE Market**

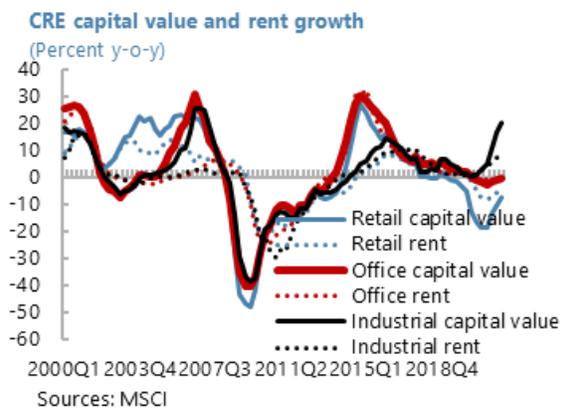
While the invested Irish CRE market is dominated by property funds, a significant portion remains unaccounted.



Foreign investors play a prominent role in the Irish CRE market.



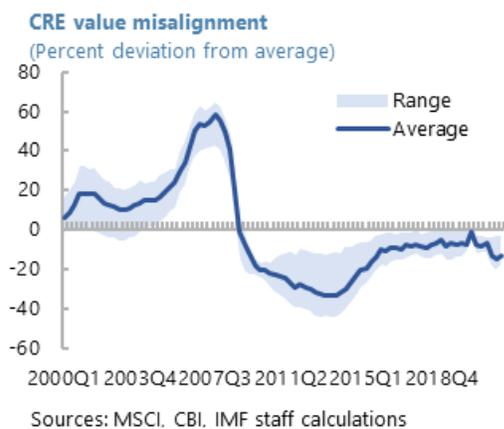
CRE returns have experienced significant volatility in Ireland, with recent divergence across sectors.



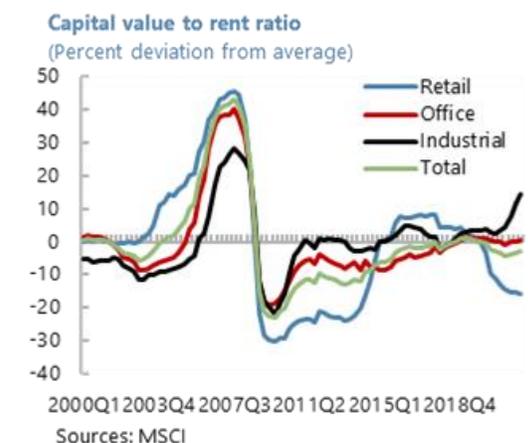
Vacancy rates have increased during the pandemic, with sustained upward trends among retail and office spaces.



The average of CRE misalignment indicators does not indicate overvaluation on aggregate...



...but across sectors, industrial properties are overvalued, and retail properties are undervalued.

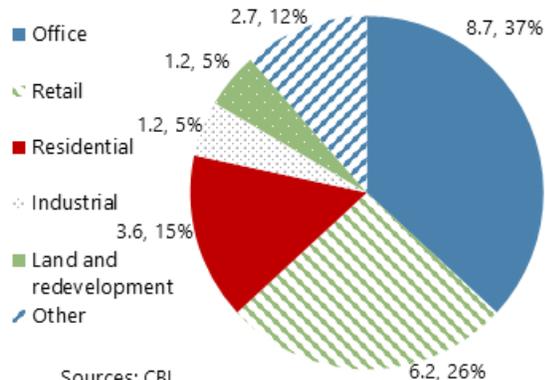


**Figure 10. Ireland: Property Funds and CRE**

Property funds are primarily invested in office and retail assets.

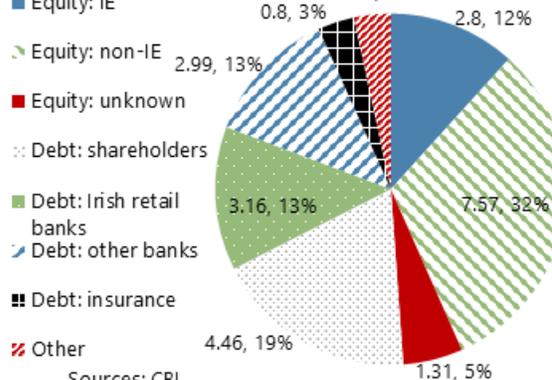
Property funds have equal shares of equity and debt financing.

