



2021 | 1



FINANCIAL STABILITY

Financial stability means that the financial system is equipped to withstand shocks to the economy and financial markets, to mediate credit and payments, and to redistribute risks appropriately.

The purpose of the Central Bank of Iceland's *Financial Stability* report is:

- to promote informed dialogue on financial stability; i.e., its strengths and weaknesses, the macroeconomic and operational risks that it may face, and efforts to strengthen its resilience;
- to provide an analysis that is useful for financial market participants in their own risk management;
- to focus the Central Bank's work and contingency planning;
- to explain how the Central Bank carries out the mandatory tasks assigned to it with respect to an effective and sound financial system.

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Statement of the Financial Stability Committee 14. apríl 2021

The economic impact of the pandemic is still uncertain. Accommodative monetary and macro-prudential policies and measures taken by the Government have supported households and businesses. Despite rising asset prices, cyclical systemic risk has not increased to any significant degree in the recent term. There is still some uncertainty about financial institutions' loan quality and how much they will need to write off as a result of the pandemic. The Financial Stability Committee (FSN) therefore decided in late March to hold the countercyclical capital buffer on financial institutions unchanged at 0%.

The three large commercial banks' capital and liquidity are strong, and they have ready access to liquidity in both krónur and foreign currencies. As a consequence, they have the resilience needed to address the repercussions of the pandemic.

The FSN considers it appropriate to continue monitoring the real estate market and credit growth, as it is important that supply and demand be in balance. In the current interest environment, it is vital that both lenders and borrowers be aware that debt service on non-indexed loans could change substantially.

The Financial Stability Committee is prepared to use every tool at its disposal to safeguard financial stability in Iceland.

Symbols:

- * Preliminary or estimated data.
- 0 Less than half of the unit used.
- Nil.
- ... Not available.
- .

Icelandic letters:

ð/Ð (pronounced like th in English this)

þ/Þ (pronounced like th in English think)

In this report, ð is transliterated as d and þ as th in personal names, for consistency with international references, but otherwise the Icelandic letters are retained.

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Financial Stability in a nutshell



Central Bank measures and Government responses to the pandemic have strongly supported households and businesses. Purchasing power has been safeguarded. Unemployment has soared, however, reaching 11.5% in February, as compared with 5% a year earlier. Job numbers have fallen in nearly all sectors, albeit most in tourism and other sectors whose activities have been restricted by public health measures. Unemployment is expected to remain high as long as the pandemic is ongoing.



International flights are still subject to heavy restrictions. Tourism company revenues have been negligible for well over a year. Increasing vaccination rates give cause for greater optimism, but as yet there is no end in sight to difficulties in the sector. Tourism companies' debt has increased markedly in the past twelve months, largely because of deferred interest and instalment payments, together with new support loans and bridge loans. At the end of 2020, lending to the tourism industry accounted for 10% of the three large banks' customer loans. If the situation does not improve, tourism operators' liquidity problems could easily develop into solvency problems for much of the sector.



The impact of the pandemic on financial institutions' balance sheets shows primarily in increased impairment and arrears and a larger share of frozen loans. In 2020, financial institutions offered temporary moratoria that, at one point, applied to one-fifth of corporate loans. After moratoria expire, loans are frozen if necessary. At the end of February, just under 17% of corporate loans were frozen, up from 3.5% a year earlier. The vast majority of frozen loans were to companies in tourism and other services.



Interest rate cuts have livened up the real estate market. Housing market turnover in greater Reykjavík was up 42% year-on-year in H2/2020, and the number of purchase contracts rose 32%. In the first two months of 2021, turnover had doubled year-on-year. Despite the surge, house prices have risen relatively modestly. In February, real prices were up 3.1% year-on-year. A record number of new flats were put on the market in 2020, but new construction has declined sharply since then.



Even though the banks were under significant pressure in 2020, owing to increased impairment and narrower interest rate spreads, their profits were somewhat higher than in 2019. Their balance sheets have grown, as can be seen in an increase in interest-bearing assets, which supports their interest income despite narrower spreads. Streamlining efforts lowered operating expenses by nearly 10% in real terms in 2020. The banks' expense ratio fell below 50% for the first time since 2015.



The Central Bank's responses to the pandemic have supported the banks' liquidity. At the end of February, their liquidity in excess of the Bank's required minimum totalled 234 b.kr., an increase of 56 b.kr. year-on-year. Interest premia on the banks' foreign bond issues are now close to pre-pandemic levels. The banks have taken advantage of this for refinancing. They have ready access to foreign credit markets, reflecting confidence in the Icelandic financial system.

Financial Stability: Developments and prospects



Risks associated with Iceland's external position and foreign currency flows

Pandemic continues to affect economic developments

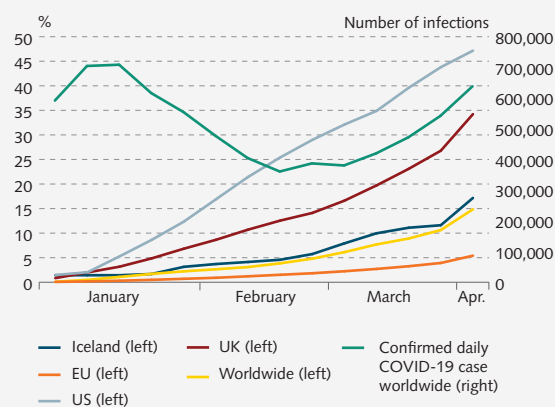
The economic outlook deteriorated in Q1/2021, following another spike in many countries' COVID-19 infection rates in the autumn, after public health measures had been eased during the summer. The reinstatement of public health measures in response to the widespread surge in COVID cases slowed the economic recovery. The GDP growth outlook deteriorated for Iceland's main trading partners, particularly the eurozone and the UK, where public health measures were tightened aggressively. Despite a weakening outlook for Q1/2021, a robust recovery is still expected among trading partner countries as the year progresses and widespread vaccination is achieved. To a large extent, however, economic developments in coming months will depend on how successful efforts to control the pandemic prove to be.

In Iceland, GDP shrank by 6.6% in 2020, less than most analysts had forecast. Private consumption and residential investment proved stronger than expected. The outlook for 2021 has improved, with a poorer outlook for exports offset by more favourable prospects for domestic demand. In the Central Bank's most recent macroeconomic forecast, published in *Monetary Bulletin* 2021/1, GDP growth is projected to measure 2.5% in 2021 and be even stronger in 2022. According to the International Monetary Fund's (IMF) most recent forecast, published in April, the economic recovery is expected to be more rapid than previously assumed. The Fund projects that global GDP growth will measure 6% in 2021 and 4.4% in 2022. The upward revision of the GDP growth forecast is due mainly to the brighter

outlook for advanced economies. Nevertheless, the IMF projects that the pace of the recovery will vary from one country to another because of differences in vaccine roll-out, government support measures, and structural factors such as the importance of tourism.

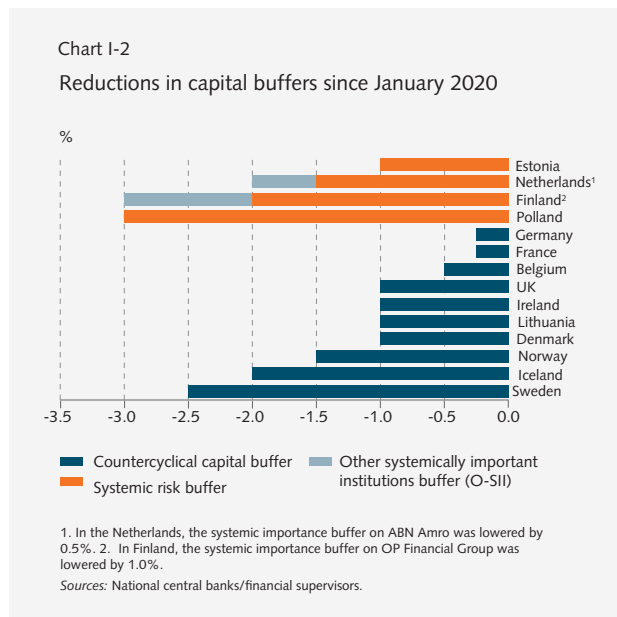
Central banks in many advanced economies have held their key interest rates unchanged in recent months, as many of them have limited room for further rate cuts. Instead, they have resorted to other stimulative measures to support the economy. Most European countries have eased macroprudential requirements in order to boost financial system resilience. Among countries that have introduced countercyclical capital buffers, most have either lowered them or released in full, and those that have not introduced countercyclical buffers have

Chart I-1
COVID-19 vaccination rates and confirmed daily infections¹



1. Share of the population who have received at least one dose of vaccine. Seven-day moving average number of infections worldwide.
Source: Our World in Data.

lowered others, including buffers for systemic risk or systemic importance.

