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TECHNICAL NOTE ON MACROPRUDENTIAL POLICY

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TECHNICAL NOTE

MACROPRUDENTIAL POLICY

Prepared By
Monetary and Capital Markets Department

This Technical Note was prepared in the context of an IMF Financial Sector Assessment Program (FSAP) mission held in Reykjavik during March 2023. It was led by Mr. Etienne B. Yehoue. This note contains the technical analysis and detailed information underpinning the FSAP assessment's findings and recommendations. Further information on the FSAP program can be found at http://www.imf.org/external/np/fsap/fssa.aspx.

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Glossary

BIS	Bank for International Settlements
CBI	Central Bank of Iceland
CCoB	Capital Conservation Buffer
CCyB	Countercyclical Capital Buffer
CISS	Composite Indicator of Systemic Risks
CPI	Consumer Price Index
CRE	Residential Real Estate
D-SIB	Domestic Systemically Important Bank
DSTI	Debt Service-to-Income
EBA	European Banking Authority
ECB	European Central Bank
EEA	European Economic Area
EIOPA	European Insurance and Occupation Pension Authority
ESRB	European Systemic Risk Board
EU	European Union
FCI	Financial Cycle Indicator
FSA	Financial Supervision Authority
FSAP	Financial Sector Assessment Program
FSB	Financial Stability Board
FSC	Financial Stability Council
FSN	Financial Stability Committee
FSSA	Financial Sector Stability Assessment
FX	Foreign Exchange
GDP	Gross Domestic Product
GFC	Global Financial Crisis
HP	Hodrick-Prescott filter
IF	Investment Fund
IMF	International Monetary Fund
LCR	Liquidity Coverage Ratio
LGD	Loss Given Default
LTI	Loan-to-Income
LTV	Loan-to-Value
MCM	Monetary and Capital Markets Department, IMF
MMF	Money Market Fund
MoFEA	Ministry of Finance and Economic Affairs
MPC	Monetary Policy Committee
NBFI	Nonbank Financial Institution
NBMF	Nordic Baltic Macroprudential Forum
NFC	Nonfinancial Corporation
NPL	Nonperforming Loan

NSFR	Net Stable Funding Ratio
O-SII	Other Systemically Important Institutions
PF	Pension Fund
RMSE	Root Mean Square Error
RRE	Residential Real Estate
RWA	Risk-Weighted Asset
SME	Small and Medium Enterprises
SRB	Systemic Risk Buffer
TN	Technical Note
UK	United Kingdom

EXECUTIVE SUMMARY[1]

Macroprudential policy in Iceland recently has centered on the property market, given the importance of this market for households' balance sheets, banks' loan portfolios, and the potential systemic risks. The authorities have proactively used property-related macroprudential tools to safeguard the stability of the financial system and to ensure financial prudence among borrowers. The Central Bank of Iceland (CBI) is the authority, with the macroprudential policy mandate**.**

The CBI has a strong institutional framework for macroprudential policy, assuring the willingness to act. The framework contains a clear mandate and well-defined objectives and has been revised in recent years, after the merger of the CBI and the Financial Supervisory Authority (FSA), to prioritize the central bank's supervision and financial stability objectives. The macroprudential mandate is assigned to the dedicated committee within the CBI, the Financial Stability Committee (FSN). The CBI uses a range of communication tools that help establish its accountability. Its Financial Stability Department has the essential role in macroprudential policymaking of providing supporting analyses.

The macroprudential framework also promotes the ability to act promptly. As the financial supervisor, the CBI has control over prudential tools; it may exercise its power as necessary to ensure financial stability. The central bank oversees all financial institutions in Iceland and has the mandate to promote financial stability, which forms the basis of its macroprudential policy framework. It has hard powers under various legislations to apply its policy-specific tools for macroprudential purposes. The FSN may issue, amend, or revoke certain policy instruments, such as the countercyclical capital buffer (CCyB), systemic risk buffer (SRB), capital surcharges for systemically important institutions, loan-to-value (LTV) cap, net open foreign exchange positions, loans in foreign currencies, limits on debt service-to-income (DSTI), and on loan-to-income (LTI) ratios.

The institutional arrangements encourage effective cooperation and coordination with other institutions. The Financial Stability Council (FSC) is a formal cooperation forum of public authorities for financial stability. Coordination at the domestic level is facilitated by the concentration of responsibilities in the CBI. Internationally, the CBI has cooperation arrangements with Nordic-Baltic countries and has reciprocity arrangements with countries in the European Economic Area (EEA) to ensure the effective implementation of macroprudential policies, especially for CCyB measures.

CBI surveillance and systemic risk assessment rely on comprehensive quantitative information and constructive dialogue with the industry as well as on various models and stress tests. The identification of systemic vulnerabilities is based on the analysis of a variety of indicators across sectors in addition to discussion with the industry and dialogue in international fora. The CBI also uses various models and performs stress tests of banks integrating top-down and bottom-up approaches for both microprudential and macroprudential surveillance. In addition, the central bank

[1] This Technical Note has been prepared by Knarik Ayvazyan as part of the 2023 FSAP for Iceland. The author would like to thank the Icelandic authorities for their excellent engagement and open dialogue.

conducts top-down solvency stress tests for the household sector based on granular mortgage debt information.

The strong analytical capacity for systemic risk monitoring can be further enhanced by filling data gaps and enriching models. The process for monitoring systemic risks is structured around the biannual production of the *Financial Stability Report,* facilitating an exchange of views at multiple stages of the development cycle. The systemic risk monitoring framework is generally good; however, it can be further enhanced by (1) more actively covering nonbanks (pension funds, insurers, and asset management companies); (2) developing truly macroprudential stress tests that take into account feedback loops between the financial system and the real economy and allow for looking at the impact of macroprudential instruments; (3) more deeply understanding the transmission of shocks between financial balance sheets; (4) developing a heatmap as a risk monitoring tool; (5) strengthening the assessment of interactions between banks and nonbanks; and (6) enhancing the analysis of tail risks, spillovers, systemic risks, and calibration of macroprudential tools. Data quality and availability are generally good, and further progress was recently made in expanding the data coverage of a credit registry. Nonetheless, there are important remaining data gaps, regarding the commercial real estate (CRE) sector, micro households and nonfinancial corporates' (NFC) balance sheet data, intra-NFC lending, and climate risks that should be addressed.

At the same time, although the speed of taking on new cyclical risks in banks' and nonbanks' balance sheets is slowing, the total amount of cyclical risks accumulated remains high in the financial sector. Key financial vulnerabilities include household leverage amid high real estate valuations following a long period of loose financial conditions. There are also signs of increased risk-taking in some sectors, most notably commercial real estate, which is among the most leveraged corporate sectors. Finally, pension funds play a vital role in the domestic financial system and can generate significant contagion effects across a financial system that is highly interconnected by common exposures and instruments such as deposits, loans, and debt securities.

While recent measures go in the right direction, the authorities should stand ready to take further actions if vulnerabilities persist. Icelandic authorities have tightened broad-based capital (CCyB) and borrower-based measures (limits on DSTI and LTV) mainly to address vulnerabilities stemming from households' indebtedness and CRE risks. However, pockets of vulnerabilities remain, and authorities should consider further actions if vulnerabilities persist. These include (1) carefully monitoring developments in the real estate market and taking further policy actions if needed; (2) introducing temporary risk-weight floors or adding temporary risk weight add-ons on CRE exposures; (3) considering to introduce borrower-based measures for CRE firms if the combinations of existing and sectorial capital measures prove insufficient to contain CRE risks; and (4) paying close attention to developments in the nonbank financial sector and developing a policy framework to address potential systemic risks that might arise from these developments.

Table 1. Iceland: Key Recommendations on Macroprudential Policy		
Recommendations	**Responsible Authority**	**Timeframe[1]**
Institutional Arrangements		
Further enhance transparency and accountability by developing a heatmap and regularly publishing reports on risk analysis.	CBI	I
Systemic Risk Monitoring		
The CBI should significantly advance its analysis of the households and corporate sectors' vulnerabilities by collecting microdata on household and NFC balance sheets and income.	CBI	I
Close remaining data gaps, including the CRE sector, intra-NFC lending, and climate risks.	CBI	ST
Enhance systemic risk monitoring by strengthening the analysis of tail risks, spillovers, and systemic risks and deepen understanding of interconnections between the bank and nonbank sectors.	CBI	ST
Strengthen the calibration of macroprudential tools by using granular data and analytical tools.	CBI	ST
Develop macroprudential stress tests that take feedback loops between the financial system and the real economy more fully into account while incorporating contagion effects across financial institutions.	CBI	MT
Develop capacity for financial stability stress tests of NBFIs, including from a systemic perspective.	CBI	ST
Continue to carefully monitor developments in the real estate market and stand ready to take further policy actions if systemic risks persist.	CBI	I
Continue monitoring CRE vulnerabilities and take actions (higher CRE risk weights, sectoral systemic risk buffer) if risks intensify.	CBI	I
Toolkit		
Consider options to broaden the bank, nonbank, and borrower-based macroprudential toolkit aimed at mitigating CRE market vulnerabilities as needed.	CBI, MoFEA	I
Pays close attention to developments in the nonbank financial sector and develops a policy framework to address potential systemic risks that might arise from these developments**.**	CBI	ST

[1] I = Immediate (within one year); ST = Short Term (within 1-2 years); MT =Medium Term (within 3-5 years).

INTRODUCTION

1. Macroprudential policy has recently focused on the property market, reflecting the potential buildup of systemic risks from that sector. The authorities have proactively made use of borrower-based macroprudential tools and the countercyclical capital buffer (CCyB) to encourage financial prudence among borrowers and build resilience in the banking system.

2. The CBI —the authority with the macroprudential mandate—has a strong institutional framework for macroprudential policy. The framework contains a clear mandate and well-defined objectives and has been revised in recent years, after the merger of the CBI and the Financial Supervisory Authority (FSA), to emphasize the CBI's supervision and financial stability objectives. The macroprudential mandate is assigned to the dedicated committee within the CBI, the Financial Stability Committee (FSN), chaired by the Governor and comprising additionally the Deputy Governor for Financial Stability, the Deputy Governor for Monetary Policy, the Deputy Governor for Financial Supervision, three experts in financial market affairs or economics appointed by the Minister; a permanent secretary participates in FSN meetings as a nonvoting member who may address the meeting and present proposals. The Financial Stability Department has the essential role in macroprudential policymaking of providing supporting analyses. The CBI uses a range of communication tools that enhance transparency and help establish accountability.

3. This technical note (TN) reviews the domestic macroprudential policy framework in Iceland and offers recommendations to strengthen it. The assessment is based on the IMF "Staff Guidance Note on Macroprudential Policy" (IMF 2014a); its supplement, "Detailed Guidance on Instruments" (IMF 2014b); and other IMF policy papers. Specifically, this note:

- Reviews Iceland's institutional framework for macroprudential policy and assesses its adequacy given country-specific circumstances.
- Evaluates the framework for systemic risk monitoring, including the use of data.
- Outlines the main macroprudential risks and assesses the adequacy of the macroprudential toolkit and makes policy recommendations.

4. This note is structured as follows: Section II examines current institutional arrangements and provides recommendations. Section III evaluates the systemic risk monitoring capacity and provides options to enhance it. Section IV assesses different types of systemic risks, discusses the availability of macroprudential instruments, and proposes a set of recommendations. Some of these recommendations are restated in the Financial System Stability Assessment (FSSA).

INSTITUTIONAL FRAMEWORK

5. A strong institutional arrangement for macroprudential policymaking is essential for the effective functioning of macroprudential policy. This note assesses the domestic institutional arrangements based on three aspects: (1) the *willingness to act*, which ensures sufficient timely actions by dedicated institutions through a clear mandate and an accountability framework, including communication tools; (2) the *ability to act*, which ensures obtaining necessary information, activating regulatory constraints, and changing regulatory perimeters when necessary; and (3) *effective cooperation* in risk assessments and mitigation across domestic and international agencies. 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).