**CRE holdings of property funds, 2019Q4**  
(EUR bn; percent)



Sources: CBI

**CRE asset financing of property funds, 2019Q4**  
(EUR bn; percent)

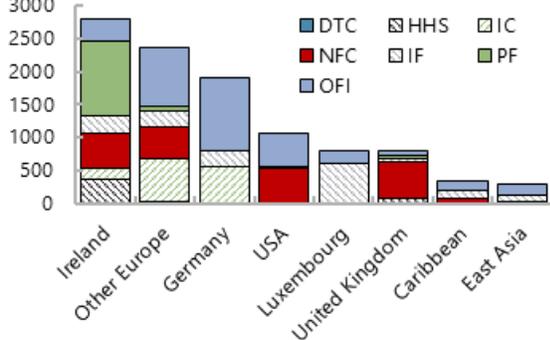


Sources: CBI

Ultimate beneficiaries of Irish property funds are primarily European OFIs, insurance companies, and NFCs.

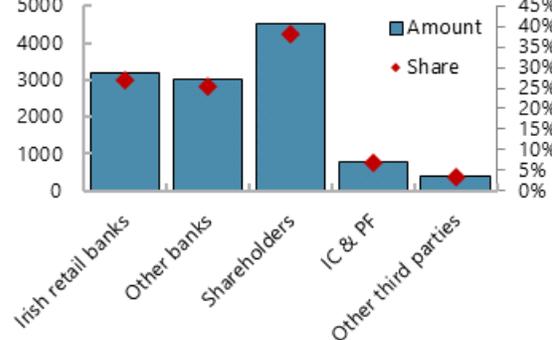
Irish retail banks are also indirectly exposed to CRE market developments through loans to property funds.

**Beneficial investors in property funds**  
(EUR mn)



Sources: CBI

**Debt liabilities of property funds**  
(EUR mn LHS; percent RHS)

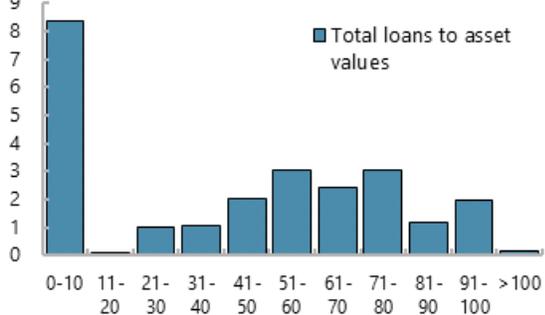


Sources: CBI

Irish property funds have relatively high leverage ratios...

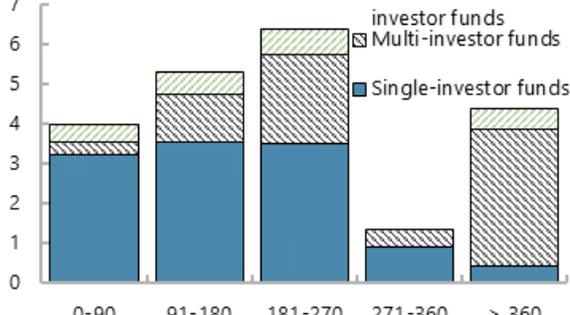
...and long liquidity timeframes.

**Distribution of property funds' leverage**  
(EUR bn y-axis; LTV x-axis)



Sources: CBI

**Distribution of property funds' liquidity timeframe**  
(EUR bn y-axis; days x-axis)



Sources: CBI

**74. Leakages to the property fund measures may require further action.** Investors in the Irish CRE market are diverse in their type, geography, and business models, rendering regulation of access to leverage difficult to target and enforce. The CBI should assess leakages to the proposed measures and consider the benefits of expanding the regulatory toolkit for other financial institutions with exposures to the CRE market. The structuring of any further measures will have to consider additional possibilities for leakage and reciprocity, given the cross-border nature of direct and indirect CRE financing. Efforts to improve data coverage on ultimate CRE investors (Recommendation 7) will further clarify the extent of potential leakage.

**75. Recommendation 10:** Broaden the bank, non-bank, and borrower-based macroprudential toolkit aimed at mitigating CRE market vulnerabilities as needed.

**76. Other risks from the non-bank sector include increased financing to SMEs** (Figure 12). Non-bank lenders account for an increasing share of lending to SMEs, reaching 32.2 percent of new loans and approximately 20 percent of total outstanding loans. The highest exposures are to the real estate, construction, and wholesale and retail sectors, owing to the specialist nature of many non-bank lenders. Non-bank lenders differ from banks in several ways. Given the higher cost of funding and lack of access to wholesale funding, non-banks typically engage in asset-backed finance in specialized areas such as property and equipment leasing. Often, non-banks will pair with international lenders to originate loans off of their balance sheets. There is no prudential regulation for non-bank lending, given that these entities do not take deposits.