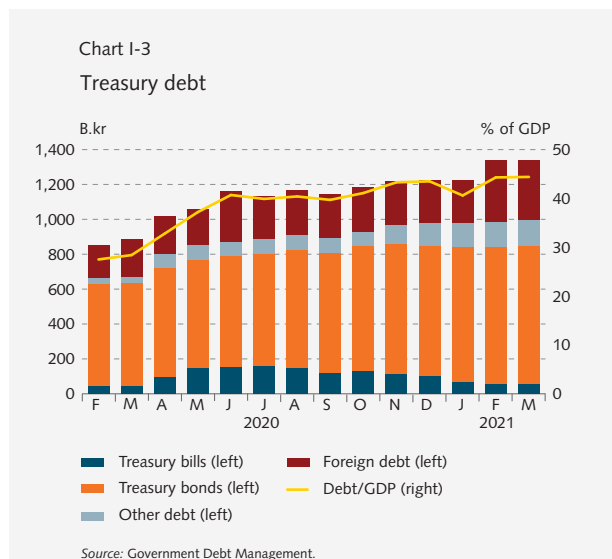


Governmental authorities virtually everywhere have attempted to mitigate the impact of the pandemic by taking broad-based economic action. Massive support measures have caused government spending and debt to mushroom in many countries. This is also true for Iceland: total Treasury debt increased by 339.2 b.kr. in 2020, and Government Debt Management's 2021 issuance calendar assumes that marketable bonds for another 180 b.kr. will be issued this year.

The real exchange rate rose by 2% month-on-month in March and was 1% higher than in March 2020. Terms of trade deteriorated in 2020, owing in part to unfavourable developments in marine product prices and to the rise in oil and commodity prices, which in turn stemmed from increased optimism about COVID-19 vaccines. They are projected to continue worsening this year, in line with the poorer outlook for marine product prices and further rises in oil and other commodity prices.

Optimism in foreign financial markets

Global equity prices have risen in recent months despite the widespread escalation of the pandemic and the tightening of public health measures. Markets are showing signs of increased optimism about vaccine roll-outs and a speedy economic recovery thereafter. Mitigating government action and low interest rates have also supported the markets. Share price volatility has been limited in historical context. Furthermore, demand for risky assets such as junk bonds has increased markedly after a wave of investor flight from those assets early last year. Yields on leading industrialised countries' government bonds have risen

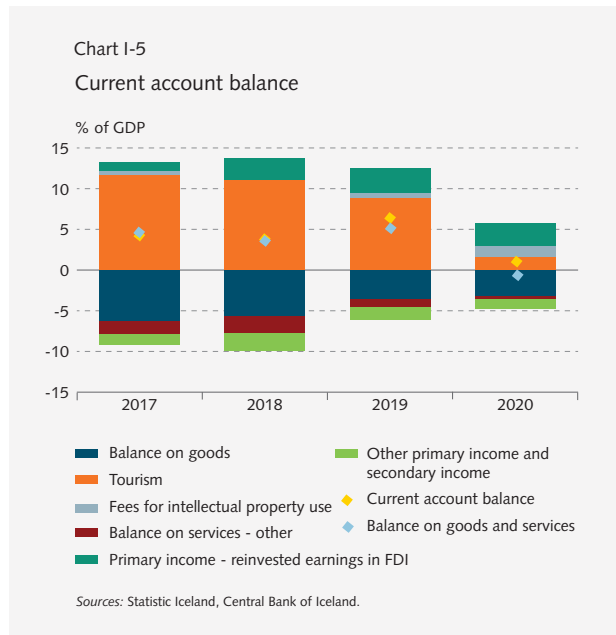


alongside increased optimism about the economic outlook and expectations of higher inflation, particularly in the US and the UK, where yields are now at their highest since March 2020 and close to the pre-pandemic level.

Current account surplus shrinks markedly

In 2020, Iceland's current account surplus measured 1% of GDP, as compared with the 2017-2019 average of 4.8%. Last year's contraction in tourism profoundly affected the current account surplus, as net tourism-generated export revenues fell by over 80% between years, to 1.5% of GDP in 2020. Unlike in previous years, it was offset by the surplus on other services trade, which accounted for 1% of GDP, including increased intellectual property export revenues in the pharmaceuticals industry. Furthermore, the goods account deficit narrowed year-on-year by 0.4% of GDP, mainly because of reduced need for imports of tourism-related inputs.

The balance on combined goods and services trade was negative by 0.6% of GDP in 2020, Iceland's first trade deficit since 2008. The balance on income was positive during the year, however, by 1.6% of GDP. As in previous years, reinvested earnings in foreign direct investment (FDI) were strongly positive – by 2.9% in 2020.

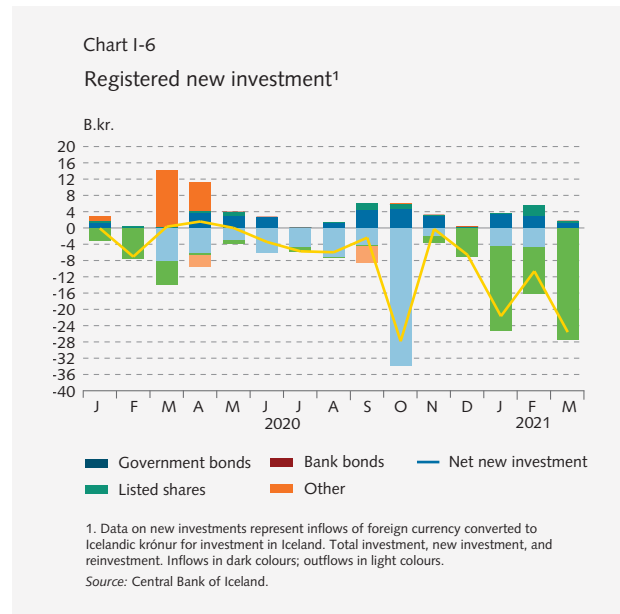


According to the Central Bank's most recent macroeconomic forecast, the current account surplus will average 0.8% of GDP over the coming three years, somewhat below previous forecasts. The outlook for terms of trade has deteriorated, particularly for oil and marine product prices.¹

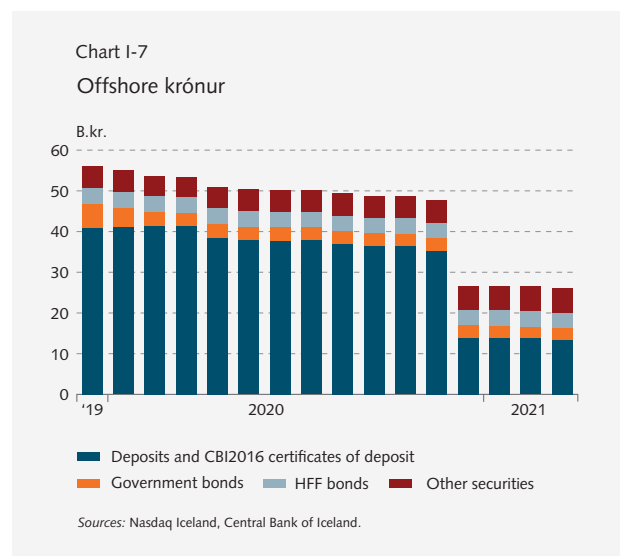
Foreign capital moves abroad

Net new investment was negative by 57 b.kr. in 2020, including sales of foreign-owned Treasury securities in the amount of 51 b.kr. The lion's share of the sales in question came from a single large bond fund, which held half of the foreign-owned Treasury bond stock at the beginning of 2020 but closed out its position during the year. At the end of March 2021, non-residents owned 45 b.kr. in Treasury securities, or around 4% of the total outstanding stock, which is low in both historical context (according to available data from 2005 onwards) and international context. In the first three months of 2021, net new investment was negative by 58 b.kr., with outflows owing primarily to a foreign fund management company's sale of shares in Arion Bank (for further associated with, see Chapter on risk linked to domestic asset markets).