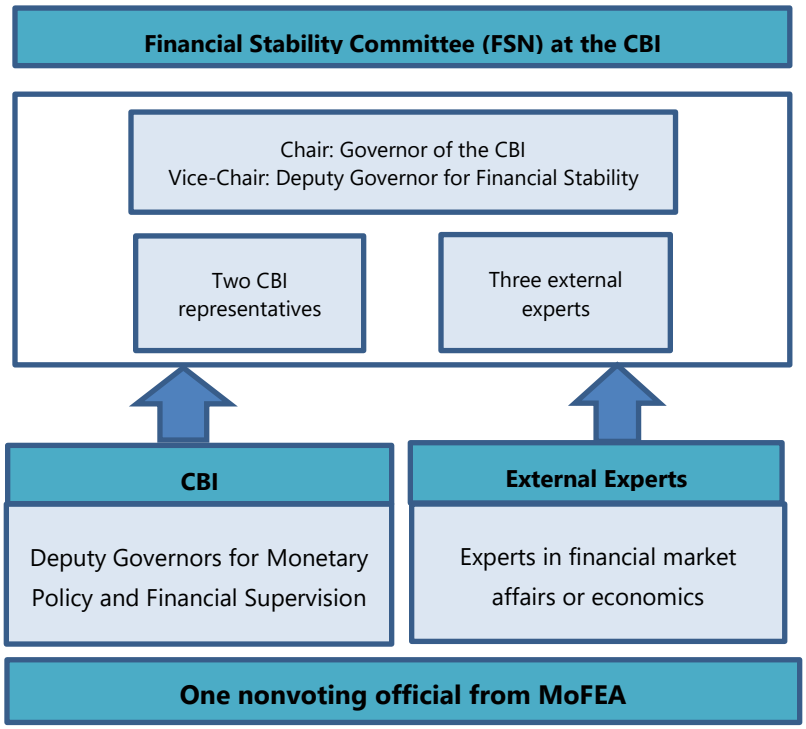
A. Willingness to Act

6. The CBI has a clear financial stability mandate. Under Chapter 1, Article 2, of the Central Bank Act No.92/2019[2], the CBI has, in addition to its price stability mandate, the objectives to (1) ensure the stability of the financial system; (2) promote sound and safe financial activities; (3) sustain the safe and effective operation of domestic and cross-border payment intermediations; (4) maintain international reserves; and (5) supervise the financial system, to ensure that its activities comply with the law and with governmental directives and that they reflect sound and appropriate business practices. As of January 1, 2020, the CBI is responsible for the tasks entrusted by law and governmental directives to the Financial Supervisory Authority.

7. The macroprudential mandate is assigned to the CBI's Financial Stability Committee[3]. The FSN was established within the CBI in 2020 with the merger of the CBI and the FSA, chaired by the Governor and comprising additionally the Deputy Governor for Financial Stability, the Deputy Governor for Monetary Policy, the Deputy Governor for Financial Supervision, and three experts in financial market affairs or economics appointed by the Minister; the permanent secretary of the Ministry of Finance and Economic Affairs, or his representative, participates in FSN meetings as a nonvoting member who may address the meeting and present proposals. (Figure 1). The FSN's principal tasks are to (1) assess the current situation of and outlook for the financial system, systemic risk, and financial stability; (2) discuss and define actions deemed necessary at any given time to strengthen and preserve the financial system's stability, involving governmental authorities when warranted; (3) approve governmental directives and make decisions entrusted to the committee by law; and (4) decide which supervised entities, infrastructure, and markets are systemically important and whose activities could affect financial stability.

[2] Central Bank Act 92 2019 (cb.is), Article 2.
[3] Central Bank Act 92 2019 (cb.is), Article 12.

Figure 1. Iceland: Macroprudential Decision Making



Source: CBI.

8. The FSN operates as a collegial body. Decisions are made by the committee according to a majority vote, and the Governor of the CBI, who chairs the FSN meetings, has the casting vote. Meetings have a quorum if five of its seven members are in attendance. All committee members have an equal opportunity to share their views on the work program and agenda. Within this collegial framework[4], the Financial Stability Department regularly monitors systemic vulnerabilities and prepares analysis and preliminary recommendations for the FSN meetings.

9. Decision making on macroprudential tools under the CBI's power is the responsibility of the FSN. The CBI has a formal mandate for macroprudential policy in Iceland, and the central bank's FSN is responsible for decision making about the use of specific macroprudential instruments[5]. However, according to Article 117(b), Paragraph 3, of Act No. 161/2002, FSN approval is not required in relation to CBI's rules on liquidity coverage ratio (LCR) or net stable funding ratio (NSFR) requirements. Further, according to Article 4 of Act No. 70/2021, committee approval is not

[4] The Financial Stability Committee's Rules of Procedure are available at https://www.cb.is/library/Skraarsafn---EN/Financial_Stability/FSC/Rules_of_Procedure_FSN_Apr2022.pdf.

[5] Central_Bank_Act_92_2019 (cb.is), Article 12.

required for the CBI to maintain a special reserve requirement on capital inflows. The FSN has decision making power over all other macroprudential measures, including capital buffers, net open foreign exchange positions, loans in foreign currencies, imposing caps on loan-to-value (LTV) and debt service-to-income (DSTI) ratios, and so on.

10. The CBI uses various communication tools to establish its commitment and public accountability, helping it meet its objectives. CBI communication tools include (1) the semiannual publication of the *Financial Stability Report,* which presents an overview of financial system developments, potential risks, and vulnerabilities as well as the financial system's resilience to these; (2) press releases on macroprudential policy measures and a press conference at which the CBI Governor and Deputy Governor for Financial Stability present an overview of global and domestic economic and financial system developments, and the rationale for adopting these measures; and (3) the publication of the *Economic Indicator Report,* a quarterly summary of economic developments and an update on the financial system. In addition, the CBI publishes working papers on financial stability issues throughout the year, and communicates to the public through newspaper interviews and articles. Such tools can help the public establish whether the authority is taking appropriate actions to achieve its objectives.

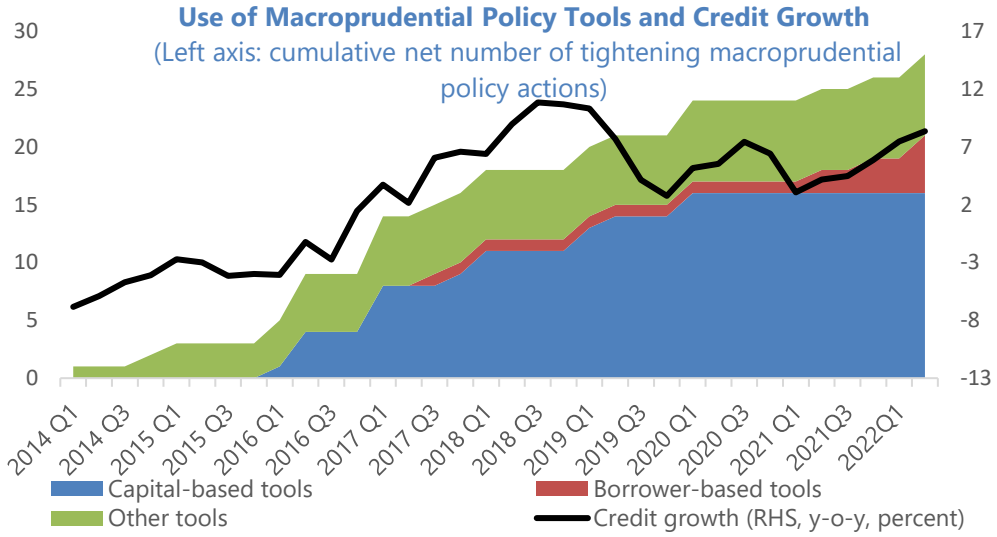
11. The willingness to act is supported by a dedicated Financial Stability Department and the effective cooperation of other CBI departments. CBI's Financial Stability Department, comprising around 26 staff, supports the FSN with assessments of systemic risks and vulnerabilities in the financial system and analyses of macroprudential policy and financial stability issues. The roles of the CBI's General Secretariat and the Economics and Monetary Policy and the Microprudential Supervision departments are also important. Specifically, the General Secretariat (35 staff) plans FSN meetings, prepares statements, and takes minutes. The Economics and Monetary Policy Department (22 staff) develops and uses the central bank's macroeconomic models and incorporates financial variables into those models to analyze the effects of financial variables on the real economy and define specific paths for the economic variables in the annual stress test scenarios. And the Microprudential Supervision Department (35 staff) provides valuable insights into the domestic systematically important banks' (D-SIBs) balance sheets, for example, credit risk, nonperforming loan (NPL) development, and loan growth.

B. Ability to Act

12. The institutional arrangements provide adequate powers to ensure CBI's ability to act. With the merger of the CBI and the FSA, the central bank oversees all financial institutions in Iceland and has the mandate to promote financial stability, which forms the basis of its macroprudential policy framework. As the financial supervisor, the CBI has control over prudential tools, and it may exercise this control as necessary to pursue financial stability. The CBI has hard powers under various legislations (for example, the Financial Undertaking Act, Consumer Loan Act, Foreign Exchange Act) to apply its specific policy tools for macroprudential purposes. Several macroprudential policy tools are currently being used to address imbalances in the housing market and overall systemic risk accumulation in Iceland (Figure 2, Table 2).

Figure 2. Iceland: Macroprudential Policy Actions Since 2014

The Icelandic authorities have taken considerable policy action since the GFC to enhance the resilience of the financial system and reign in financial imbalances, in particular relying on broad-based capital tools…



Sources: IMF Macroprudential Policy Survey, IMF staff calculations.

13. The CBI has adequate information-collection powers. The data-collection arrangements for macroprudential purposes are enshrined in various articles of national law. However, the CBI has limited access to tax reports from individuals. The CBI shares required information with the FSN without any formal arrangement. For proper systemic risk analysis and macroprudential policies, data gaps exist in commercial real estate, nonbank financial institutions (NBFIs) (especially investment funds), intra-NFC lending, microdata on household and NFC balance sheets and income, and the transition and the physical impact of climate risks on banks. Closing data gaps is one of the intermediate objectives in the Icelandic macroprudential policy strategy. When required data are inadequate for macroprudential policy purposes, the CBI often collects additional data through the topical bank, household, and NFC surveys.

C. Effective Coordination and Cooperation

14. The Central Bank of Iceland's broad mandate and its integrated model of financial supervision across different sectors have clear strengths in fostering coordination within the CBI. Several high-level CBI committees provide checks within the institution as well as formalized structures to coordinate macroprudential and microprudential policies, including the FSN, the Monetary Policy Committee (MPC)[6], and the Financial Supervision Committee[7]. Coordination of monetary and macroprudential policies takes place through both the FSN and the MPC. The

[6] The MPC advises on decisions of the CBI's monetary policy instruments, including interest rate paths, transactions with credit institutions other than loans of last resort, reserve requirement rates, securities, and foreign exchange market transactions aimed at achieving price stability.

[7] The Financial Supervision Committee sets the financial supervisory policy of the CBI. The policy covers the activities entrusted to the FSA by law and articulates the central bank's focus, approach, and methodology in its financial supervisory activities.

Governor of the CBI as well as the Deputy Governors for Financial Stability and Monetary Policy are all members of both the FSN and MPC. Further, all policy decisions of the FSN are presented to and discussed by the MPC and vice versa. Finally, analysis by the Financial Stability Department and Monetary Policy Department that underpins policy decisions is often shared and discussed within and between departments. Policy coordination in crisis times is further facilitated insofar as the management of financial crises may require policy action—including monetary easing and emergency liquidity assistance by the central bank—far beyond the relaxation of macroprudential tools.

15. The Financial Stability Council (FSC) is a formal cooperation forum of public authorities for financial stability.[8] The council is a venue for consultation, exchange of information, and policymaking to strengthen and preserve financial stability in the public interest, limit the buildup of systemic risk, and coordinate the preparedness of public authorities for financial crises. When financial stability is threatened, or there is a risk of events that may cause significant contagion effects to the financial market, FSC plays a coordinating role regarding government intervention. The principal tasks of the FSC include (1) formulating official policy on financial stability; (2) monitoring economic imbalances, financial system risks, undesirable incentives, and other conditions that are likely to jeopardize financial stability; and (3) assessing the effectiveness of macroprudential policy tools. The FSC mainly relies on the CBI's proposals or analysis when processing its projects. The council members are the Governor of the CBI and the Minister of Finance and Economic Affairs (MoFEA), who is also the chair. They meet at least three times a year, and more as needed.

16. The CBI has cooperation arrangements and is in regular dialogue with multilateral institutions. At the European level, within the European Systemic Risk Board (ESRB), the CBI actively participates 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 CBI is an active observer at the European Banking Authority (EBA), European Securities and Market Authority (ESMA) and European Insurance and Occupation Pension Authority (EIOPA) regarding macroprudential issues. The CBI also participates in the Nordic-Baltic Macroprudential Forum (NBMF). The forum comprises several smaller working groups that share information and expertise on macroprudential instruments and analyze systemic risks. The NBMF workstreams produce biannual reports that cover risk assessment and macroprudential tools activated by member states.