**77. Some forms of non-bank finance are not registered as lending in the CCR.** Peer-to-peer and crowdsourced financing are not classified as loans and are therefore not reported to the CCR. At present, the level of financing obtained through these channels is very small, but the CBI should monitor developments as materiality increases (see Recommendation 6).

## F. Structural Vulnerabilities

**78. The banking sector is highly concentrated in groups, requiring additional capital buffers for six O-SIIs** (Figure 13). Five banking groups hold 85 percent of all banking assets and over 90 percent of household and private-sector lending. Six institutions have been deemed O-SIIs in the annual review, with additional capital buffers commensurate with the level of systemic risk and comparable to European peers. On the retail side, with the exit of two foreign groups, the retail banking segment has seen additional concentration into the hands of three remaining banks.

**79. The insurance sector is similarly concentrated across sub-sectors.** The top five insurers across life insurance, non-life insurance, and reinsurance account for over 50 percent of assets by sub-sector.

**80. The Irish financial system is highly interconnected with the rest of the world, and a macroprudential perspective is increasingly important in the non-bank sectors.** The absence of a non-bank macroprudential framework at an international level is a gap with outsized impact on Ireland, given the relative size and interconnectedness of its financial system. Issues stem both from a need to fill data gaps (for instance, relative to direct cross-border CRE investment), as well as

attempts to regulate non-banks (for instance, leverage requirements for non-resident non-banks). In the context of the large, internationally focused segment of the funds sector, the CBI has emphasized the importance of a broader macroprudential framework for the funds sector at a global level. The Irish authorities have already demonstrated leadership on non-bank macroprudential issues, and these efforts should be redoubled at the European level.

**81. Recommendation 11:** Work through European institutions to develop macroprudential tools targeting risks from non-banks, including for leakages and cross-border issues.

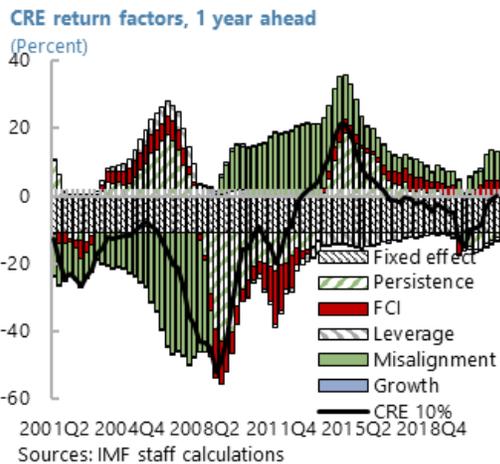
**82. The CBI has not yet activated the systemic risk buffer and is considering its overall strategy for its macroprudential bank capital toolkit.**<sup>35</sup> The experience of the COVID-19 pandemic has placed a premium on readily adjustable macroprudential tools, while questions have also been raised on the interactions between buffers once the CCyB is lifted from 0 percent. The development of a dynamic macroprudential stress test will help assess the appropriate level of through-the-cycle capital for the Irish banking sector that could potentially be employed through the CCyB rather than activating an additional structural buffer. The CBI should prioritize completing this work.

---

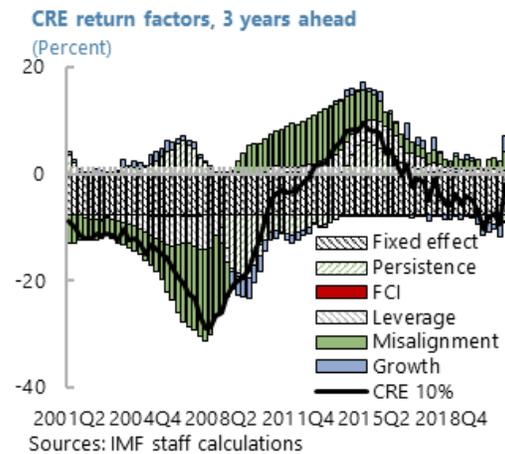
<sup>35</sup> Since the completion of the analysis, the CBI has announced as part of its Capital Framework Review that it will rely on a single instrument—the CCyB—rather than a combination of instruments (e.g., the CCyB and the SyRB) to safeguard resilience against macro-financial risks, including those stemming from the small and globalized nature of the Irish economy.