1 See *Monetary Bulletin* 2021/1.



The stock of offshore krónur shrank by half in 2020, mostly towards the end of the year. Until that time, it had been all but unchanged since the remaining capital controls on them were lifted in spring 2019. The offshore balance totalled 26 b.kr. at the end of March 2021, about half of it in Central Bank CBI2016 certificates of deposit.²

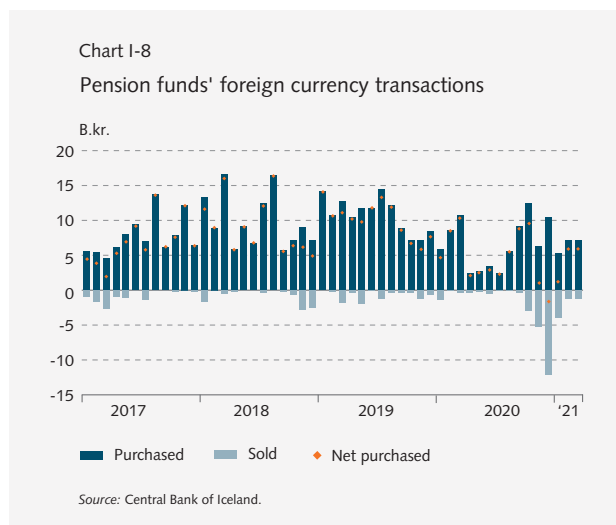


2 Offshore krónur are króna-denominated assets that have been traded among non-residents since the capital controls were imposed in 2008, but at a different price than in the onshore market. They were considered likelier to exit the market upon liberalisation of the capital controls and were therefore deemed a threat to financial stability, owing to Iceland's balance of payments problem. Legislation passed in 2016 defined offshore krónur explicitly and placed special restrictions on their disposal, thereby enabling the authorities to take the next steps in lifting the capital controls. In March 2019, the restrictions on offshore krónur were lifted, and their owners were permitted either to invest the proceeds from them in Iceland or to convert them to foreign currency in the onshore market. The proposed new Foreign Exchange Act will eliminate offshore krónur, if passed.

As the past few months illustrate, capital flows can be volatile, especially when international investors are involved. International settlement and custody provider Clearstream recently reintroduced activities for Icelandic securities after a two-year hiatus.³ This could result in increased capital inflows in the coming term, as could the inclusion of Icelandic equity securities in the MSCI Frontier Market Index this May (for further discussion, see Chapter on risk associated with domestic asset markets). The proposed new Foreign Exchange Act and the repeal of the legislation on offshore krónur could also pave the way for increased movement of capital to and from Iceland.

Pension funds scale down foreign currency purchases after a spike last autumn

The pension funds had suspended their foreign currency purchases from mid-March to mid-September but decided not to extend the hiatus further. They resumed buying foreign currency in September and October, at roughly 10 b.kr. per month, the 2019 average. From November 2020 through March 2021, however, they bought only about 2.5 b.kr. per month, on average.



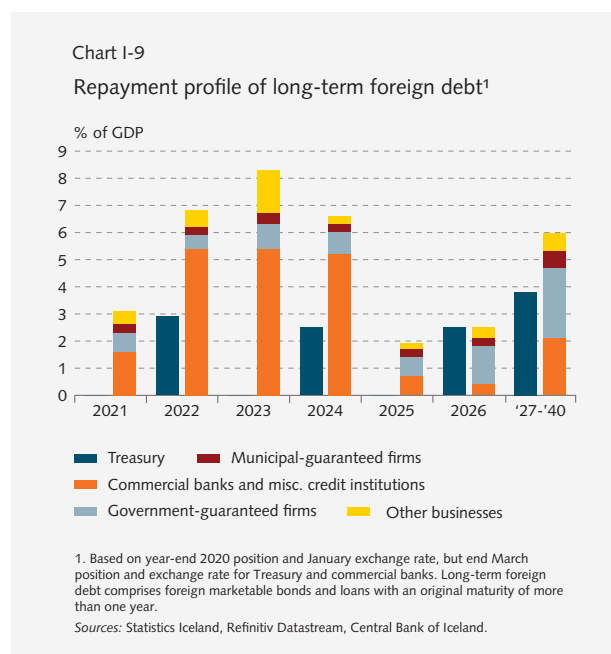
On the whole, the pension funds continue to be buyers of foreign currency, but their situation differs from one fund to another. The past few months' reduction in net purchases is due to currency sales by a few funds, some of whose foreign assets may have been close to their internal benchmarks – at least temporarily – as foreign securities prices have risen steeply in the recent term. The pension funds' foreign assets increased by 29% year-on-year in 2020, to a year-end total of

3 For further information, see the February 2021 announcement on Clearstream's website: <https://www.clearstream.com/clearstream-en/news-room/210209-2437310>.

1,926 b.kr., or 65% of GDP. The ratio of foreign assets to total assets was therefore 34%, an increase of 3.6 percentage points during the year.

Funding terms reminiscent of pre-pandemic times

Interest rates on the commercial banks' foreign bond issues are now similar to those offered to them before the onset of the pandemic. By the same token, the terms offered to the Treasury are at their best ever. In February, the Treasury issued a seven-year bond in the amount of 750 million euros (117 b.kr.) at a yield of 0.117%. The bond is part of the Government's pandemic response measures and increases Treasury debt by the amount of the issue. In recent years, Treasury foreign issuance has focused mainly on refinancing existing debt and paving the way for other domestic issuers' bond market activity.



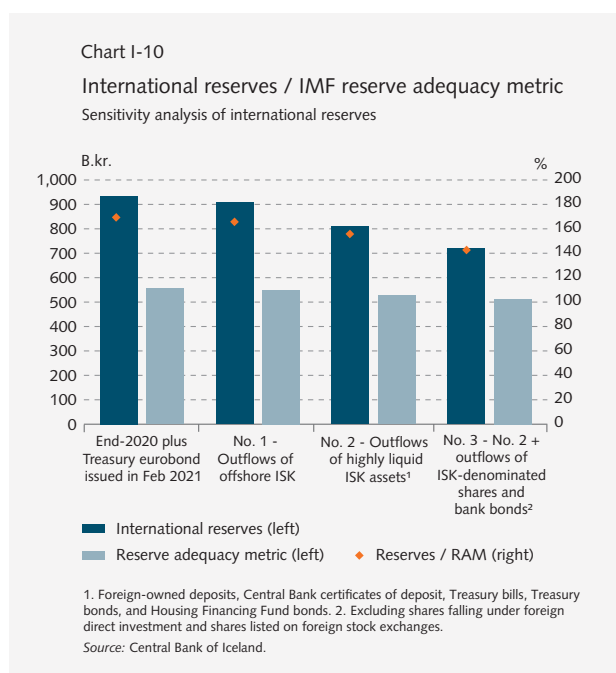
Even though market terms abroad have improved, few Icelandic entities other than the commercial banks, the Treasury, and energy companies have gone to foreign markets for funding. The remaining foreign bond payments for 2021 total 90 b.kr. (3.1% of GDP), a half can be attributed to instalments on the commercial banks' foreign marketable bonds.

A strong external position and ample international reserves

Iceland's net international investment position (NIIP) was positive by 35% of GDP at the end of 2020 and had improved by 14 percentage points between years. Financing activities improved the NIIP by 5.5% of GDP, and price and exchange rate movements made a positive impact as well. Foreign share prices rose by 14% dur-

ing the year, and the króna depreciated by over 10%, whereas domestic share prices rose by over 20%.

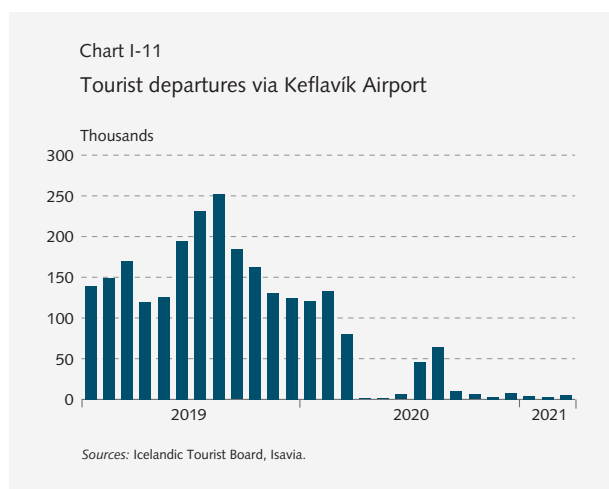
The international reserves remained virtually unchanged in krónur terms in 2020 but declined by 82 b.kr. at constant exchange rates, primarily because of the Central Bank's activity in the interbank foreign exchange market. The ratio of the international reserves to the International Monetary Fund's (IMF) reserve adequacy metric was 152% at the end of 2020, which is also virtually unchanged. Other things being equal, the Treasury's recent eurobond issue increases it to 168%. The reserves totalled 857 b.kr. at the end of March 2021; therefore, they are ample in terms of key reserve adequacy criteria despite some outflows in the recent term. Sensitivity analysis of the reserve adequacy ratio shows that they should easily be able to withstand significant outflows, but the stock of highly liquid króna-denominated assets held by non-residents has shrunk markedly in the past few months.