[8] The Act of the Financial Stability Council (only available in icelandic): https://www.althingi.is/lagas/nuna/2014066.html

Table 2. Iceland: Macroprudential Measures in Use		
Measures	**Current Calibration**	**Last Change**
Broad-Based Tools		
Countercyclical capital buffer (CCyB)	Iceland has implemented, since March 1, 2016, a CCyB framework consistent with the Basel Committee on Banking Supervision (BCBS) framework. The increasing rate takes place no later than 12 months following the rules and a decrease immediately. As communicated in March 2023 and effective March 2024, the CCyB rate increased to 2.5 percent.	March 2023
Capital conservation buffer (CCoB)	In line with the requirements and phase-in arrangements set out under the Basel III framework, Iceland has implemented the requirement for a capital conservation buffer (CCoB) for credit institutions, since July 2, 2015. Since January 3, 2017, credit institutions need to meet a CCoB of 2.5 percent.	January 2017
Limit on leverage ratio	As of September 13, 2016, the leverage ratio may not be lower than 3 percent for credit institutions, credit undertakings, and other undertakings.	September 2016
Systemic risk buffer (SRB)	The SRB was introduced by changes to the Act on Financial Undertakings No. 161/2002, July 2, 2015, which incorporates capital buffers, as provided for in Council Directive 2013/36/EU (CRD IV), into Icelandic law. As of April 1, 2016, the SRB is 3 percent for systemically important deposit-taking institutions, while non systemically important deposit-taking institutions were granted a longer grandfathering period and were as of January 1, 2020, required to maintain a 3 percent SRB.	May 2018
Capital surcharges for other systemically important institutions (O-SIIs)	The buffer became effective on April 1, 2016, by a decision of the FSA, following a recommendation from the Financial Stability Council on January 22, 2016. As announced on March 1, 2016, and effective April 1, 2016, the O-SII buffer rate was set at 2 percent for the three largest commercial banks: Arion banki, Íslandsbanki, and Landsbankinn.	April 2016
Liquidity Tools Applied to the Banking Sector		
Liquidity coverage ratio (LCR)	The minimum LCR for credit undertakings and consolidated credit undertakings is 1.0. The minimum LCR in Icelandic krónur for credit and consolidated credit undertakings is 0.5. And the minimum LCR in euros for credit institutions whose euro-denominated liabilities equal 10 percent or more of their total liabilities is 0.8. The LCR framework was implemented in Iceland on December 1, 2013, but new rules took effect on March 31, 2017, and then again on January 1, 2019, which better aligns the framework with the EU regulatory framework. National options have been applied by including requirements on foreign currency liquidity and Icelandic krónur. As announced on December 7, 2022, and effective January 1, 2023, new LCR rules were issued, amending national options in foreign currency, but the LCR requirement in all currencies combined remains the same.	December 2022
Net stable funding ratio (NSFR)	The minimum NSFR for credit undertakings and consolidated credit undertakings is 1.0. The NSFR is based on the standards developed by the BCBS, issued in 2014, and their incorporation into European law via Regulation (EU) No. 2019/876 of the European Parliament and of the Council (CRR II). The CRR II was implemented via amendments to the Regulation on Prudential Requirements for Credit Institutions, No. 233/2017.	June 2021
Household Sector Tools		
Cap on loan-to-value (LTV) ratio	The cap on LTV was introduced on July 24, 2017. The maximum LTV ratio was 85 percent of a property's market price. However, first-time home buyers (FTBs) might be granted loans of up to 90 percent of the market price. As announced and effective July 24, 2017, the FSA issued rules limiting the LTV ratio of new residential mortgages in accordance with Article 25(1) of Act No. 118/2016 on Consumer Mortgages. The measure covers all institutions extending mortgage loans to consumers, including banks, the Housing Financing Fund, pension funds, and registered creditors. As announced and effective June 30, 2021, the maximum LTV ratio is 80 percent of a property market price. However, FTBs may be granted loans of up to 90 percent of the market price. See Rules No. 778/2021. As announced and effective June 15, 2022, the maximum LTV ratio is 80 percent of a property market price. However, FTBs may be granted loans of up to 85 percent of the market price.	June 2022

Table 2. Iceland: Macroprudential Measures in Use (Concluded)		
Cap on debt service-to-income ratio (DSTI)	As announced and effective December 1, 2021, the maximum DSTI ratio is 35 percent of the borrower's monthly disposable income. However, for FTBs, the maximum is 40 percent. A 5 percent general exemption (speed limit) applies per quarter. When calculating debt service, the maximum maturity is set at 40 years for nonindexed mortgages and 25 years for indexed mortgages. Also, a minimum interest rate of 5.5 percent and 3 percent should be used when calculating debt service for nonindexed and indexed mortgages, respectively.	June 2022
Exposure limit	As of December 31, 2016, the limit on the size of exposure to a single borrower is 25 percent of capital. Limitations on the size of single exposures have been implemented for many years.	December 2016
Corporate Sector Tools		
Exposure limit	As of December 31, 2016, the limit on the size of exposure to a single borrower is 25 percent of capital. Limitations on the size of single exposures have been implemented for many years	December 2016
Limits on Foreign Exchange Positions		
Net foreign exchange positions	The foreign exchange balance of systemically important supervised entities must be within the following limits at all times: (1) an open position in individual foreign currencies may be neither positive nor negative by more than the equivalent of 10 percent of a systemically important supervised entity's own funds; and (2) the total foreign exchange balance may be neither positive nor negative by more than the equivalent of 10 percent of a systemically important supervised entity's own funds—but may never exceed 25 b.kr. The foreign exchange balance of a credit undertaking that is not a systemically important supervised entity must be within the following limits at all times: (1) an open position in individual foreign currencies may be neither positive nor negative by more than the equivalent of 15 percent of the credit undertaking's own funds; cf. (2) the total foreign exchange balance may be neither positive nor negative by more than the equivalent of 15 percent of a credit undertaking's own funds—but may never exceed 25 b.kr.	August 2018
Foreign exchange swaps or derivative positions	Effective June 30, 2021, the CBI introduced limits on the derivative positions of Icelandic banks, involving contracts specifying the Icelandic króna against a foreign currency. The limits are twofold: (1) commercial banks' forward foreign currency position vis-à-vis each individual counterparty (long or short) may not exceed 10 percent of their capital base; and (2) commercial banks' gross forward foreign currency position may not exceed 50 percent of their capital base. The calculation of the forward foreign currency position vis-à-vis each individual counterparty is detailed in Article 3 of Rules No. 765/2021; in short, it is the total net sum of (1) all forward contracts, futures, and swaps; (2) total net delta value of currency options; and (3) the market value of other derivative contracts. The forward foreign currency position vis-à-vis each individual counterparty is strictly based on contracts specifying the Icelandic króna against a foreign currency. In this context, the gross forward foreign currency position is then defined as the total sum of the absolute values of all of the bank's forward foreign currency positions vis-à-vis each counterparty.	June 2021

D. Recommendations

17. To further transparency and accountability, the CBI should periodically publish an analysis of systemic risks. For instance, the CBI should regularly publish the heatmap and a note evaluating systemic risks, including policy recommendations that could help address any emerging risk identified by the analysis and a summary of the thematic studies undertaken by the staff members of the CBI.

SYSTEMIC RISK MONITORING

A. Assessment

18. Comprehensive monitoring of systemic vulnerabilities in the financial sector is crucial in translating risk assessment into policy actions. The effectiveness of the macroprudential policy framework depends to a large extent on how the process of monitoring and assessment of systemic risk, as well as the calibration of macroprudential policy tools, are operationalized in practice. This section assesses the existing framework of systemic risk monitoring by examining (1) the use of indicators and different econometric and modeling methods in the risk analysis; (2) the process between the risk analysis and policy decision; and (3) data gaps to be addressed and analytical tools to be enhanced.

19. Macroprudential policy decisions in Iceland are based on several indicators and judgments. A guided discretion approach is used wherein key indicators identify risks to assess when policy action might be needed, but the decision is based on the judgment that considers all relevant information. The FSN reviews a data factsheet of a broad set of macrofinancial indicators and analyzes macroeconomic, credit market, liquidity, solvency, and foreign exchange (FX) risks. Macrofinancial data and indicators complemented by model-based indicators (for example, growth-at-risk indicator, probability of impending financial crisis) and analytical tools[9] (for example, financial cycle indicator, domestic systemic risk indicator, and financial condition index) developed by the CBI.

20. The CBI also uses D-SIBs stress tests for surveillance and risk assessment. The CBI performs stress tests integrating top-down and bottom-up approaches for both microprudential and macroprudential surveillance. For the household sector, CBI uses top-down solvency stress tests and sensitivity analysis based on granular mortgage debt information assessing the debt servicing implications of shocks on the interest rate and income.

21. Data quality is generally good, and the current availability of a comprehensive credit registry database will help fill knowledge gaps. The CBI has broad powers to collect data under various legislation to fulfill its mandates, including with respect to financial stability. The central bank has recently made progress in collecting granular data on households and nonfinancial corporates in the financial system, however, there remains some gaps**.** The credit registry data have detailed information on borrowers' profiles, loan characteristics (including debt servicing), and collaterals by type of exposure, including domestic credit to corporate and mortgage credit to households, which is useful for macroprudential risk analysis for the housing and mortgage market monitoring compliance with LTV and DSTI rules of the CBI. However, complete information (all exposures above 300 million ISK) on exposures to corporates, including, for example, commercial real estate loans,

[9] See CBI's *Financial Stability Report,* available at Financial Stability (cb.is).

only started in September 2022. And granular data and account-level information on new housing loans started in August 2020.

22. Progress has been made in closing some of the existing data gaps, related nonbank financial institutions (NBFI), cross-border capital transfers, and FX transactions. With the merger of the CBI and the FSA, supervisory data with individual exposure-level data on investment funds' (IF) and pension funds' (PF) exposures have become available for the analysis of systemic risk. At the same time, the system of cross-border capital transfers and FX transactions has been revised and improved and should be used again soon.

23. The CBI also relies on survey data[10], constructive dialogue with market participants, and industry specialists. CBI's quarterly bank lending survey is used to evaluate changes in lending conditions and their expectations for the coming six months. The survey builds on the ECB bank lending survey.

B. Recommendations

24. The analytical framework for systemic risk monitoring and stress testing is primarily oriented toward the banking sector. The indicators used for risk identification, as well as overall analytical tools, are largely focused on the banking sector, households, corporates, and housing sectors. There is scope for better incorporating NBFI risk analysis into common risk assessment, particularly given the size of this sector and interconnectedness in the Icelandic financial system. Analytical capability should be deepened to understand (1) the transmission of shocks between financial balance sheets within a group; and (2) extending macro stress testing to NBFIs (specifically pension funds and investment funds), including from a systemic perspective.

25. While the CBI has developed tools for risk identification and assessment of the impact if risks materialize, further efforts are needed to develop macroprudential stress test frameworks. Currently, the impact of adverse scenarios on the D-SIBs is largely studied through microprudential stress tests. The stress testing model captures the first-round effects on the banking system, the spillover to the real economy and the second-round effects are missed. The CBI should devote resources toward developing truly macroprudential stress tests that consider feedback loops between the financial system and the real economy and allow for looking at the impact of macroprudential instruments.

26. Risk assessment capacity of systemic risk and the calibration of macroprudential tools should be strengthened:

- In addition to the GDP-at-risk analysis, consider implementing at-risk analyses for house prices. In addition to applying to GDP growth, the CBI could follow the IMF's example of expanding its

[10] Central Bank lending survey (cb.is).

at-risk analysis framework to, also cover other important aspects such as house prices (April 2019 GFSR, 2022 Germany FSSA).

- Calibration of macroprudential tools, as well as the assessment of their effectiveness, should be supported by data-driven and technical analysis. For example, network methods could be used to identify and determine the buffer size of banks subject to the systemic risk buffer (SRB). In the future, credit registry data could be used to establish a model for the probability of default (PD) based on a number of explanatory variables, including the DSTI level of the borrower and their financial margins.

- As there is no single measure of systemic risk, the CBI has developed alternative indicators of cyclical risk. However, the central bank should continue to monitor, qualify, and improve on such measures in order to mature its macroprudential framework, building on advances in both academic and international policy thinking.

- The CBI could produce heatmaps and a risk dashboard representing a way to group vulnerabilities within a sector into their key components (debt growth, leverage, and liquidity risk) and aggregate different indicators. These monitoring tools and direction changes will further strengthen macrofinancial risk analysis, as well as improve communication and accountability.

27. Continued efforts to address data gaps would help create a more complete picture of risk buildups. First, more granular and timely data on intra-NFC lending are needed to supplement the analysis of trends in nonbank financial intermediation. Data on exposures within the NFC sector, for example, loans extended by companies to other companies in Iceland, are limited. Second, climate data should be collected, and climate risks should be incorporated into general financial stability assessments. Third, micro data on households and NFCs are needed to refine risk analysis. The credit registry does not include loan level data for consumer and other loan exposures. Finally, regular reporting of CRE companies' financial conditions is useful for monitoring and assessing repayment risks to banks. A comprehensive assessment of data gaps should be conducted, and existing data gaps should be swiftly addressed to support a comprehensive assessment of systemic risk.