**Figure 11. Ireland: CRE at Risk**

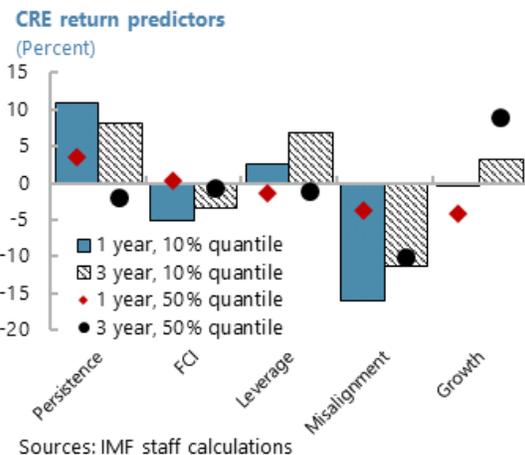
Misalignment and FCI impact tail risk in the near term...



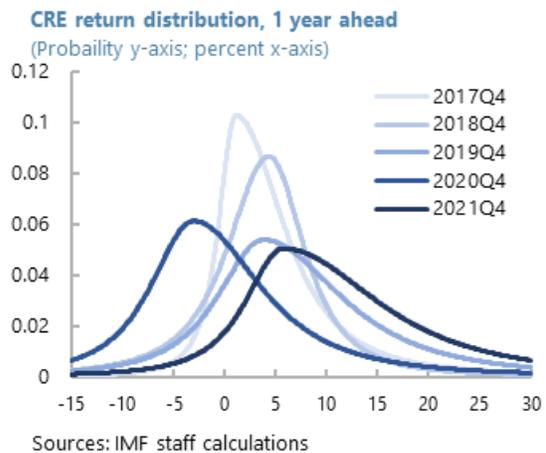
...while growth plays a larger role in the medium term.



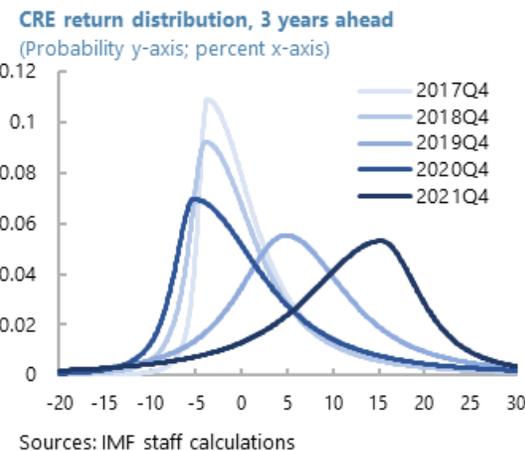
Predictors of CRE returns vary by quantile and horizon.



CRE returns have recovered strongly since 2020...



...and are projected to accelerate significantly in the medium term.

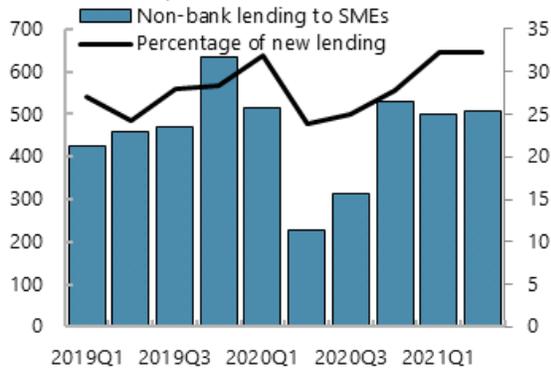


**Figure 12. Ireland: Non-Bank Lending to SMEs**

Non-bank credit to SMEs forms an increasing share of new lending...

**Non-bank lending to SMEs**

(EUR mn LHS; percent RHS)

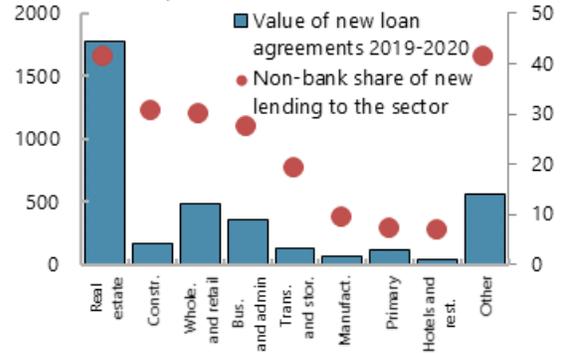


Sources: CCR, CBI

...particularly to the real estate and construction sectors in Ireland.