Near-total collapse in tourism revenues

International travel is still subject to widespread restrictions because of the pandemic, and virtually no tourists have come to Iceland in the past seven months. It is assumed that from 1 May onwards, tourists from certain European countries will be able to come to Iceland without undergoing quarantine, depending on the state of the pandemic in the countries concerned.⁴ The effects of relaxed restrictions will depend on how successfully

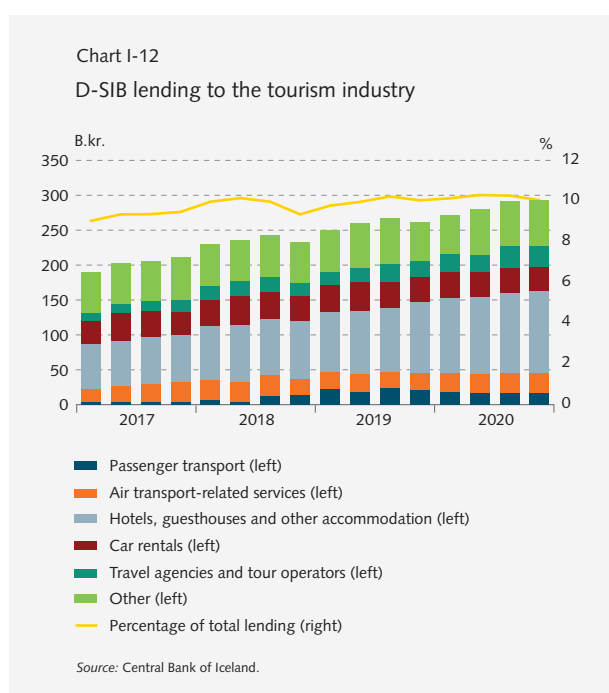
⁴ See <https://www.government.is/news/article/2021/01/15/Covid-19-screening-mandatory-for-arriving-passengers-until-spring/>



the spread of the virus is contained both in Iceland and abroad, and how much of the population has been vaccinated. Travellers from outside the Schengen Area are only admitted if they can produce a vaccination certificate or a certificate showing they have previously had the disease. The International Air Transport Association's (IATA) February forecast of revenue passenger kilometres (RPK) is somewhat more pessimistic than its December 2020 forecast, as air travel has gotten off to a slower start in 2021 than was forecast in December.

Liquidity problems could develop into solvency problems

Tourism companies' debts have increased somewhat since the pandemic struck, and growth in the domestic systemically important banks' (D-SIB) lending to the sector measured just over 11% in 2020. A large share of



the increase is due to deferred payments of interest and instalments during the year, as well as to new support loans and bridge loans.⁵ In addition, the depreciation of the króna during the year increased the outstanding ISK balance of foreign-denominated loans, which account for nearly one-third of loans to tourism companies. At the end of 2020, loans to tourism companies accounted for roughly 10% of the commercial banks' total lending and just over 20% of their corporate lending portfolios. Write-downs of D-SIB loans to the sector increased by nearly 17 b.kr. in 2020, in line with increased risk of default and resulting enforcement measures. Write-downs accounted for a total of 8.7% of the claim value of the loans at the end of 2020, as opposed to 3.4% a year earlier.

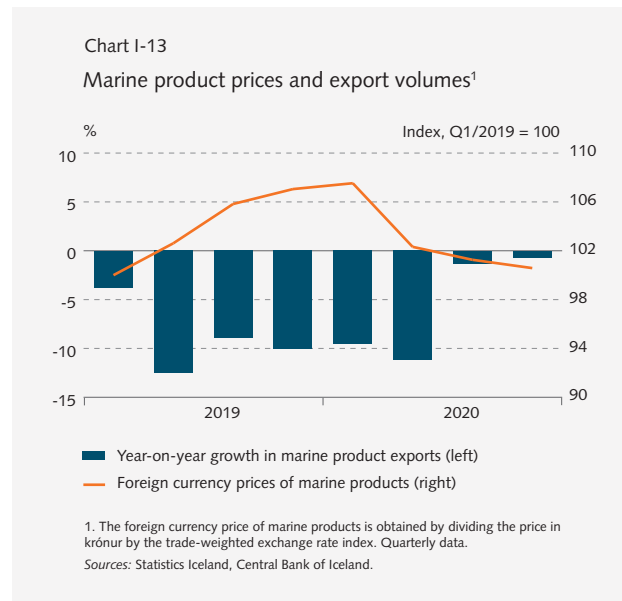
The payment difficulties that tourism companies have been battling in the past year because of the collapse in revenues could develop into a solvency problem for a large share of the sector when the companies begin paying their loans again. As yet, insolvencies in the sector have been limited, and debt restructuring has yet to take place in most cases. As the end of the pandemic approaches, it is vital to begin the process.

A large share of the past year's surge in unemployment is due to reduced job numbers in the tourism industry: by December 2020, the number of employees in typical tourism industry segments had contracted by nearly 48% year-on-year. It appears as though the coming summer will resemble last year in that domestic tourism will be the mainstay of the season's activity, although this is predicated on the relaxation of domestic public health measures. However, some parts of the tourism sector – lodgings in greater Reykjavík, recreation companies, travel agencies, and the like – will only reap the benefits of increased domestic travel to a limited extent. Tourism industry performance depends on when the pandemic is brought under control, borders are reopened, and air travel returns to normalcy.

Market conditions still tight for marine products

The contraction in marine product exports eased markedly in H2/2020. At the end of H1, it had measured 10% year-on-year, but for 2020 as a whole, marine product exports contracted by 5.7% between years. Foreign currency prices of marine products also fell marginally, and the outlook is for further declines this year. Market conditions are difficult in Iceland's main trading partner countries, owing to reduced activity in the hotel and restaurant sector. It can be expected that demersal catches

5 Approximately 62% of loans to tourism operators were granted a general moratorium on payment in 2020. In addition, tourism operators received 5.7 b.kr. in support loans and 2.8 b.kr. in bridge loans during the year.

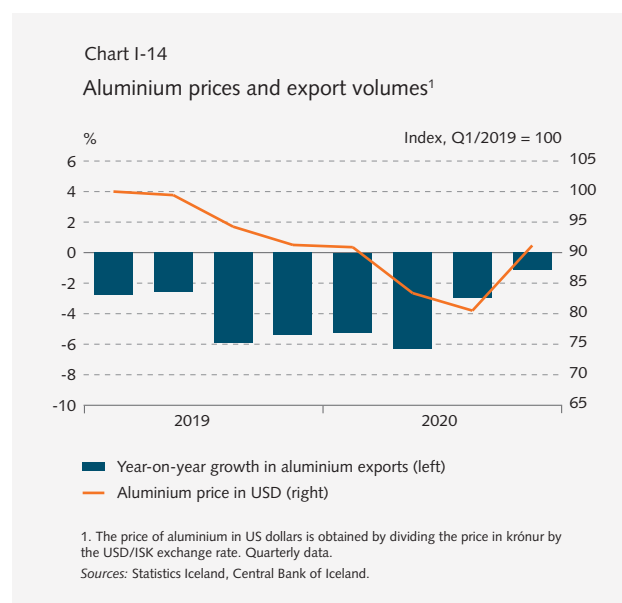


will be smaller in 2021 and the total allowable catch for pelagics unchanged year-on-year, even though a capelin quota has been issued for the first time since 2018.

Loans to fishing companies accounted for 10.6% of the D-SIBs' total loans to customers at the end of February 2020. This ratio has fallen somewhat in recent months, concurrent with a slight appreciation of the króna, as most fishing industry debt is denominated in foreign currencies. Non-performing fishing industry loans increased slightly towards the end of 2020, to 3.7% of loans to the sector in February, as compared with 2.4% at the end of 2019.

Outlook improving for the aluminium industry

The value of aluminium exports rose by 2% year-on-year in 2020, owing to increased volume and higher



prices. Global aluminium prices rose sharply in US dollar terms in H2/2020, after having bottomed out in May at USD 1,462 per tonne. By the end of 2020, prices were 35% above the May 2020 low. They have continued to rise in the first three months of 2021 and were up approximately 44% year-on-year at the end of March.

In mid-February, Landsvirkjun and Rio Tinto Iceland entered into a new energy agreement, mitigating the uncertainty that had persisted for some time about the Straumsvík aluminium smelter.