SYSTEMIC RISKS AND MACROPRUDENTIAL TOOLS

28. This section provides an assessment of systemic vulnerabilities and their mapping into recommendations for macroprudential toolkit in Iceland. Systemic vulnerabilities are assessed based on developments in multiple signaling indicators, as well as on the FSAP's financial sector risk analysis (see the Technical Note on Risk Analysis), and following an approach suggested in the IMF "Staff Guidance Note on Macroprudential Policy" (IMF 2014a) supplement, "Detailed Guidance on Instruments" (IMF 2014b). Based on the assessment of each type of vulnerability, recommendations are provided for Iceland's macroprudential policy.

A. Broad-Based Vulnerabilities: Assessment, Tools, and Recommendations

29. The financial cyclical indicator (FCI) has started to decline from the local peak reached at the end of 2021 (Figure 3) but remains above its historical median level. The dynamic FCI was created to measure the accumulation of risks in the financial sector and to provide an early warning signal of the potential materialization of risks six quarters ahead (Box 1). Based on earlier studies, the FCI includes indicators covering a range of demand and supply factors that characterize the cyclical swings in financial risk perceptions. The recent decrease in the FCI was due mainly to developments in the loans to the household market and a sizeable drop in the correlation between the individual FCI sub-indicators. Net new household loans (particularly mortgage lending) slowed significantly, accompanied by declining year-on-year changes in household debt into gross disposable income. The theoretical FCI value excluding the effect of the correlation increased further and is the highest since 2014. This points to incoming mixed signals regarding the future evolution of cyclical systemic risks as the economy has just passed the peak of the financial cycle.

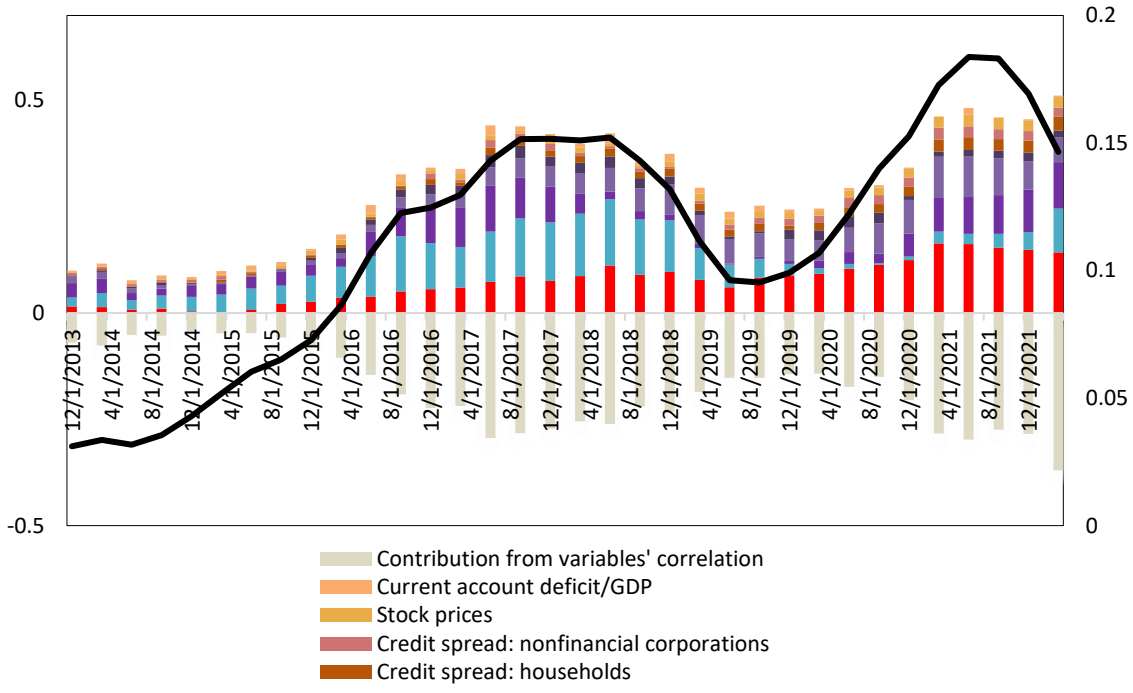
30. The assessment of the FCI thus suggests that the speed of taking on new cyclical risks in bank and nonbank balance sheets is slowing. However, the total amount of cyclical risks accumulated remains high.

Figure 3. Iceland: Financial Cycle Dynamic

The financial cycle in Iceland is declining …

1. Financial Cycle Index and Decomposition by Nine Sub indicators

(Minimum FCI = 0, maximum = 1. Highly negative contributions indicate a generally weak correlation between the variables, whereas near-zero contributions indicate growing interconnectedness in individual areas of financial risk.)

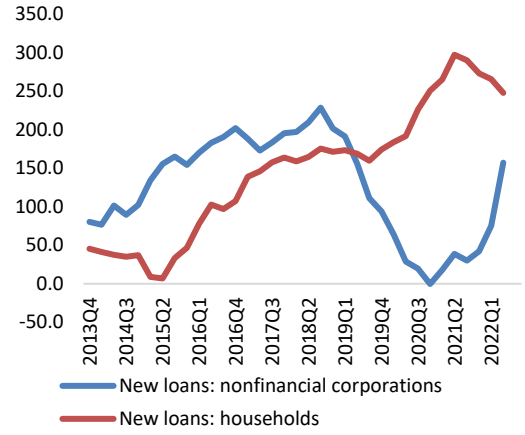


Sources: CBI, IMF staff estimation.

Figure 3. Iceland: Financial Cycle Dynamic (Concluded)

Net new household loans continue to decline…

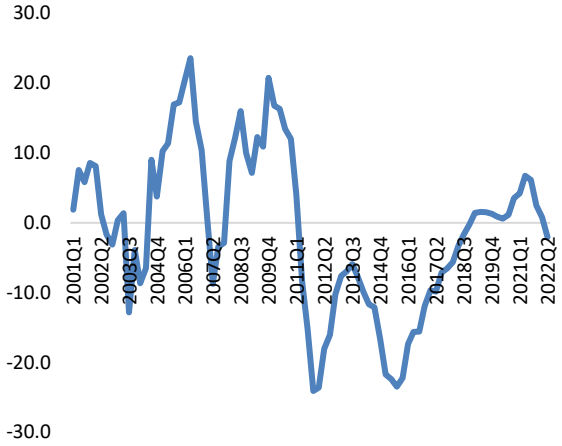
2. Annual Moving Average of New Loans (B.kr.)



Source: CBI.

… and household debt to shrink.

3. Household Debt to Gross Disposable Income (y-o-y change, percentage point)



Source: CBI.

Box 1. Iceland: Estimation of Financial Cycle Indicator

While the global financial crisis (GFC) has highlighted the importance of relations between business and financial fluctuations, finding a policy-relevant indicator for the financial cycle is still a problem in the current policy debate.

Defining excessive credit growth or the credit-to-GDP gap based on the Hodrick-Prescott (HP) filter technique is problematic because of the length of available variables and existing structural brakes (*BIS Quarterly Review,* March 2014), the "starting point problem" (Drehmann and Tsatsaronis 2014), inefficiency in real-time (*BIS Quarterly Review,* March 2014; Edge and Meisenzahl 2011; Orphanides and van Norden 2002), strong dependence on the choice of certain parameters, and the weak link of the statistical filters to economic theory. Moreover, the credit-to-GDP ratio is only a rough measure of leverage in the economy, on the basis of which it is hard to identify turning points between phases of the financial cycle in a timely manner (Frait and Komárková 2012).

We have developed a financial cycle indicator (FCI), which is able to (1) solve the main practical and conceptual criticisms of the credit-to-GDP gap as a guide to setting CCyBs under Basel III; (2) capture time and the cross-sectional dimension of risks; (3) determine the position of the economy in the financial cycle, which will increase the effectiveness of macroprudential policy analysis and implementation; and (4) guide decision making concerning CCyB changes.

The FCI was constructed based on a set of variables (sub-indicators) measuring swings in risk, and aggregated them into a single indicator using standard portfolio theory. Holló et al. (2012) first proposed this methodology in the macroprudential context and used it to construct a composite indicator of systemic stress (CISS).

Box 1. Iceland: Estimation of Financial Cycle Indicator (Continued)

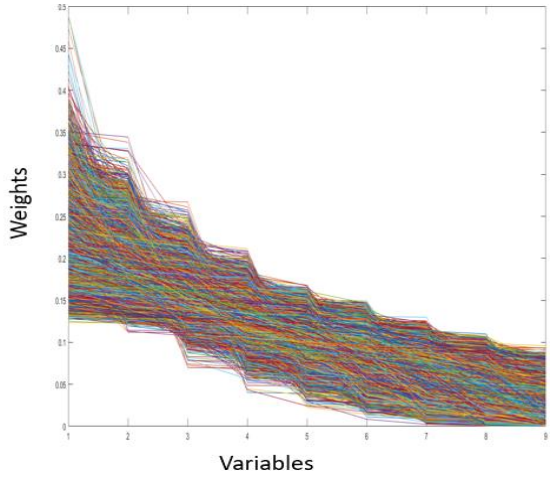
Constructing the FCI included the following steps: (1) choose variables that capture the buildup rather than the materialization of risks (Table 1, Box 1); (2) normalize variables to the range (0,1) by using a Gaussian kernel estimate of the cumulative distribution function; (3) estimate a time-varying variance-covariance matrix based on the exponentially weighted moving average method (EWMA); (4) choose the set of weights through a Monte Carlo 30000 simulation analysis, which produces a FCI that best describes the macrofinancial developments. These weights were estimated to provide optimal predictive performance for loan loss impairment six quarters ahead (Figure 1, Box 1). Timely identification of risk materialization is necessary for making timely decisions about the CCyB setting. The final vector of weights is chosen considering predicting the power of the FCI while forecasting the changes in NPLs (root mean square error (RMSE)); and (5) aggregate them into a single indicator using standard portfolio theory as described in equation (1).

$$FCI_t = (w^o s_t)' C_t (w^o s_t) \qquad (1)$$

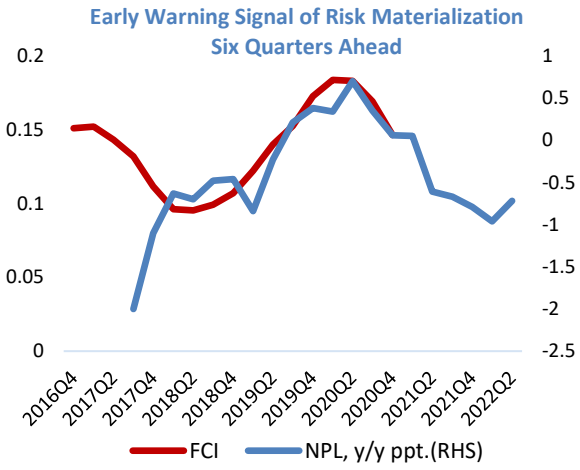
Where FCI_t is a financial cycle indicator, w^o is a vector of weight, s_t is a matrix of variables, and C_t is a time-varying variance-covariance matrix.

Iceland: Financial Cycle Indicator

Finding the best weights from the randomly generated weights.



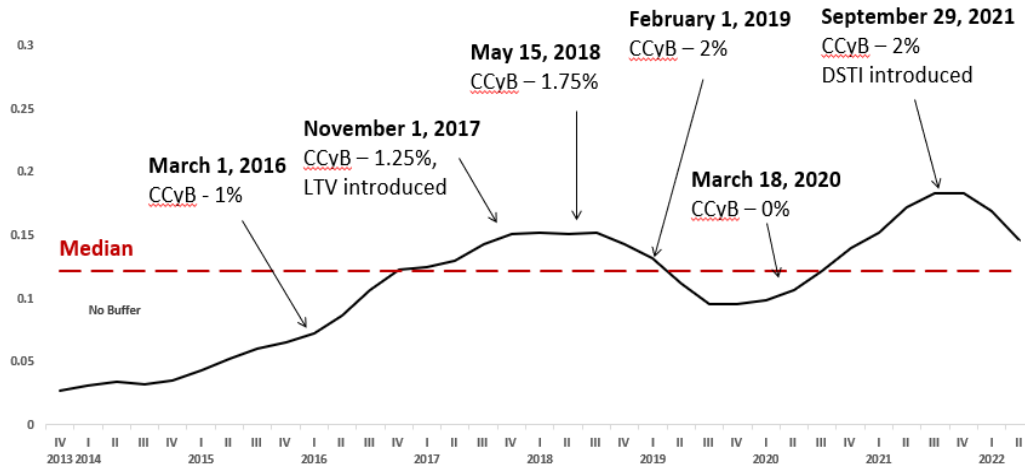
FCI provides promising results.



Box 1. Iceland: Estimation of Financial Cycle Indicator (Concluded)

The macroprudential policy is assessed as being appropriate and sufficient to increase resilience and reign in financial imbalances in Iceland.

Financial Cycle and CCyB Calibrated Rates



Sources: CBI, IMF staff estimates.