**Non-bank loans to SMEs by sector**

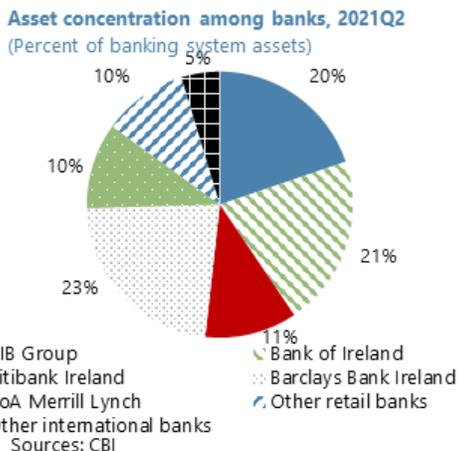
(EUR mn LHS; percent RHS)



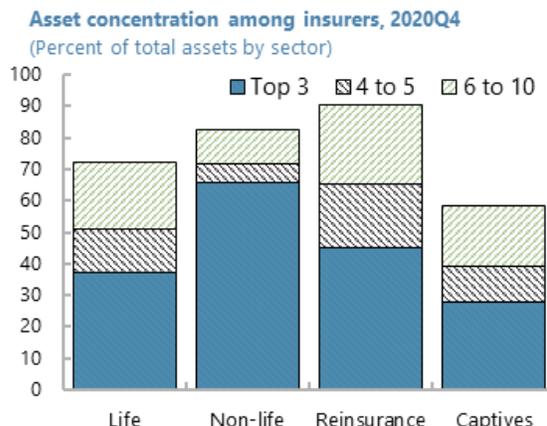
Sources: CCR, CBI

**Figure 13. Ireland: Structure of the Financial System**

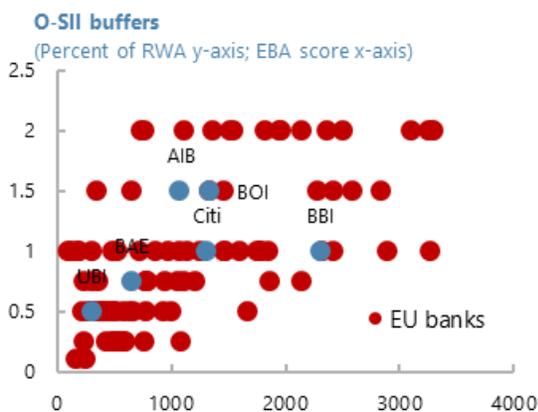
The banking sector is highly concentrated by banking groups.



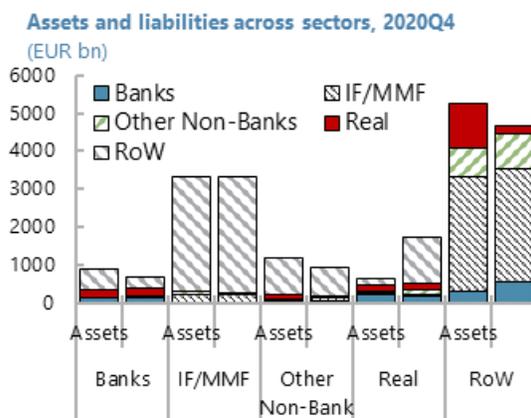
The insurance sector is similarly concentrated, though different entities dominate different sectors.



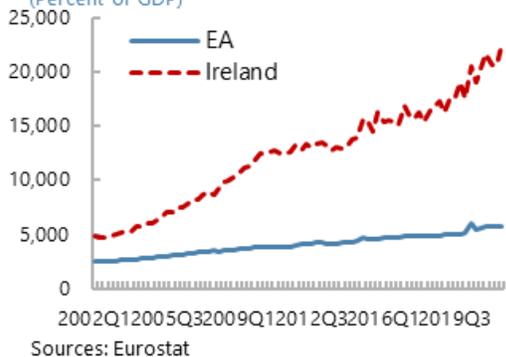
Six institutions are assessed as O-SIIs, with comparative buffers relative to EBA scores as European peers.



Cross-border linkages are large relatively large across all sectors of the financial system, but especially for IFs/MMFs.



**Total financial assets**  
(Percent of GDP)



The size of the Irish financial system relative to its economic output far exceeds peers.