Risk associated with domestic asset markets

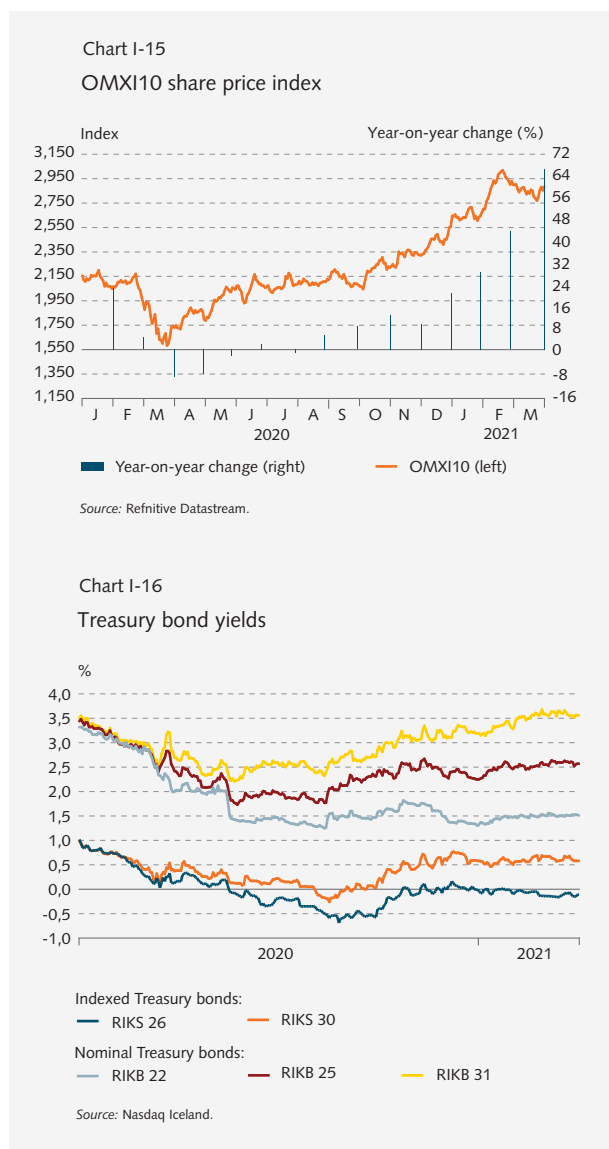
Domestic share prices up sharply

The Icelandic stock market has been lively in recent months, and prices have risen steeply. The Nasdaq Iceland OMXI10 index rose by 13% in the first three months of the year and is up 82% from its March 2020 trough. Developments in share prices have differed across companies and sectors. Shares in insurance companies and financial institutions have appreciated most in 2021 to date, led by Arion Bank, the second most valuable company in the Main Market, whose share price rose 32% in the first three months of the year. Over the same period, Marel shares rose in price by nearly 11%. The rise in the OMXI10 is due largely to Marel, which accounts for 52% of the total market capitalisation of the index, while Marel and Arion combined account for 68%. On the other hand, companies in sectors that are sensitive to the bleaker outlook for tourism – such as Icelandair and real estate firms – have been on the defensive in 2021 to date.

Trading in shares has increased in recent months. In the first three months of the year, stock market turnover totalled 264 b.kr., an increase of 22% year-on-year. Trading volume has increased commensurably. Direct pledging of shares in the Icelandic stock market was just under 12% at the end of March, after declining by 1.6 percentage points since July. The pension funds hold about 39% of listed Icelandic companies in terms of market value. The assets are not pledged. As a result, direct pledging of shares held by owners other than the pension funds totals 20%.⁶

Since the publication of the last issue of *Financial Stability*, real estate firms Reginn and Reitir have increased their share capital via stock offerings held in September

⁶ Direct pledging is the average percentage of pledged shares for all listed companies on both the Main List and the First North market, based on the relative weight of each company. Only direct pledges are considered; therefore, no account is given to general collateral in shares or indirect collateralisation via derivatives contracts. Therefore, pledging in the Icelandic equity market is probably higher.



and October 2020. In recent months, foreign fund management companies have divested their holdings in Arion Bank. Taconic Capital Management, which was the largest single shareholder at the beginning of 2021, with about one-fourth of Arion shares, sold its entire holding in the bank. Since the last *Financial Stability* report, no companies have been delisted from the exchange, but Sildarvinnslan has decided to prepare for listing on the Main Market. In late March, Kvika banki, TM, and Lykill merged under the name Kvika. In addition, the Minister of Finance and Economic Affairs has decided to begin the process of selling part of the holding in Íslandsbanki, which is wholly Government-owned. The aim is to hold an initial public offering and list all shares in the bank on the securities exchange thereafter.⁷

⁷ For further information, see the press release from the Ministry of Finance and Economic Affairs: <https://www.stjornarradid.is/default.aspx?pageid=e5cf150d-33a7-11e6-80c7-005056bc217f&newsid=40957ce1-6250-11eb-812f-005056bc8c60>.

Index provider Morgan Stanley Capital International (MSCI) announced in February 2021 that the Icelandic equity market will be included in the company's Frontier Markets indices from May onwards. Icelandic companies' share in the indices will be published when MSCI's May 2021 semi-annual index review approaches, but the previous review suggested that Marel and Arion would be included in the Frontier Markets Index, comprising about 5.24% of the index. This would make Iceland the fourth-largest country represented in the index.⁸ MSCI indices attract significant capital, and a number of international funds invest in accordance with them or use them as benchmarks; therefore, it can be assumed that inclusion in the MSCI equity indices will make listed Icelandic companies more visible to foreign investors.⁹

Long-term bond yields rise

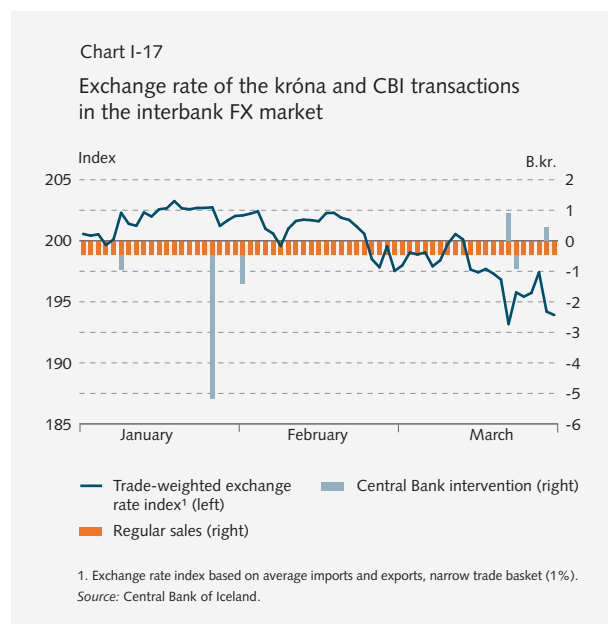
Nominal Treasury bond yields rose in the first three months of the year, particularly on longer maturities. Yields on indexed Treasury bonds have fallen on short- and medium-term maturities, whereas at the end of March, long-term yields were about the same as at the beginning of the year. The breakeven inflation rate has therefore risen over the period. The rise in long-term bond yields and the decline in short-term yields have caused the slope of the yield curve to grow steeper, in a possible sign of investor confidence in a economic rebound. The Central Bank lowered its key interest rate by 0.25 percentage points in November 2020, to the current 0.75%. Total bond market turnover in the past six months totalled 820 b.kr., an increase of about 16% relative to the six months beforehand.

Central Bank scales down daily foreign currency sales

At the end of March, the Central Bank announced its intention to reduce the scope and frequency of its regular foreign currency sales. In April, the Bank will sell 3 million euros to market makers three days each week instead of every day. The Central Bank launched its regular currency sales programme in mid-September with the aim of deepening the market and improving price formation. The Bank announces its currency sales plans for the coming month at each month-end, with amounts determined based on market conditions at the time in question.

⁸ The indices in question are the MSCI Frontier Markets 100 Index and the MSCI Frontier Markets 15% Country Capped Index.

⁹ For further information on Iceland's inclusion in MSCI's Frontier Markets indices, see: <https://frontiermarketnews.org/2021/02/10/iceland-becomes-eligible-for-inclusion-in-the-msci-frontier-markets-100-index/>



The market has been stable in 2021 to date, following an episode of considerable pressure after foreign investors exited in H2/2020. In Q1/2021, the króna appreciated in nominal terms by 3%, and exchange rate volatility was limited. Over that period, the Central Bank sold currency for 35.7 b.kr. through its regular sales programme and its market intervention. The Bank's net sales since the beginning of September 2020 total 134.7 b.kr., including 66 b.kr. under the regular sales programme. At the end of March, the króna had appreciated by 7% since the end of September, when the last Financial Stability report was published, and 4% year-on-year. Further discussion of the foreign exchange market and foreign currency flows can be found in Box 1.