The FCI generally takes higher values when variables are rising across all monitored segments. The stronger the correlations between all the transformed variables, the stronger the signal sent out by the FCI about overall changes in sentiment over the cycle. The negative contribution of the cross-correlation structure to the FCI (the loss due to imperfect correlation of the variables) is due to the difference between the current FCI value and the potential upper bound. Highly negative contributions indicate a generally weak correlation between the variables, whereas near-zero contributions indicate growing interconnectedness in individual areas of financial risk.

Table 1. Used Variables and the Best Weights from the Randomly Generated Weights

Variables	Generated best weights
1. New bank loans to households - an annual moving sum of new loans	0.241
2. New bank loans to nonfinancial corporations - an annual moving sum of new loans	0.239
3. Property prices y-o-y change in the price index	0.162
4. Household debt/gross disposable income (moving annual total)- y-o-y change, %	0.143
5. Nonfinancial corporations' debt/gross operating surplus (moving annual total) - y-o-y change, %	0.05
6. Spread between the rate on new loans to households and 3M interbank rates	0.045
7. Spread between the rate on new loans to NFCs and 3M interbank rates	0.041
8. Stock prices y-o-y change in the price index	0.04
9. Current account deficit/GDP % p.a.	0.038

Unlike the credit-to-GDP gap, the FCI relatively well-explained developments closely correspond to economic intuition and are in line with current expert judgments. In this light, the measures may better serve macroprudential purposes than the traditionally used credit-to-GDP gap and provide policymakers with a useful framework for assessing the financial cycle (Box Figure).

31. Broad-based capital tools have been actively used to increase resilience and reign in financial imbalances. The authorities have been at the forefront of introducing Basel III and its European counterpart into law, as well as actively applying capital buffers in those regulations. Prudential regulations on capital are aligned with EU rules and EBA guidelines, including capital buffers applicable to banks. Pillar 2 capital requirements are substantial, based on in-house benchmark models that CBI has developed and disclosed to the banking industry to capture risk exposures that are not covered in Pillar 1, including concentration risk and interest rate risk in the banking book (IRRBB). The CCyB, CCoB, and SRB provide valuable resilience against shocks, given the observed imbalances in the financial system.

32. Accordingly, the CCyB has been activated, and Financial Sector Assessment Program (FSAP) stress tests suggest capital buffers are enough to absorb adverse macrofinancial shocks. The CBI uses a range of indicators (other than the Basel credit-to-GDP gap) capturing credit, household, corporate, banking sector, and market risks in assessing the buildup of systemic risk to decide on the activation of the CCyB[11]. However, the CCyB guiding approach is a learning-by-doing approach where other countries' (mainly Nordic countries) implementation is taken into consideration. Overall, the Icelandic approach to calibrating the CCyB can be characterized as "early activation and buildup," with an eye to reaching 2.5 percent of risk-weighted assets (RWA) in a timely manner without necessarily having observed obvious signs of financial excess and cyclical systemic risk buildup. On March 1, 2016, the CBI announced a rise in the CCyB[12] to 1 percent, in line with the preventive nature of the macroprudential policy. The buffer rate was further increased to 1.25 percent on November 1, 2017, to 1.75 percent on May 15, 2018, and to 2 percent on February 1, 2019. The CCyB was decreased to 0 percent on March 18, 2020, and was again increased to 2 percent on September 29, 2021, and to 2.5 percent on March 15, 2023. FSAP analysis suggests that although the financial cycle has started to decline, it is still advanced, and systemic risk accumulation remains high. In addition, FSAP bank solvency stress tests[13], which simulate a credit shock to households and corporates mainly via a drop in output and increase in interest expense and unemployment rates, confirm banks' overall resilience to severe and plausible macroeconomic shocks. The exercise found meaningful credit losses for households, which, however, remain less than for corporates.

B. Vulnerabilities from the Housing and Household Sectors: Assessment, Tools, and Recommendations

33. Household vulnerabilities have remained a key concern. Despite strong decelerations in recent years, households' debt stood at 148 percent of disposable income at the end of 2022, which

[11] See Background_to_the_decision_on_the_countercyclical_capital_buffer.pdf (cb.is).

[12] The loosening decision of CCyB is effective immediately, but in the case of tightening of CCyB, there is one year lag between the announcement and effective dates.

[13] See the Technical Note on Stress Testing and Systemic Risk Analysis for more details.

is almost two percentage points higher than the historical average. Further, around 81 percent of household debt is made up of mortgages, making homeowners sensitive to house price changes (Figure 5), accompanied by the continued global tightening of financial conditions. According to the IMF's Scorecard estimates, Iceland's household vulnerability scored 4 out of a maximum of 6 in the second quarter of 2022. The overall score summarizes the three indicators (house price misalignment, mortgage market risk, and household indebtedness)[14].

34. The share of CPI (consumer price index)-indexed and variable loans has continued to decline (Figure 5). For the first time, nonindexed mortgages accounted for more than half of the mortgage stock in June 2021. Owing to these dynamics, the share of CPI-indexed loans in the stock of existing household debt decreased from 69 percent at the beginning of the COVID-19 pandemic to 43 percent in the third quarter of 2022. It subsequently started to grow, given the significant increase in the share of new mortgage loans, which are CPI-indexed, reaching 50 percent of total new loans by January 2023. In addition, the share of variable interest rates came down significantly since the third quarter of 2021, reaching 44 percent in the third quarter of 2022, probably as a consequence of the monetary policy rate hikes by the CBI.

35. Households have the flexibility to switch between indexed and non-indexed mortgages by refinancing throughout the loan term. Beyond the newly issued indexed loans, the recent trend also suggests that borrowers are taking advantage from this possibility by increasingly seeking shelter from the rising interest payment burdens of non-indexed loans resulting from higher nominal interest rates by switching to indexed loans. Indexed mortgages utilize real interest rates, which are lower than nominal interest rates in periods of high inflation, but add inflationary effect onto the principal of the loans keeping the debt servicing burden predictable. While borrowers can benefit from a lower interest payment over the short term, adding price level adjustments to the outstanding loan amount could erode the households' home equity and lead to negative amortization during times of high inflation.

36. House prices have become overvalued in recent years. House prices have grown rapidly in recent years. Building cost, income growth, increased net migration flows, and short-term rental contracts demand generated by tourism have indicated an overheating in the real estate market. The IMF's Systemic Risk Tracker (Figure 4) and estimation of house price misalignment with different techniques (Box 2) show that house price growth in Iceland is susceptible to macrofinancial shocks, and the likelihood of a price correction has increased recently. The models where long-term house price growth is changeable, including the house price misalignment model[15] and Kalman filtration,

[14] The price misalignment indicator has a weight of 3. Countries for which there is evidence of overvaluation based on the price-to-income, price-to-rent, and the econometric model get a score of 3, with each measure contributing 1 to the overall price misalignment score. The mortgage market risk indicator has a weight of 1 and is computed based on (1) a dummy variable indicating LTV above 80 percent (maximum possible LTV based on a recent survey, but not necessarily up to date); (2) a dummy variable for variable rate loans; or (3) a no recourse dummy variable (unequal weight). The household balance sheet indicator has a weight of 2 and is based on (1) the level of mortgage debt-to-GDP; and (2) the growth rate in household credit over the past three years, with equal weights.

[15] See IMF's Global Housing Cycles (IMF Working Paper WP/12/217).

suggest a price misalignment, potentially ranging from 6 percent to 7 percent, which, if corrected, could result in financial losses to households and financial institutions.

37. There are signs that the risk profile of mortgage loans has been deteriorating recently. Loan-level data from the CBI since 2020 provide insight on the impact of interest rate adjustment on household debt distress, when DSTI exceeds 35 percent. For instance, the CBI simulations[16] based on loan-level data suggest that under the assumption that all nonindexed fixed-rate loans are converted to nonindexed variable-rate loans at the market rate of March 2023, fewer than 3 percent of households would have a DSTI ratio above 35 percent, with the incremental change being less than 1 percentage point. Approximately half of all non-indexed mortgages have a fixed interest rate, but most of these fixed-rate loans will not be released until the years 2024 and 2025. Over the past three years, the share of households whose debt service exceeded 35 percent of disposable income had risen by two percentage points (from about 7 percent in January 2020 to 9 percent in January 2023) (Figure 5).

Figure 4. Iceland: Housing Market Mispricing

Heatmap (quantiles) across countries and from 2011 to 2022Q2

		2018				2019				2020				2021				2022	
Indicators	Country	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
House price-to-income ratio	Iceland	122.8	121.0	121.6	121.0	123.6	121.8	120.8	120.8	124.8	129.2	134.0	137.5	141.7	145.2	145.6	145.8	150.5	158.2
	Latvia	108.6	109.8	106.3	107.7	105.8	109.0	111.3	110.6	109.8	109.0	113.2	113.7	113.8	116.9	117.4	118.1	116.0	117.7
	Estonia	97.1	96.4	94.5	95.0	94.8	93.9	94.6	96.3	100.9	99.7	99.0	102.3	107.7	106.0	105.6	107.8	110.2	114.0
	Lithuania	99.2	100.1	99.6	98.3	99.0	98.5	97.8	97.2	99.0	102.0	102.5	104.6	108.0	106.9	108.5	111.2	112.3	113.5
	Sweden	104.5	103.9	104.0	102.8	102.5	102.9	103.3	102.4	103.5	104.8	107.1	108.6	112.3	113.1	113.7	112.2	115.7	113.3
	Denmark	105.6	107.9	107.3	103.9	105.9	107.5	107.1	104.4	105.7	108.5	113.4	115.4	120.8	121.1	120.1	114.5	114.6	112.5
	Norway	107.6	109.3	105.7	101.1	103.3	106.5	106.1	104.1	107.0	113.6	116.2	117.5	123.4	123.6	116.6	105.1	102.1	100.4
	Finland	94.9	95.3	94.2	93.3	92.7	93.4	92.2	91.0	91.4	93.4	93.9	95.1	96.7	97.0	95.3	93.6	92.7	92.0
House price-to-rent ratio	Latvia	127.0	129.9	121.8	126.7	127.7	132.3	131.9	134.0	133.3	141.3	140.2	141.8	144.4	151.6	152.8	158.2	164.7	166.6
	Iceland	111.7	111.6	111.8	111.9	111.6	111.6	112.1	113.4	114.8	116.1	118.0	119.6	121.0	124.6	126.8	127.4	130.0	135.7
	Lithuania	104.6	105.8	105.3	104.8	105.4	104.0	103.4	104.5	106.9	108.9	108.6	111.6	117.5	121.2	126.6	131.5	128.8	129.4
	Denmark	109.7	111.9	112.5	109.6	111.3	113.9	114.8	111.8	113.3	115.6	121.1	123.6	127.9	130.9	130.9	125.6	124.3	122.8
	Sweden	106.8	107.4	106.7	105.8	104.2	106.1	107.4	107.2	109.5	109.9	111.3	112.7	114.2	118.5	118.6	117.2	118.7	116.2
	Norway	101.3	103.6	100.3	98.3	100.2	103.0	102.4	100.0	105.2	110.1	111.5	111.3	111.3	114.8	109.6	104.8	111.6	112.1
	Estonia	111.2	110.5	107.3	109.7	111.5	111.4	114.1	119.2	129.0	121.8	124.0	127.5	134.2	133.1	125.7	121.4	123.9	104.4
	Finland	100.2	101.2	99.5	98.8	98.4	99.6	98.4	97.6	98.9	100.1	100.2	101.1	101.9	103.5	101.2	99.6	97.6	97.9
Real house price growth	Iceland	10.5	4.5	2.3	3.5	1.2	0.7	0.2	1.7	3.4	4.1	4.4	4.1	4.1	7.9	9.9	10.5	12.2	13.9
	Estonia	3.3	3.9	0.5	1.9	3.5	2.8	5.8	6.4	9.8	5.3	4.9	6.0	5.9	12.6	11.1	10.1	7.2	5.9
	Lithuania	4.3	4.7	4.1	4.8	5.6	3.8	3.9	4.4	3.6	6.2	5.3	8.8	11.0	9.7	12.8	9.7	4.4	2.6
	Norway	-3.0	-0.7	-0.3	-1.0	0.0	-0.5	0.7	1.0	0.7	1.5	3.3	6.2	7.9	9.3	6.7	3.2	3.3	0.5
	Latvia	9.2	6.2	4.2	7.9	3.4	4.5	9.5	6.5	6.7	1.9	1.7	2.9	3.0	9.6	8.3	8.4	7.5	-0.1
	Sweden	-2.3	-3.5	-4.1	-1.3	-0.3	0.1	1.4	1.5	3.5	3.1	3.1	4.9	5.6	9.0	9.2	7.3	5.4	-0.3
	Finland	0.3	-0.2	-0.3	-0.2	-0.8	-0.6	-0.4	-0.7	0.3	0.9	1.4	3.4	3.1	3.3	2.5	0.4	-1.5	-4.2
	Denmark	4.2	3.6	2.8	2.5	1.6	1.9	2.0	1.9	1.4	1.3	5.6	10.3	13.2	13.5	9.2	3.4	-0.7	-4.5

Source: IMF Systemic Risk Tracker.