## References

Acharya, V., Bergant, K., Crosignani, M., Eisert, T., and F. McCann (2020), "The Anatomy of the Transmission of Macroprudential Policies," IMF Working Papers 2020/058, International Monetary Fund.

Adrian, T., Boyarchenko, N., and D. Giannone (2019), "Vulnerable Growth," *American Economic Review*, Vol. 109(4): 1263-89.

Bergin, A. and A. Garcia-Rodriguez (2020), "Regional demographics and structural housing demand at a county level," Research Series No. 111, Economic and Social Research Institute, Department of Housing, Local Government, and Heritage.

Besley, T., Meads, N., and P. Surico (2008), "Insiders versus Outsiders in Monetary Policymaking," *American Economic Review*, Vol. 98(2), pp. 218-23.

Bhattacharjee, A. and S. Holly (2015), "Influence, Interactions, and Heterogeneity: Taking Personalities out of Monetary Policy Decision-making," *Manchester School*, University of Manchester, Vol. 83(2), pp. 153-182.

Bianchi, B. Galstyan, V., and V. Herzberg (2020), "Global Risk and Portfolio Flows to Emerging Markets: Evidence from Irish-Resident Investment Funds," Research Technical Paper, Central Bank of Ireland, Vol. 2020(13).

Central Bank of Ireland (2014), "A Macroprudential Policy Framework for Ireland."

——— (2019), "Financial Stability Review 2019 II," November.

——— (2020), "Forward-looking assessments of banking resilience: the Central Bank's framework for the Irish retail banking system," November.

——— (2021a), "Financial Stability Review 2021 I," June.

——— (2021b), "Financial Stability Review 2021 II," November.

——— (2021c), "Macroprudential measures for the property fund sector," Consultation Paper No. 145, November.

——— (2021d), "Mortgage measures framework review," Consultation Paper No. 146, December.

Coates, D., Daly, P., Keenan, E., Kennedy, G., and B. McCarthy (2019), "Who invests in the Irish commercial real estate market?: An overview of non-bank institutional ownership of Irish CRE," *Financial Stability Notes*, Central Bank of Ireland, Vol. 2019(6).

Conefrey, T. and D. Staunton (2019), "Population Change and Housing Demand in Ireland," Economic Letter, Central Bank of Ireland, Vol. 2019(14).

Daly, P., Moloney, K., and S. Myers (2021), "Property funds and the Irish commercial real estate market," Financial Stability Notes, Central Bank of Ireland, Vol. 2021(1).

Deghi, A., Katagiri, M., Shahid, S., and N. Valckx (2020), "Predicting downside risks to house prices and macro-financial stability," IMF Working Paper no. 2020/011, International Monetary Fund.

Department of Finance (2021), "SME Credit Demand Survey: April-September 2021."

Eijffinger, S., Mahieu, R., and L. Raes (2018), "Inferring hawks and doves from voting records," European Journal of Political Economy, Vol. 51(C), pp. 107-120.

Elekdag, S., Prasad, A., Jeasakul, P., Alter, A., Lafarguette, R., Feng, A. X., and C. Wang (2019), "Growth at Risk: Concept and Application in IMF Country Surveillance," IMF Working Paper no. 2019/036, International Monetary Fund.

Emter, L., Killeen, N., and P. McQuade (2021), "Bank and non-bank financial institutions' cross-border linkages: new evidence from international banking data," Financial Stability Notes, Central Bank of Ireland, Vol. 2021(3).

Gaffney, E. and D. Greaney (2020), "COVID-19 payment breaks on residential mortgages," Financial Stability Notes, Central Bank of Ireland, Vol. 2019(5).

Gaffney, E. and C. Kinghan (2021), "Mortgage lending in Ireland during the 2010s," Financial Stability Notes, Central Bank of Ireland, Vol. 2019(9).

Grace, T., Hallissey, N., and M. Woods (2015), "The Instruments of Macro-Prudential Policy," Quarterly Bulletin Articles, Central Bank of Ireland, p. 90-105, January.

Groth, C. and T. Wheeler (2008), "The behaviour of the MPC: Gradualism, inaction and individual voting patterns," Discussion Papers 21, Monetary Policy Committee Unit, Bank of England.

Hallissey, N. (2016), "Interconnectedness of the Irish banking sector with the global financial system," Quarterly Bulletin Articles, Central Bank of Ireland, p. 66-82, January.