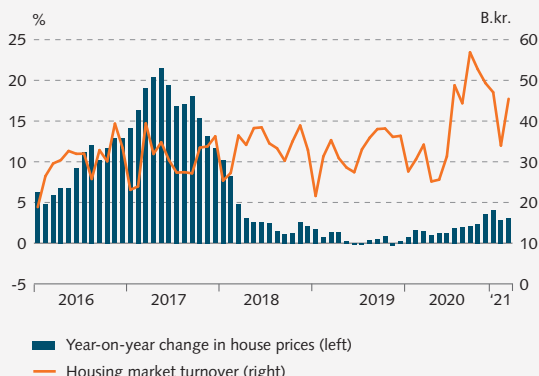
Modest price hikes despite strong turnover

The residential property market has been lively since mid-2020 despite the economic contraction, with turnover in the capital area up 42% year-on-year in H2.¹⁰ The number of purchase contracts rose by 32% over the same period. Turnover peaked in Q4 and has contracted somewhat since then. In January and February, however, it was nearly 50% higher in real terms than in the same period of 2020.

Central Bank rate cuts resulted in a steep decline in mortgage lending rates, which stimulated the market last summer. Weighted non-indexed rates on new residential mortgages have fallen by over 1.5 percentage

¹⁰ Turnover data are now based on new methodology used by Registers Iceland, with purchase agreements classified by date of issuance rather than date of registration, as was done previously. This gives a more accurate view of month-to-month developments in the real estate market, as registration of purchase agreements can be subject to delays.

Chart I-18
Real house prices and housing market turnover in greater Reykjavík¹



1. Housing market turnover, at constant December 2020 prices.
Sources: Statistics Iceland, Registers Iceland, Central Bank of Iceland.

points in the past year. Indexed rates have fallen as well, by about 1.1 percentage points over the same period. As a result, it appears that households have used a larger share of their savings to enter the market at a time when consumption options are limited by public health measures. Young people have been buying homes in increasing numbers, and first-time buyers accounted for a record of over 30% of purchase contracts in 2020. New construction accounted for nearly 19% of finalised contracts nationwide in 2020, up from 13.5% in 2019. The share of contracts due to new construction is at its highest since 2008.

Despite the surge in turnover, house prices have risen relatively modestly thus far. The rise in real house

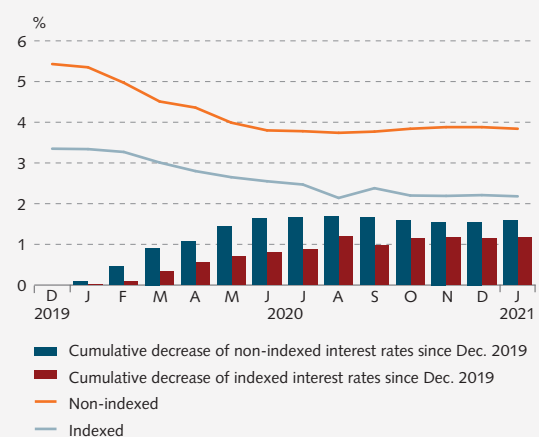
prices has eased somewhat in recent months, to 3.1% year-on-year as of end-February. Single-family home prices were up 2.2% in real terms, whereas condominium prices were up 3%. In the past year, house prices in regional Iceland have risen more or less in line with prices in the capital area. The ratio of house prices to the wage index was down 2.9% year-on-year in February.

Rent prices subsided concurrent with the rise in house prices. In February, rent had fallen by 7% year-on-year in real terms, yet the number of registered rental agreements rose in 2020. The decline in rent is due in part to the increased supply of flats previously used as short-term tourist rentals, and furthermore, lower interest rates have enabled renters to buy homes and exit the rental market.

Decline in new residential construction

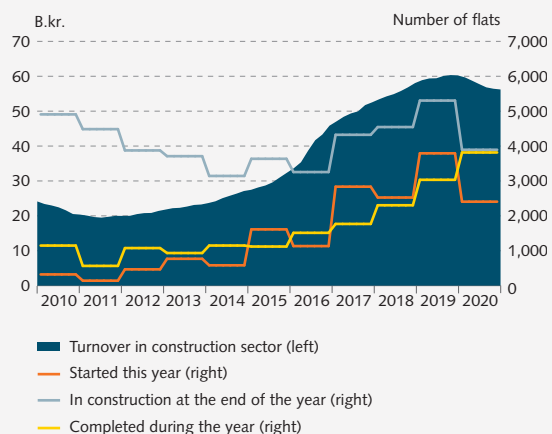
A record of over 3,800 newly constructed flats were put on the market in 2020, according to figures from Statistics Iceland. By the end of the year, however, the number of flats under construction was down by a fourth relative to end-2019, and the number of housing starts also fell markedly during the year. The tally carried out by the Federation of Icelandic Industries in March also shows a steep drop in the number of homes under construction in greater Reykjavík. Nevertheless, even though the number of new projects has dipped due to uncertainty about the economic impact of the pandemic, a large number of construction permits for new residential property were granted in 2020, according to the annual report from the Reykjavík building officer. Measures put in place by the Central Bank and the Government,

Chart I-19
Average weighted interest rates of new mortgages to consumers¹



1. Data includes mortgages from O-SII banks and the Housing and Construction Authority. As of August 2020 the data also includes new mortgages from the largest pension funds.
Source: Central Bank of Iceland.

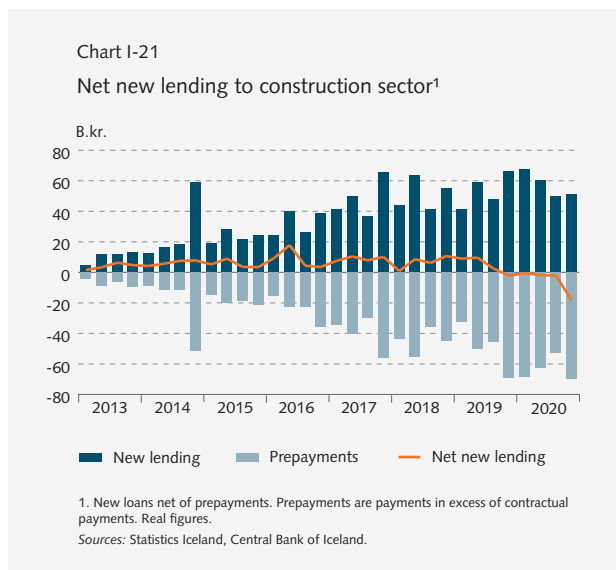
Chart I-20
Turnover in the construction sector and RRE construction¹



1. Turnover in the construction sector is shown as a 12 month moving average.
Sources: Registers Iceland, Central Bank of Iceland.

including interest rate cuts and reimbursement of value-added tax on the labour component of home maintenance, have supported the construction sector. The number of people employed in the construction industry has remained relatively stable in the recent term. In addition, the number of frozen loans to the sector has been negligible, as is discussed further in the section entitled *Risk associated with households' and businesses' position*. This indicates that the construction sector has not been hit hard by the pandemic and is prepared to undertake new projects when the uncertainty subsides.

Construction sector debt to the D-SIBs continued to contract in Q4/2020 and the early part of 2021. At the end of January, it totalled 157 b.kr., about 15% lower in real terms than in the same month of 2020. The contraction in construction sector debt is due in part to the sale of new properties that were completed last year. Construction companies have had relatively easy access to credit, with new lending to the sector totalling 226 b.kr. in 2020, up from 206 b.kr. in 2019.

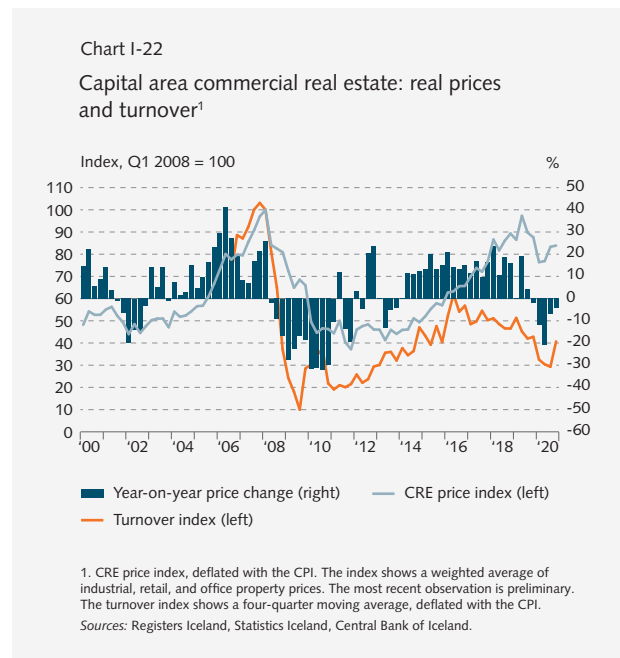


Strong turnover in the commercial property market

The real commercial real estate (CRE) price index fell by 4.2% year-on-year in Q4/2020. It rose somewhat in Q3, after a steep drop at the beginning of the year, but was broadly unchanged between Q3 and Q4.¹¹ The index therefore fluctuated considerably during the year, and it is now nearly 10% above its estimated long-term trend. Turnover in registered CRE transactions in greater Reykjavík rose considerably in Q4, after a steep decline in H1. For the year as a whole, turnover was about 5% lower in real terms than in 2019. Price formation and

11 The most recent index value is preliminary and could change if purchase contracts are registered late.

turnover in the market were therefore disrupted much less in 2020 than after the 2008 financial crisis.