38. Icelandic authorities have undertaken several measures to address household vulnerabilities. The maximum loan-to-value (LTV) ratio was first implemented in July 2017. A limit of 85 percent in general and of 90 percent for first-time homebuyers was imposed[17]. The LTV ratio

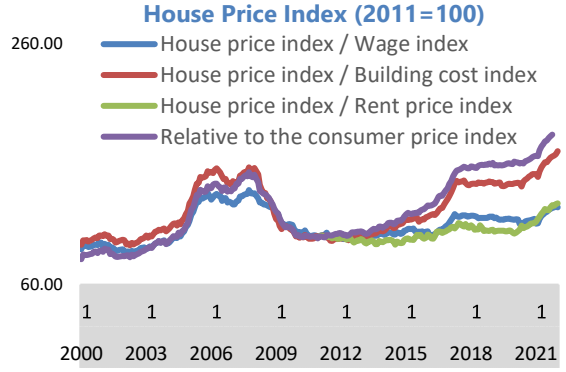
[16] See CBI's *Financial Stability Report (Box 1),* available at Financial Stability (cb.is).

[17] See FME's memorandum and Financial Stability Council opinion available at https://www.cb.is/library/Skraarsafn---EN/Financial_Stability/Restrictions-on-mortgage-lending/FME-LTV-Memorandum-July-2017.pdf and LTV-rules-opinion-of-FSC.pdf (cb.is)

was further tightened in June 2021[18] and in June 2022[19]. As a result, the general maximum LTV ratio is 80 percent and 85 percent for first-time homebuyers. The cap on the DSTI was 35 percent (first-time buyers cap was 40 percent) in September 2021[20]. To limit excessive mortgage lending at unsustainable low interest rates and to reduce the disparity in calculated debt-service among different mortgage types (indexed and non-indexed), CBI implemented changes to the Rules on Maximum Debt Service-to-income Ratios for Mortgage Loans to Consumers (see Act: No. 701/2022). Under the new rule, which can be defined as a stressed-DSTI, when calculating debt service, the higher of the contractual interest rates or a reference interest rate of 3 percent for indexed mortgages and 5.5 percent for non-indexed mortgages must be used. Additionally, the maximum maturity period for indexed mortgage loans has been reduced from 30 years to 25 years, while the maximum maturity for non-indexed mortgage loans remains unchanged at 40 years. The calibration of the reference interest rates aligns with an estimation of the equilibrium real interest rate. The LTI, which is defined as the total amount of mortgage loans to the annual disposable income of the borrower, has not been implemented yet. LTI can be restricted in the range of 5 to 9. The CBI can implement this tool after receiving approval from the FSN.

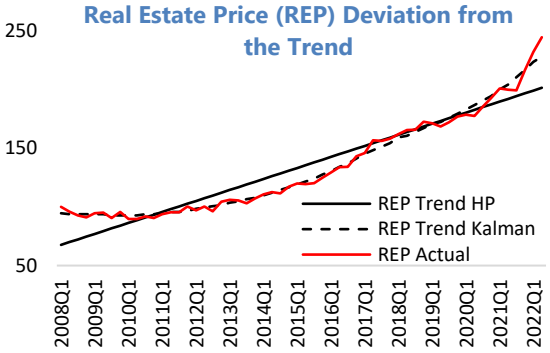
Figure 5. Iceland: Housing Prices and Household Balance Sheet

House prices are higher than fundamentals…



Source: CBI.

…likelihood of price correction has increased.



Sources: CBI, IMF staff estimates.
Note: The REP HP Trend is determined using a Hodrick-Prescott (HP) filter with λ = 400,000.

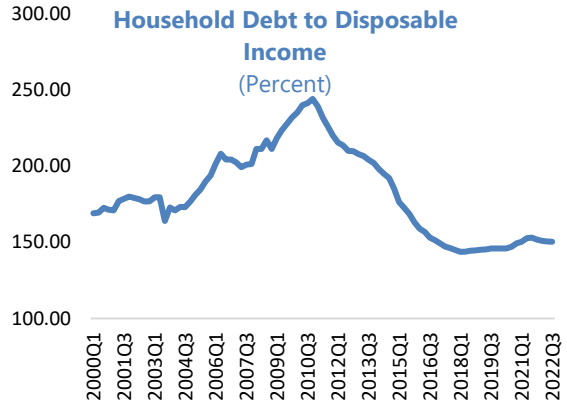
[18] See the minutes of the 8th Financial Stability Committee meeting for details: https://www.cb.is/library/Skraarsafn---EN/Financial_Stability/FSC/FSN_minutes_27june2021_ENG.pdf.

[19] See the minutes of the 13th Financial Stability Committee meeting for details: https://www.cb.is/library/Skraarsafn---EN/Financial_Stability/Minutes_Financial_Stability_Committee_13thMeetingJune2022.pdf.

[20] See minutes of the 9th Financial Stability Committee meeting for details here: https://www.cb.is/library/Skraarsafn---EN/Financial_Stability/FSC/FSN_minutes_september_2021.pdf

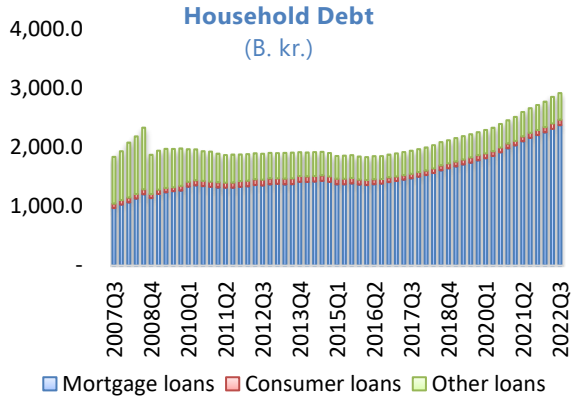
Figure 5. Iceland: Housing Prices and Household Balance Sheet (Concluded)

The household debt-to-disposable income ratio is declining.



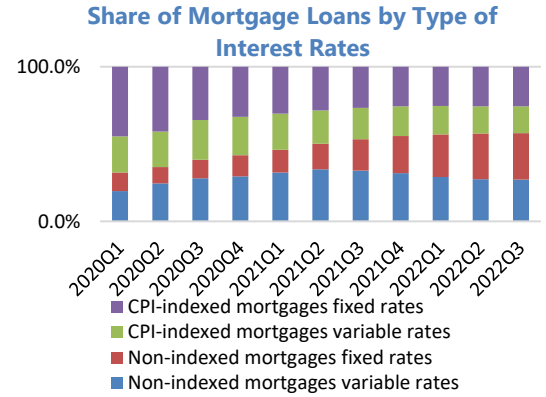
Source: CBI.

The 4/5 of household debt is made up of mortgages.



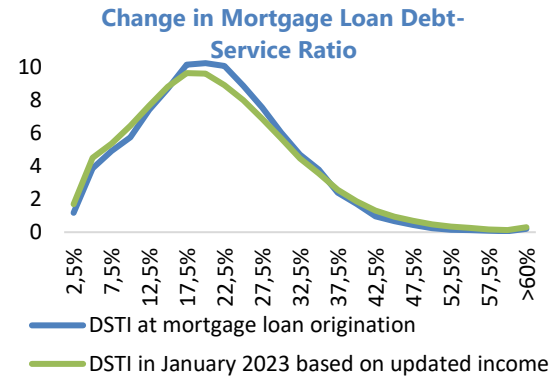
Source: CBI.

Household debt composition has changed substantially since the pandemic.



Source: CBI.

The interest rate hikes and further increases weigh on household debt service.



Source: CBI.

Box 2. Iceland: Estimation of House Price Misalignment

IMF's Global Housing Cycles model was used to estimate the misalignments in house prices. The explanatory variables are meant to capture mainly demand-side factors. At the same time, supply is assumed to be relatively inelastic in the short run but has an impact on house prices in the long run. Changes in house prices serve as the dependent. The regression takes the following form:

$$\begin{aligned}\text{House price growth}_t = \\ &= C + \theta\ \text{affordabilityt}_{t-1} + \beta_1\ \text{income growth}_t + \beta_2\ \text{credit growth}_t + \beta_3\ \text{short term rate}_t \\ &+ \beta_4\ \text{long term rate}_t + \beta_5\ \text{stock price growth}_t \\ &+ \beta_6\ \text{working age population growth}_t + \beta_7 \text{global financial crisis indicator}_t \\ &+ \beta_8\ \text{COVID pandemic indicator}_t + \epsilon_t\end{aligned}$$

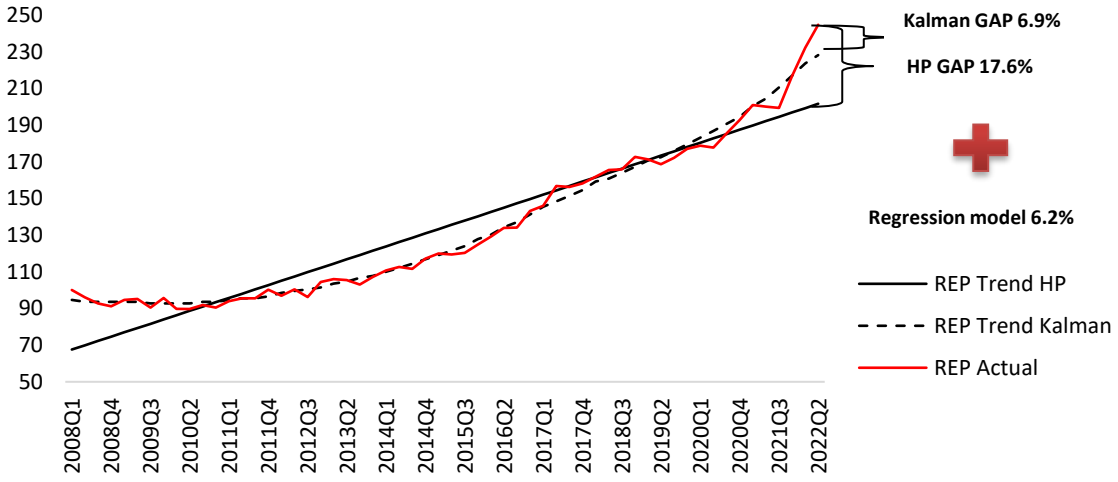
The explanatory variables are changes in income per capita, short- and long-term interest rates, credit growth, growth in equity prices, and growth in the fraction of the working-age population. The long-term equilibrium relationship is measured using the ratio of house prices to income (proxied by per capita GDP), which is a measure of affordability. In addition, construction costs serve as a proxy for supply-side factors.

The levels of house prices in years from 2014 to 2018 are used as alternative base levels from which the fitted values of the house price increases are accrued. The misalignment is then calculated as the average over these base years.

In addition to the regression model, the house price misalignments were estimated using the Hodrick-Prescott filter (Article IV, Iceland 2021, Selected Issues) and Kalman filter (Figure 1, Box 2).

As a result, the estimated overvaluation in 2022Q2 is from 6.2 percent to 17.6 percent.

Real Estate Price Deviation from the Trend



Sources: IMF staff estimation.

39. Borrower-based measures improve the resilience of borrowers and also dampen house prices. Empirical research has shown that borrower-based tools, such as LTV and DSTI caps, effectively reduce the buildup of vulnerabilities over time (IMF-BIS-FSB 2016) while providing households with valuable buffers. At the same time, the recent IMF Selected Issues Paper (Article IV, Iceland 2022) suggests that a tightening—for example, a lower LTV ratio and/or a lower DSTI ratio—also dampens house prices significantly for a few quarters having transitory effects. Nonetheless, existing literature (He et al. 2016; Cerutti et al. 2017) suggests that the impact of borrower-based measures on the growth rate of house prices and credit is limited in advanced countries. Having these measures in place is therefore useful in building buffers, containing vulnerabilities among borrowers and enhancing financial stability[21].

Recommendation

40. The authorities should continue monitoring developments in the housing market and stand ready to take further actions if systemic risks persist. Over time, if vulnerabilities associated with housing finance persist, further tightening for borrower-based measures could be considered.