Hansen, S. and M. McMahon (2008), "Delayed doves: MPC voting behaviour of externals," Centre for Economic Performance Paper No. 862, London School of Economics and Political Science.

Hansen, S., McMahon, M., and C. V. Rivera (2015), "Preferences or private assessments on a monetary policy committee?" Journal of Monetary Economics, Vol. 67, pp. 16-32.

Heffernan, T., McCarthy, B., McElligott, R., and C. Scollard (2021), "The role of non-bank lenders in financing Irish SMEs," Statistical Publications, Central Bank of Ireland, April 2021. Available at <https://www.centralbank.ie/statistics/statistical-publications/behind-the-data/the-role-of-non-bank-lenders-in-financing-irish-smes> (Accessed May 10, 2022).

International Monetary Fund (2011), "Macroprudential Policy: An Organizing Framework," IMF Policy Papers, Vol. 2011(18).

——— (2014a), "Staff Guidance Note on Macroprudential Policy," December.

——— (2014b), "Staff Guidance Note on Macroprudential Policy: Detailed Guidance on Instruments," December.

——— (2018), "Global Financial Stability Report," October.

——— (2019), "Global Financial Stability Report," April.

Jung, A. and G. Kiss (2012), "Preference heterogeneity in the CEE inflation-targeting countries," European Journal of Political Economy, Vol. 28, pp. 445-460.

Kennedy, G., and S. Myers (2019), "An overview of the Irish housing market," Financial Stability Notes, Central Bank of Ireland, Vol. 2019(16).

Kennedy, G., O'Brien, E., and M. Woods (2016), "Assessing the sustainability of Irish residential property prices: 1980Q1-2016Q2," Economic Letters, Central Bank of Ireland, Vol. 2016(11).

Kennedy, G., Killeen, N., Skouralis, A., Velasco, S., and M. Wosser (2021), "COVID-19 and the commercial real estate market in Ireland," Financial Stability Notes, Central Bank of Ireland, Vol. 2021(4).

Klein, N. (2016), "Corporate Sector Vulnerabilities in Ireland," IMF Working Paper no. 16/211, International Monetary Fund.

Kullback, S. and R.A. Leibler (1951), "On Information and Sufficiency," The Annals of Mathematical Statistics, Vol. 22(1), pp. 79-86.

McInerney, N. (2020), "Macroprudential Policy and the Irish Crisis," The Economic and Social Review, Vol. 51(4), p. 507-533.

O'Brien, E., O'Brien, M., and S. Velasco (2018), "Measuring and mitigating cyclical systemic risk in Ireland: the application of the countercyclical capital buffer," Financial Stability Notes, Central Bank of Ireland, Vol. 2018(4).

O'Brien, M. and S. Velasco (2020), "Unobserved components models with stochastic volatility for extracting trends and cycles in credit," Research Technical Paper, Central Bank of Ireland, Vol. 2020(9).

O'Brien, M. and M. Wosser (2018), "An Early Warning System for Systemic Banking Crises: A Robust Model Specification," Research Technical Paper, Central Bank of Ireland, Vol. 2018(9).

——— (2021), "Growth at Risk and Financial Stability," Financial Stability Notes, Central Bank of Ireland, Vol. 2021(2).

Pagan, A. (1984), "Econometric Issues in the Analysis of Regressions with Generated Regressors," International Economic Review, Vol. 25(1), pp. 221-247.

Parla, F. (2021), "Financial Market Turbulence and Macro-Financial Developments in Ireland: a Mixed Data Sampling (MIDAS) Approach," Research Technical Paper, Central Bank of Ireland, Vol. 2021(7).

Riboni, A. and F. J. Ruge-Murcia (2010), "Monetary Policy Committee: Consensus, Chairman Dominance, or Simple Majority?" The Quarterly Journal of Economics, Vol. 125(1), pp. 363-416.

Ryan, E. (2017), "The Role of Macroprudential Indicators in Monitoring Systemic Risk and Setting Policy," Quarterly Bulletin Articles, Central Bank of Ireland, p. 62-79, April.

Wosser, M. (2017), "What drives systemic bank risk in Europe," Research Technical Paper, Central Bank of Ireland, Vol. 2017(8).