Loan quality deteriorated in 2020

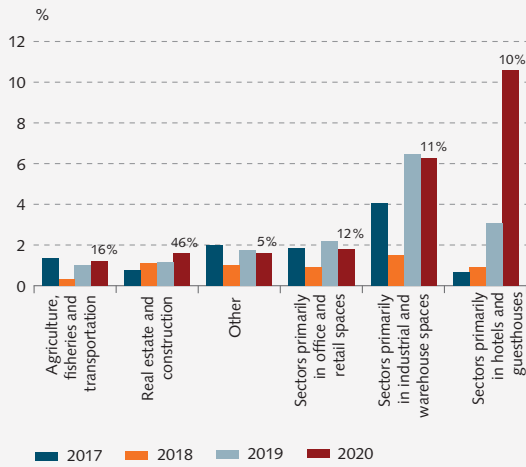
The commercial banks' CRE-backed mortgage lending totalled just over 757 b.kr. at the end of 2020, about 26% of total loans to customers. On the whole, lending contracted by 3% in real terms in 2020, with the decline spread across all sectors apart from hotel and guesthouse operations, where the rapid growth of recent years continued and measured nearly 17% in real terms.¹²

Facility-level non-performing loan (NPL) ratios rose from 2.2% to 3.3% during the year. Arrears increased most – from 3.1% to 10.6% – among hotel and guesthouse operators. By the year-end, arrears were second-highest (6.3%) on loans backed primarily by industrial and storage property. NPL ratios remained low in the construction and real estate sectors. The same is true of sectors that mainly use retail and office space.

The distribution of loan-to-value (LTV) ratios on CRE-backed loans generally deteriorated year-on-year, and unhedged or poorly hedged risk increased somewhat. The combined amount of loans with LTVs over 90% nearly doubled in real terms in 2020. Proportionally, the increase was greatest among loans to hotel and guesthouse operators, where outstanding loans with LTVs over 90% quadrupled in real terms. Furthermore,

12 The figure is based on the total, excluding debtors in sectors where loans backed by collateral other than CRE weigh heavier; i.e., fishing, agriculture, and transportation and transit. These sectors are not included in this section unless otherwise stated. The total including these sectors comes to 906 b.kr., or 31% of the credit stock.

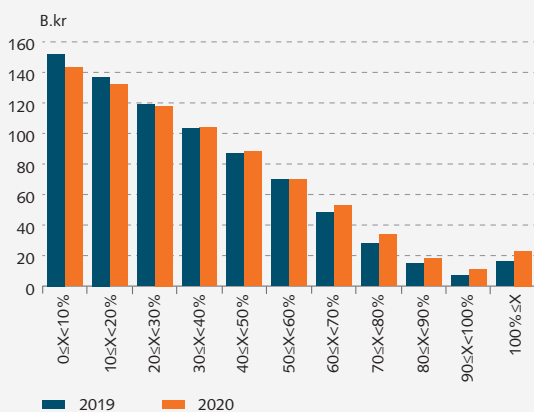
Chart I-23
Commercial bank CRE-mortgages' NPL-ratios by sector¹



1. Year-end figures. Non-performing loan ratios build on loans reported in 90 day arrears, according to the facility-based approach. Debtors are categorized as primarily utilizing certain CRE-types according to the Central Bank of Iceland's estimate, based on their NACE-categorization. Figures on top of year-2020 columns signify CRE-mortgage loans to each sectoral group as a ratio of total commercial bank CRE-mortgages.

Sources: Central Bank of Iceland.

Chart I-24
LTV-ratio distribution on CRE-backed commercial bank credit¹



1. Each outstanding loan balance is split into LTV-buckets, and the balances in each bucket are then summed. Constant December 2020 prices, deflated with the CPI.

Sources: Statistics Iceland, Central Bank of Iceland.

the weight of commercial property as collateral is greatest among borrowers in this sector, with hotels accounting for almost 90% of all collateral provided. The risk associated with CRE rose most in this sector in 2020, although the amounts in question are not very high relative to the banks' capital base.

As a result, it would be imprudent to paint too bleak a picture of the trend. Although this is a sign of deteriorating loan quality, it also reflects the fact that at the beginning of the pandemic, the banking system was well prepared to support a distressed sector such as the hotel industry by offering moratoria and credit facilities,

as cyclical risk had been largely contained during the preceding upswing. Furthermore, some of the increase in hotel sector debt is due to State-guaranteed support loans and bridge loans.

The debtors that could have the greatest impact on financial stability due to connections with the CRE market are real estate firms and construction companies. Just under half of the commercial banks' CRE-backed loans are to companies in these sectors. NPL ratios in the real estate and construction sectors were still low at the end of 2020, and developments in the distribution of LTV ratios were the most favourable in those sectors during the year; for example, the share of CRE-backed loans with an LTV of over 90% rose by only 3% in real terms in 2020.

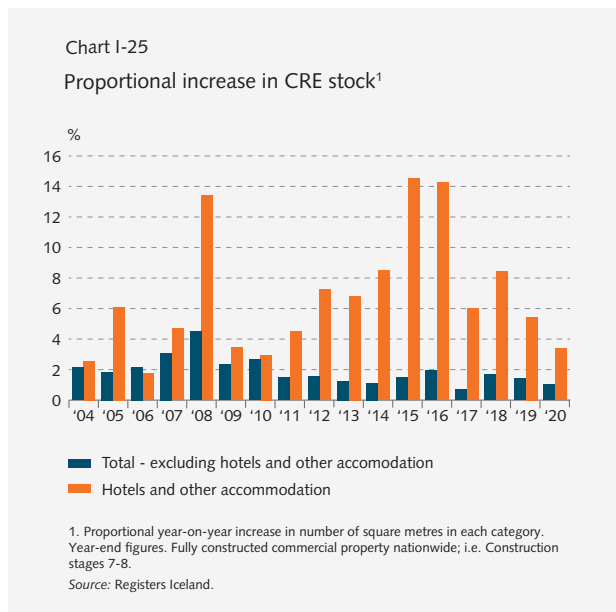
Strong core operations, but weaker cash flows

The large CRE firms – Eik, Reginn, and Reitir – have been adversely affected by the pandemic through their tenants. Hotels, restaurants, and retail stores in central Reykjavík have suffered the largest drop in revenues. The impact can be seen in increased impairment of accounts payable and reduced cash flows as a result of deferred and cancelled rent payments.¹³ In 2020, the three companies' combined cash from operations contracted by nearly 41% year-on-year in real terms. The companies' core operations were sound in H2, however, and the combined yield on their investment assets measured 5.6% during the period. A large positive valuation adjustment affected the companies' income in Q4, but over the course of 2020 as a whole, the three companies wrote asset values up by 4.3 b.kr., about half as much as in 2019. This reflected the upward impact of new leases, price level increases, and lower interest expense, offset by the downward impact of lower occupancy ratios, lower hotel asset values, and a higher required return on equity.

Financing costs are a large expense item in real estate firms' operations. The companies took advantage of lower interest rates in H2 and refinanced existing debt at more favourable rates. Since Q4/2020, the three large firms have issued marketable bonds in the amount of just over 40 b.kr. The share of non-indexed debt has also increased somewhat. The companies' balance sheets are still strong, and their equity and leverage ratios were broadly unchanged year-on-year at the end of 2020.

¹³ The judgment handed down by the District Court of Reykjanas on 16 March in Fosshótel Reykjavík vs. Íslandsbanki and Íþaka Real Estate gives rise to questions about whether hotels' leases with real estate firms will increasingly be set aside for reasons of fairness in connection with COVID-19, which could affect the real estate firms' operating results.

They will continue to face the adverse effects of the pandemic in the coming term. Therefore, it is important that they safeguard their resilience. The support they have given their tenants during the pandemic has fostered greater stability in the market. If the effects of the pandemic prove longer-lasting than is currently expected, a large portion of deferred rent payments could be lost, thereby putting the companies' financial strength under increased pressure.