C. Vulnerabilities from the Corporate Sector: Assessment, Tools, and Recommendations

41. Corporate indebtedness in Iceland appears low at this juncture. Tightening of both global and domestic financial conditions following the crisis and the new regulatory environment have made the Icelandic non-financial corporate sector less leveraged. As a percentage of GDP, the gross corporate debt of NFCs decreased significantly in the lead-up to the GFC and has remained relatively stable at 80-90 percent since 2017. Although real credit growth has slowed in recent years, banks remain the main corporate financing source. The Iceland NFCs remain highly dependent on loan financing from banks and other financial institutions, with an average share of 82 percent by end-2022. The largest exposure (about 70 percent of total loans) is to the banking system, followed by other financial institutions. These loans are mainly to the real estate, fisheries, and services sectors (65 percent of the loans). The real estate sector accounts for a quarter of corporate loans. This indicates the importance of monitoring the vulnerabilities coming from real estate, especially given the high indebtedness of households also linked to residential real estate.[22]

42. The pandemic caused a significant drop in enterprises' sales and increased corporate debt distress. The corporate sector has become more vulnerable (Figure 6) in recent years mainly because of higher profitability risks, stock valuation risks and default risks. Also, the rise in stock

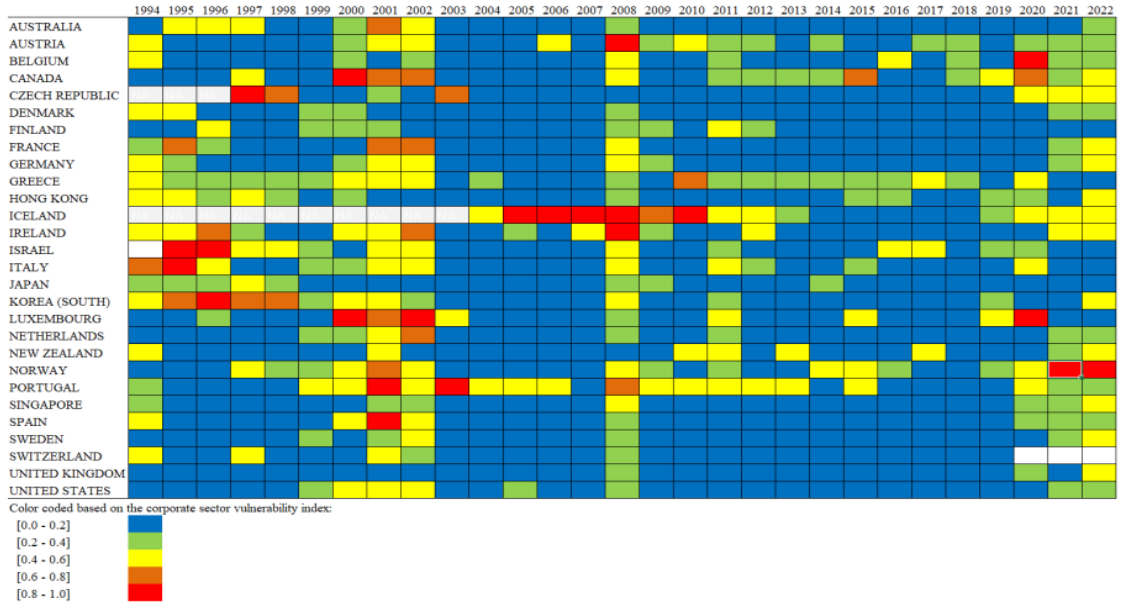
[21] The introduction in June 2022 of the stressed-DSTI in Iceland should therefore improve the resilience of borrowers. The measure is however too recent to allow an analysis of its efficacy at this stage.

[22] Some corporate sector loans are related to household indebtedness because they originate as housing company loans. Housing company loans are classified as real estate loans to the NFC sector because the debtor is the housing company. However, most of these loans are related to renovations and new construction of the residential real estate, and thus, de facto, the debtors are households rather than NFCs. This should be noted when classifying loans as either the household sector or the corporate sector.

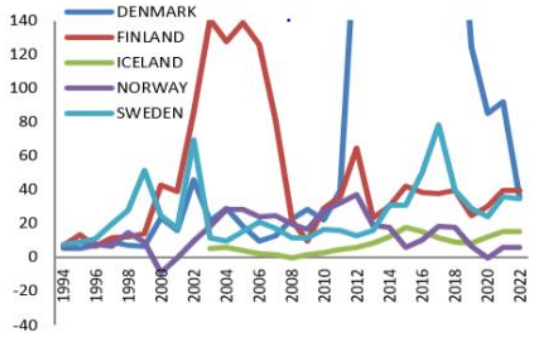
valuation and profitability risks are being exacerbated by the effect of high inflation on firms' real earnings and real return on assets. Aggregate non-performing loans on D-SIBs lending to NFCs increased marginally during the pandemic, but sectoral variation was significant, as the service and other tourism related sectors were hit the hardest, representing the largest increase in the NPLs (Figure 8). Rising interest rates and subsequent increasing funding costs, could further erode firms' earnings.

Figure 6. Iceland: Corporate Sector Vulnerability

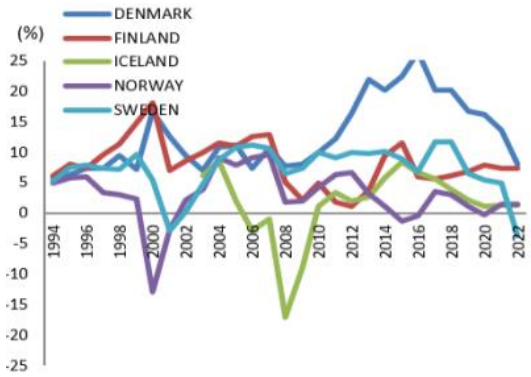
Heatmap across advanced countries and from 1994-2022



Liquidity (Interest coverage ratio) is lowest in Norway and Iceland.



Profitability (Return-on-assets) has declined in Iceland.



Source: IMF Corporate Sector Monitor.

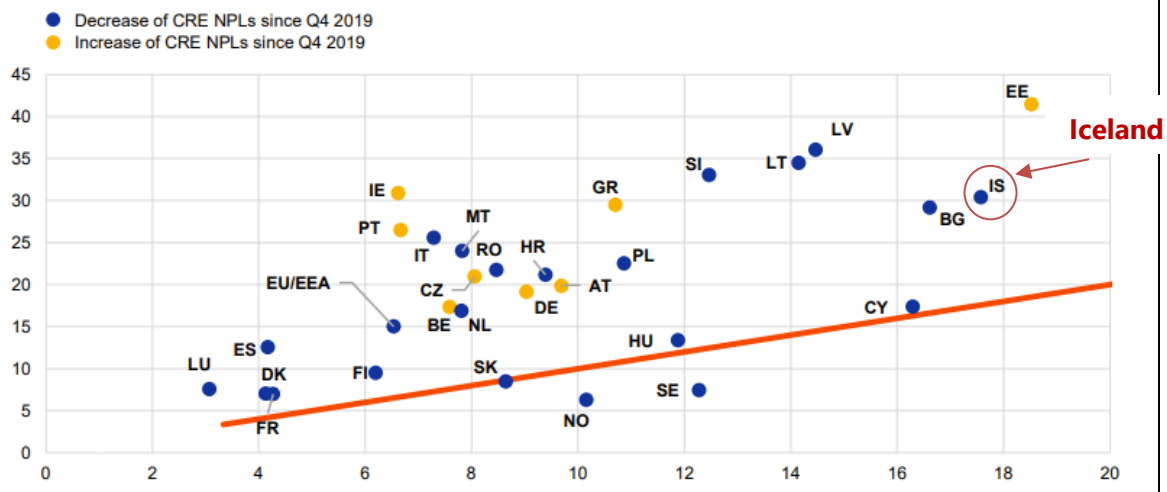
Note: The analysis is based on the Corporate Vulnerability Utility (CVU). An overall corporate vulnerability indicator is created as the weighted sum of five dimensions—indebtedness (debt-to-asset ratio), liquidity (interest coverage ratio), profitability (return-on-asset), stock valuation, and default probability—and normalized to take a value between 0 and 1 (the higher the worse). The CVU is maintained by the IMF Research Department based on commercially provided Thomson Reuters data as well as other public data. For detailed methodology, see User Manual for the Corporate Vulnerability Utility by Brooks and Ueda (2005, the latest update in 2011 by Ueda).

43. The CRE sector accounts for a higher share of banks' NPLs than other sectors. CRE NPLs' share has declined from the post-pandemic period but remains high. The stock of CRE loans represents a larger share of NPLs than its share in total lending would imply, with the share of CRE NPLs as a proportion of total NPLs at around 40 percent in Estonia and above 30 percent in Iceland, Ireland, Latvia, Lithuania, and Slovenia (Figure 7). This suggests that in most countries, default rates for CRE loans are higher than those for the stock of loans in other segments of the economy.

Figure 7. Iceland: Share of CRE Loans as a Proportion of Total Bank Loans: Outstanding vs. Nonperforming

(Percentage, Q2 2022)

The share of CRE loans as a proportion of total bank loans and CRE NPL as a proportion of total NPL are high in Iceland.



Source: EBA Risk Dashboard.

Note: The chart shows the ratio of CRE exposures to total exposures (x-axis) and the ratio of CRE nonperforming exposures to total nonperforming exposures (y-axis). Individual country data include subsidiaries, which are excluded from the EEA aggregate. For example, at the country level, the subsidiary in country X of a bank domiciled in country Y is included in data for both countries X and Y (for the latter as part of the consolidated entity). Only the consolidated entity domiciled in country Y is included in the EEA aggregate. The sample of banks is unbalanced and reviewed annually. A differentiation between cross-border and domestic exposure is not possible. Some NPLs have been moved to bad banks and similar structures and are no longer on banks' balance sheets.

44. Key risks stem from CRE and the construction sector, while exposures are continuously rising. Banks' credit to the CRE sector and construction and CRE prices have risen rapidly in recent years (Figure 8). Banks' large exposure to CRE and construction loans and strong cyclicality in the CRE sector pose a risk of substantial loan losses in case of a sharp correction of prices. Different price metrics suggest that CRE prices are historically high and far above their trend level (Figure 8). It is also worth noting that the level of banks' exposure to CRE-related risks varies significantly in terms

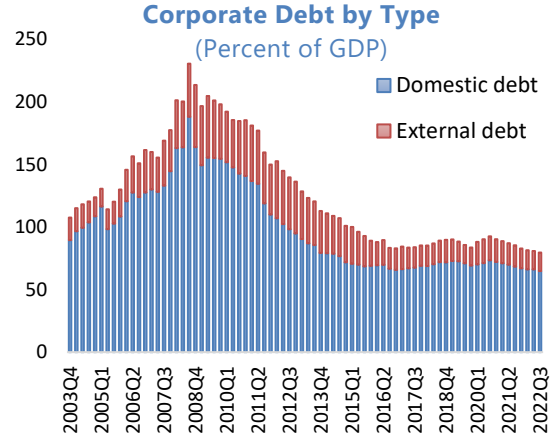
of the size of exposure and the underlying risk (for example, location and size[23]). FSAP sensitivity analysis shows that, due to a sharp increase in the probability of default, real estate sector, among other sectors, would have the highest negative impact on banks' capital, given their higher exposure and relatively higher loss given defaults[24].

45. Corporate debt in foreign currencies has shrunk significantly since the GFC. Corporate debt in foreign currencies amounted to more than 28 percent of GDP and around 36 percent of total corporate debt at the end of 2022 Q3. Of this, 40 percent were foreign loans and 12 percent were marketable bonds issued abroad. Around 35 larger Icelandic nonfinancial companies finance themselves in whole or in part abroad, mainly through borrowing. Net new loans to companies in foreign currencies, as well as changes in the stock, indicate that corporate FX borrowing has remained relatively stable as a share of total corporate debt in recent years. Corporations that borrow in foreign currencies are mainly firms with foreign revenues, for example, fisheries, transport, and tourism.

46. The CBI has been proactive in identifying measures to address risks from the corporate sector. In line with the CBI's diagnosis of risk concentration among large corporates, banks are required to conform with a 25 percent exposure limit (of capital) to a single borrower, effective December 31, 2016.

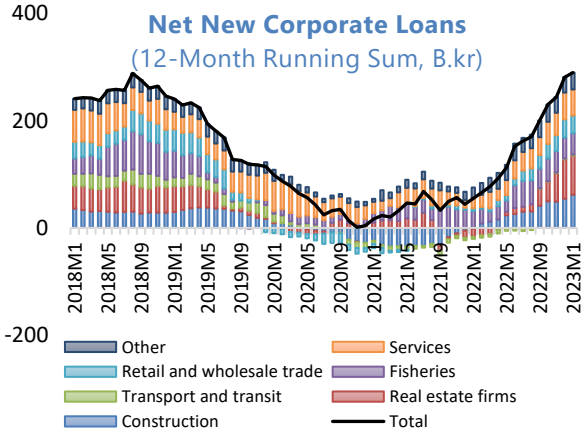
Figure 8. Iceland: Nonfinancial Corporate Debt and CRE Prices

Aggregate corporate debt has declined since the peak of the global financial crisis, with the largest exposure to the banking sector.



Sources: CBI, IMF staff calculations.

Banks' exposure to the CRE sector and construction is continuously rising.