## Annex I. Growth-at-Risk Models

**1. This annex provides background information on the statistical models estimated to assess tail risks to growth, house prices, and commercial real estate prices in Ireland.** We estimate quantile regression models of the form

$$y_{t+h,q} = b_{h,q}X_t + e_{t+h,q} \quad (1)$$

where  $y$  represents the dependent variable at horizon  $h$  and quantile  $q$ ,  $X$  represents a matrix of the covariates or factors along with an intercept term,  $b$  represents the coefficients at horizon  $h$  for each quantile  $q$ , and  $e$  represents the quantile regression error term. This setup has been employed for estimating tail risks to growth by Adrian et al. (2019) and adapted for financial stability and real estate prices in Elekdag et al. (2019) and Deghi et al. (2020) among others. The analysis has been specifically applied to Ireland previously in O'Brien and Wosser (2021) for growth and in Kennedy et al. (2021) for commercial real estate prices.

**2. We estimate three models to assess the relevant importance of key determinants.** First, we take y-o-y growth of real modified demand (GNI\*) as the dependent variable, estimating the model

$$\Delta GNI_{t+h,q}^* = b_{1,q} + b_{2,q}\Delta GNI_t^* + b_{3,q}FCI_t + b_{4,q}Leverage_t + b_{5,q}VIX_t + e_{t+h,q} \quad (2)$$

where the financial conditions index  $FCI$  for Ireland is estimated as in IMF (2018),  $Leverage$  is measured as the alternative credit gap from O'Brien and Velasco (2020), and  $VIX$  represents the volatility index for the S&P 500. Standard errors are bootstrapped to avoid the generated regressor problem (Pagan, 1984).

**3. For house prices, y-o-y growth is modeled as the dependent variable in the model**

$$\Delta RRE_{t+h,q} = b_{1,q} + b_{2,q}\Delta RRE_{t,q} + b_{3,q}FCI_t + b_{4,q}Leverage_t + b_{5,q}Misalignment_t + b_{6,q}\Delta GNI_t^* + b_{7,q}\Delta CCI_t + e_{t+h,q} \quad (3)$$

where  $RRE$  represents an index for real residential real estate prices,  $Leverage$  represents the first principal component of the alternative credit gap, LTI, and LTV for mortgages,  $Misalignment$  represents the first principal component PTI and PTR ratios expressed as the percentage deviation from the sample average, and  $CCI$  represents a construction cost index for RRE. The modeling follows the methodology in IMF (2019).

**4. For CRE prices, y-o-y growth is modeled as the dependent variable in the model**

$$\Delta CRE_{t+h,q} = b_{1,q} + b_{2,q}\Delta CRE_t + b_{3,q}FCI_t + b_{4,q}Leverage_t + b_{5,q}Misalignment_t + b_{6,q}\Delta GNI_t^* + e_{t+h,q} \quad (4)$$

where  $CRE$  represents a price index for all commercial real estate, and  $Leverage$  is measured only as the alternative credit gap.  $Misalignment$  is measured as the average of various value indicators—

including CRE returns to rent, CRE returns to GNI\*, CRE returns to private consumption, and CRE returns to employment—following Kennedy et al. (2021).

**5. The fit of each model over the sample spanning 2001Q1 through 2021Q4 is assessed based on the probability integral transform (PIT) test.** A probability integral transform evaluates the cumulative density function of a random variable, and if the model is correctly specified, then the PIT should follow an independent and identically distributed (IID) uniform distribution on the unit interval. A test statistic for divergence from the IID hypothesis is given by Kullback and Leibler (1951). For each of the models estimated in this analysis, the hypothesis that the PIT is IID uniformly distributed is not rejected, suggesting that the distance between the estimated model and the unknown true model for each case (growth, RRE, CRE) is not statistically significant.

**6. Following the estimation of the conditional quantiles, a parametric t-skew distribution is fitted for each time period.** The t-distribution is a parsimonious way of summarizing information about the variance, skewness, and kurtosis of the dependent variable in the sample. Multiple projections are made at the 1- and 3-year ahead horizons, where each projection is indexed by the date at which it is made. This means that density projections reflect both current economic conditions and the term structure of growth, RRE prices, and CRE prices.

**7. We also quantify the effects of macroprudential policies by computing a shock to LTV and LTIs.** Estimating the effects of policies is a complicated task and we must consider a few caveats. First, macroprudential policies, credit, and asset prices may all respond to common developments, raising endogeneity concerns. Second, the impact of macroprudential policies from monetary, fiscal, and microprudential policies may be difficult to disentangle and thereby isolate the impact. In our reduced-form setup, we quantify the impact of macroprudential policies by constructing a conditional forecast of the distribution of house prices given a 10 percent shock in the LTV and LTI ratios.