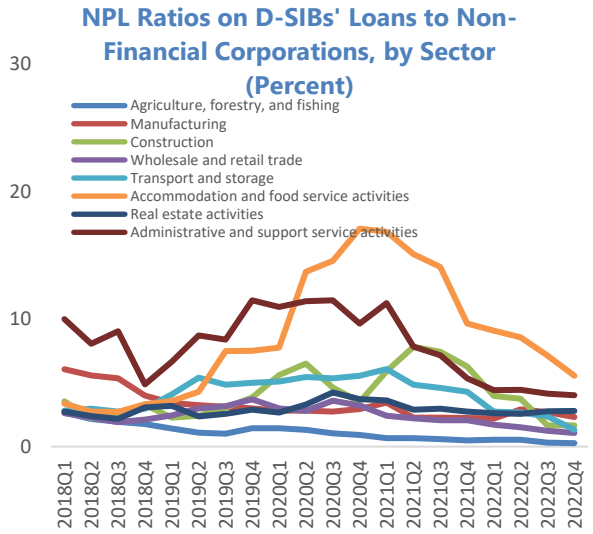
Source: CBI.

[23] Statement of Financial Stability (cb.is) Committee, March 15, 2023.

[24] See the Technical Note on Stress Testing and Systemic Risk Analysis for more details.

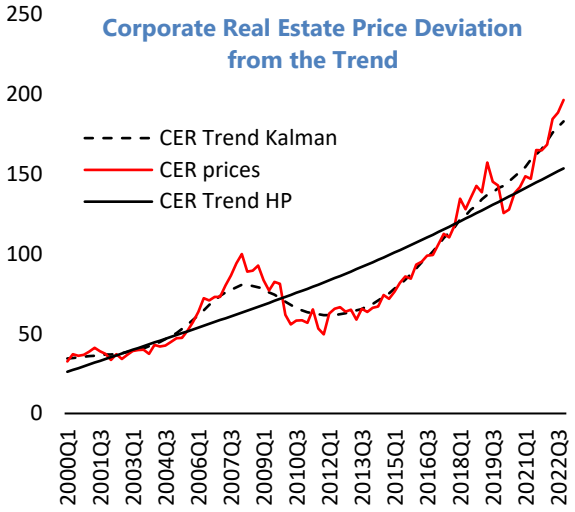
Figure 8. Iceland: Nonfinancial Corporate Debt and CRE Prices (Concluded)

The NPL ratio on the D-SIBs' corporate loans continued to decline.



Source: CBI.

CRE prices are historically high and above their trend level.



Sources: CBI, IMF staff estimation.

Note: CR HP Trend is determined using a Hodrick-Prescott (HP) filter with λ = 400,000.

47. Strong growth of domestic bank lending to CRE and the construction sector warrants attention. Close monitoring of credit, overall indebtedness, and other risk indicators of the NFCs should continue, including looking at real estate and construction sector-related corporate finance—where strong demand for credit is supported by price overvaluation.

48. Risks from corporate exposures appear manageable; however, they should be monitored carefully. The solvency stress test shows that despite relatively high capital depletions over adverse scenarios, no bank would face a capital shortage below the minimum capital requirement stress[25]. However, some banks' losses associated with large, indebted corporates may increase notably under stress. The balance sheets of corporates may further worsen if financial condition tightening continues, which can have substantial spillovers in case of a stress event. The CBI should monitor and evaluate the risks from corporate exposures and stand ready to act if corporate vulnerabilities increase. Most of the corporate debt is nonindexed and bears variable interest.

[25] See the Technical Note on Stress Testing and Systemic Risk Analysis for more details.

Recommendations

49. There are merits to considering options to broaden the toolkit for addressing CRE vulnerabilities. The existing broad-based capital measures help safeguard bank resilience; however, the tools are too blunt for targeting the very specific risks in the CRE sector, and the sole reliance on them may not be effective in containing price and credit booms more generally (IMF-FSB-BIS, 2016). It is useful to consider broadening the macroprudential toolkit to facilitate a more targeted and comprehensive approach to CRE vulnerabilities:

- **Sectoral capital measures.** Unlike broad-based measures, sectoral capital measures target banks with higher exposures to riskier sectors. This would be particularly important for CRE exposures, which vary across Icelandic banks. It would be useful to introduce risk weights, which will help the banking system withstand corporate credit losses by building capital buffers. This instrument may also increase the cost of credit and slow the growth of corporate credit. A higher risk weight can be implemented by a risk weight floor or LGD floors in calculating RWAs. An important advantage of capital buffers (SRB[26]/CCyB) is that they are adjustable over the cycle—in particular that they can be relaxed—allowing losses to be absorbed and credit to flow when it is most needed.

- **Borrower-based measures.** If combinations of existing and suggested measures prove insufficient to contain CRE risks, borrower-based measures could also be considered. Such measures would directly target reducing excessive credit growth and stretched valuations while increasing borrowers' resilience[27]. However, borrower-based measures are less procyclical than some capital tools, and effective implementation of such measures requires addressing several substantial operational challenges with regard to sectoral heterogeneity and data limitations. Despite the ongoing work on improving data availability, an in-depth assessment of the riskiness of CRE bank loans is still hindered by data quality issues.

D. Vulnerabilities from Funding and Liquidity: Assessment, Tools, and Recommendations

50. The Icelandic banking sector has relied on wholesale funding. Retail deposits explain only half of the funding structure of banking. The other half of their funding are equity and wholesale funding, including covered bonds, unsecured bonds, and interbank deposits (Figure 9). The loan-to-deposit ratio was around 134 percent at the end of 2022. That being said, the current banks' funding structure is an improvement of their funding in relying more on deposits, which were just around 38 percent in 2014.

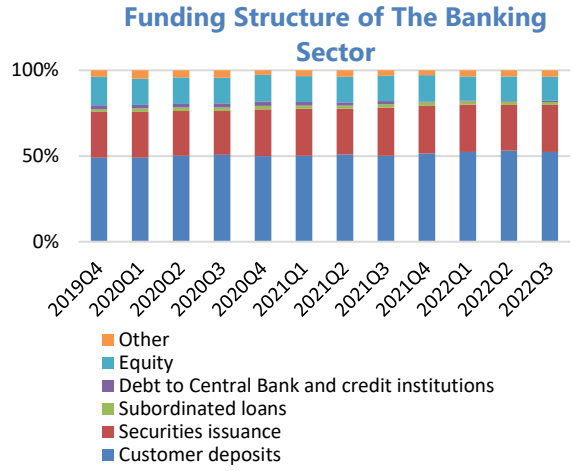
[26] According to the Icelandic law on credit undertakings no.161/2002, the CBI has power and can apply a sectoral systemic risk buffer.

[27] Borrower-based measures for CRE loans are available in Belgium, Ireland, France, Lithuania, Malta, Slovenia, and Sweden.

51. The banking system has sufficient aggregate liquidity and stable funding, but this could be insufficient during periods of stress. At the end of 2022, the D-SIBs' combined liquidity ratio in all currencies was 165 percent, far above the 100 percent minimum required under CBI rules. The liquidity ratio in foreign currencies was 316 percent, whereas the ratio in Icelandic krónur was 121 percent. The D-SIBs' net stable funding ratio (NSFR) for all currencies combined was 117 percent and, therefore, well above the 100 percent minimum requirement. At that time, the funding ratio in foreign currencies was 165 percent, whereas the ratio in Icelandic krónur was 108 percent. However, the liquidity stress test of the banks found that although the banking system on aggregate is broadly resilient to adverse liquidity conditions, they are not immune to additional liquidity outflows from pension and nonresident FX funding, especially over the longer term. In addition, stress tests focusing on individual currencies reveal common vulnerabilities to domestic and foreign currency- denominated outflows[28].

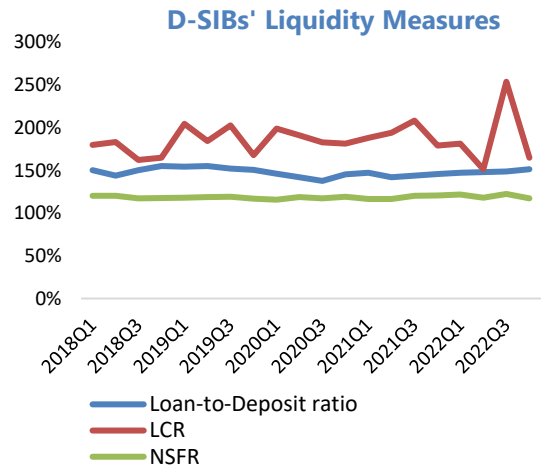
Figure 9. Iceland: Banks' Funding Structure and Liquidity Measures

Retail deposits explain half of the funding structure of banking.



Source: CBI.

the banking system has sufficient aggregate liquidity and stable funding.



Source: CBI.

E. Vulnerabilities in Structural Dimensions: Assessment, Tools, and Recommendations

52. The financial system in Iceland is highly concentrated and dominated by the banking sector and pension funds. Total banking sector assets accounted for 135 percent of GDP as of 2022 Q3. The banking system continues to be highly concentrated: the three largest banks—Arion Banki, Íslandsbanki, and Landsbankinn—account for 95 percent of banking assets. The banking sector is also highly interconnected with the NBFIs. Among NBFIs, PFs with assets at 173 percent of GDP play a vital role. Other financial intermediaries, such as IFs, money market funds (MMFs), equity funds, and so on, play a much smaller role in financial intermediation in Iceland. Their total assets

[28] See the Technical Note on Stress Testing and Systemic Risk Analysis for more details.

amount to just over 35 percent of GDP and have only grown slightly in relation to GDP in the past decade.

53. FSAP analysis suggests increasing interconnectedness across sectors, which is mainly driven by households' and PFs' assets increase and NFCs' liabilities rise. By the end of 2021, the total value of households' assets amounted to 307 percent of GDP. More than 60 percent of households' asset exposures are with PFs, and around 13 percent are with banks. And banks, other financial sectors such as insurance, IFs and MMFs, and the real economy are directly or indirectly interconnected with PFs through common exposures and instruments such as deposits, loans, and debt securities. PFs exposure to the banks has more than doubled from 2017 to 2021, accounting for 10 percent of total pension fund assets—this corresponds to 14 percent of banks' financial liabilities. NFCs are the largest borrowers, with debt held by banks, NBFIs, and other NFCs.

54. Pension funds have been playing an increasing role in credit intermediation to households. By end-2022, they hold around 23 percent share in outstanding mortgage loans and are in active competition with the banks in the mortgage market. As a result, their market share increased rapidly from 2016 to 2020 but decreased somewhat in 2020-21 during the low-interest rate environment of the pandemic. The PFs generally have stricter lending standards than the banks, and borrower-based macroprudential tools apply to them as well as to all mortgage lenders in Iceland.

55. PFs are also an important provider of credit to the NFC sector, and their share of total NFC credit has been increasing steadily. The share of PFs' credit to the NFC sector increased about three times in the past ten years, and their lending activities are often connected to real estate projects. Pension funds are the main buyers of corporate bonds in Iceland. These are mainly bonds issued by large real estate companies, power companies, and the fishing industry.

56. Regarding NFC lending, there has been a noticeable increase by specialized IFs in recent years. PFs have also increased their exposure to corporate loans by investing in specialized investment funds. IFs lending activity is largely limited to loans to bigger companies and is often connected to real estate projects, but there are also instances of lending to small and medium enterprises (SMEs) and other sectors. Also, there are examples of funds buying loan portfolios from banks. The scope of IF lending to corporates is small; however, the CBI should closely monitor and be ready to act if risks increase.

57. Three institutions are assessed by the CBI to be systemically important and, therefore, subject to capital surcharges. Another systemically important institution (O-SII) buffer is used to address risks that an individual institution poses to the stability of the financial system. The O-SII buffer -captures the exposure of the individual institution to the system-wide risks. The identification of institutions subject to the O-SII buffer is based on EBA guidelines[29]. In addition, the CBI includes a measure describing the importance of the FX market for Iceland's economy. The O-SII buffer rate

[29] EBA-GL-2014-10 (Guidelines on O-SIIs Assessment).pdf (europa.eu).

was set at 2 percent for the three largest commercial banks, and it has remained unchanged since its introduction (April 1, 2016).

Recommendation

The domestic bank-NBFI interlinkages are remarkable[30], and a macroprudential perspective is increasingly important in the nonbank sectors. The CBI should continue to pay close attention to developments in the nonbank financial sector and develop a policy framework to address potential systemic risks that might arise from these developments. In addition to monitoring mortgage lending, paying close attention to NBFI's other quasi-banking activities (e. g., increased share of PFs credit to the NFCs in recent years, and PFs' lending activities connected to real estate projects through CREs) is advisable as they could become a potential source of systemic risk.

[30] See the Technical Note on Stress Testing and Systemic Risk Analysis for more details.