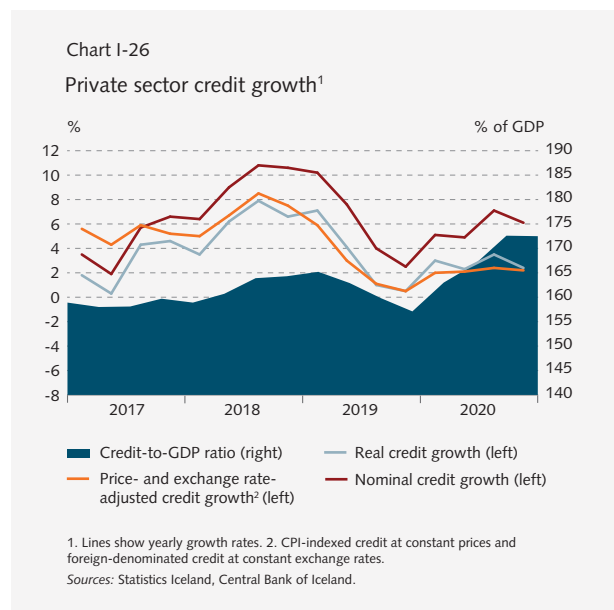
Hotels still under construction

The supply of guest accommodation has grown rapidly in the past decade, and its share in the total CRE stock has risen from 2.7% in 2010 to 5.1% by the end of 2020. Growth has eased somewhat in the recent past, but even so, over 40,000 square metres of hotel and guesthouse space were under construction in greater Reykjavík in March. This is equivalent to 13% of the existing stock of lodging space. Excluding guest lodgings, growth in the CRE stock was relatively modest in 2020, and there are few indications that the supply of other types of CRE has overtaken demand.

Risk associated with private sector debt

Private sector debt rising gradually

Concurrent with falling interest rates, growth in private sector debt picked up in 2020, measuring 2.4% in real terms, up from 0.5% in 2019. Household debt rose by 4.8% in real terms in 2020, versus 4.3% a year earlier. Corporate debt increased by 0.4% in real terms in 2020, after contracting by 2.7% in 2019. The change is due



primarily to an increase in foreign debt and the depreciation of the króna.¹⁴ Firms' debt to domestic financial institutions continued to decline in 2020. Private sector debt-to-GDP ratio measured 172.5% at the end of 2020, an increase of 15.5 percentage points year-on-year – the steepest rise by this measure since the last financial crisis. The rise in the debt-to-GDP ratio is due both to growth in debt and to the marked contraction in GDP during the year. If the economy rebounds strongly after the pandemic is over, the rise in the ratio will probably revert to some extent.

Households turn increasingly to non-indexed mortgages

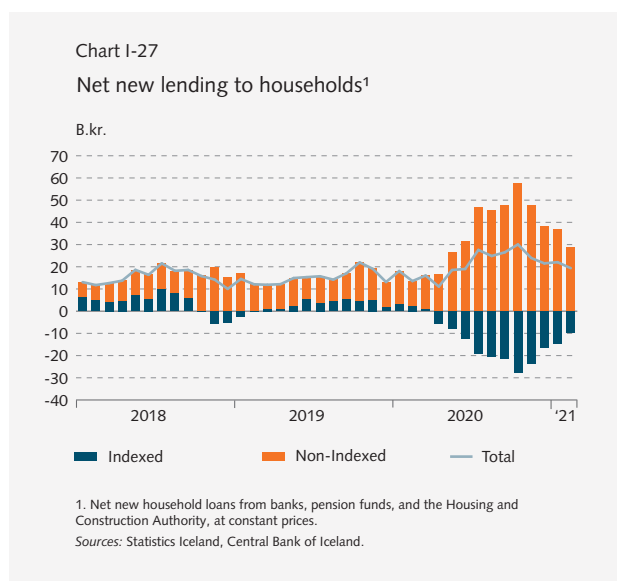
In January, the twelve-month rise in real household debt measured 3.9%, after gaining steam in H2/2020 and then easing once again towards the year-end.¹⁵ Growth in debt is still considered relatively modest and is in line with the trend of the past few years despite the radically changed economic situation. Central Bank interest rate cuts have been transmitted effectively to rates on loans to individuals, and households have taken advantage of historically low rates to buy property and refinance less favourable debt. The increase in residential mortgage lending appears to have peaked in October 2020, when net new loans totalled just over 29 b.kr.¹⁶ Low interest rates have made non-indexed loans

14 Foreign debt includes debt to foreign financial institutions and marketable bonds issued abroad.

15 The January figure is based in part on estimates, as data from the Housing and Construction Authority were not available when this report was compiled.

16 Net new loans are defined as new loans less loan retirement and loan prepayments in excess of contractual requirements.

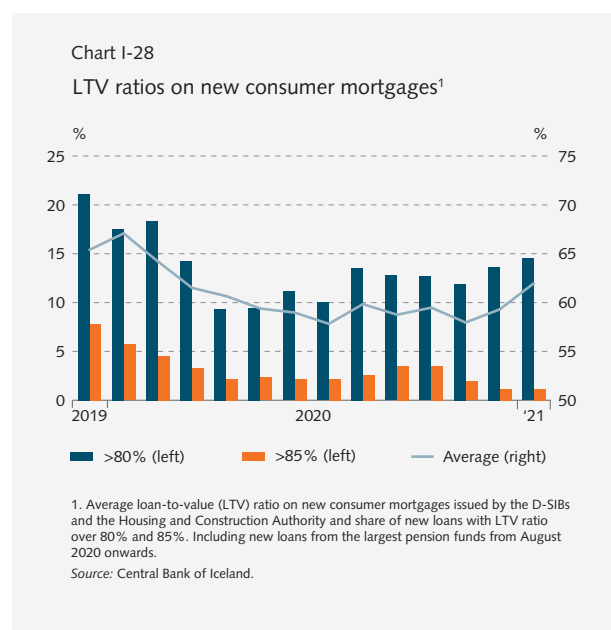
more attractive to households than before, and in recent months about ¾ of new mortgages have been non-indexed. Net new indexed mortgage lending was negative by 148 b.kr. in 2020, and many households have refinanced indexed debt with new non-indexed loans. At the end of January, non-indexed loans accounted for 42.4% of total household debt, up from 29.8% a year earlier. In H1/2020, only a small percentage of new non-indexed loans bore fixed interest, but as H2 progressed, the share of fixed-rate loans began to rise. It peaked at nearly 45% in November but has fallen considerably since then.¹⁷



The commercial banks have dominated the mortgage lending market in the recent term. In most instances, they have offered more favourable terms than other lenders and their lending requirements have generally been less stringent. The pension funds have not lowered mortgage interest rates as much as the banks have. As a result, households have increasingly moved their business to the banks. This is a major shift from the trend of the past few years, when the banks lost market share to the pension funds. In H2/2020, the pension funds' loans to fund members contracted by just over 37 b.kr., after having peaked in June. Over the same period, there was also a discernible increase in retirement of mortgage loans from the ÍL Fund.

Concurrent with the increase in mortgage loans, there has been a contraction in other types of household debt, which fell by nearly 4% in real terms in 2020. This includes overdraft loans. It is likely that many households have taken advantage of refinancing opportunities

to pay off other, less favourable debt. Households also stepped up their saving in 2020 and doubtless used some of their accumulated funds to retire debt.



Loan quality of new mortgages

The loan quality of new consumer mortgages has been relatively stable in the recent term, after improving markedly during the wave of refinancing in spring 2020. The share of new consumer mortgages with a loan-to-value (LTV) ratio of more than 80% has lain in the 12-15% range since August. Over the same period, the average LTV ratio has been around 60%. The average debt service to income (DSTI) ratio has fluctuated slightly more, rising somewhat last October and then declining again in November and December.¹⁸ At the same time, there was an increase in the number of consumers who took out mortgages with a DSTI ratio of more than 30%. The volatility in October and November was probably due to the strong turnover in the real estate market and the record number of first-time buyers in the market during the autumn. Since April 2020, lending terms have reflected the interaction between market turnover and large-scale refinancing of existing debt.

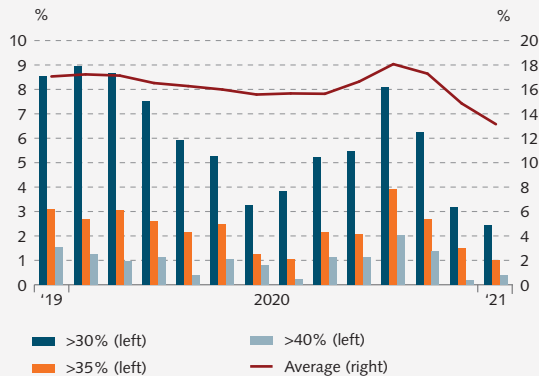
Limited growth in corporate debt

In 2020, growth in corporate debt stemmed largely from increased foreign debt and the depreciation of the króna. This applies in particular to the depreciation of the króna versus the euro, as over 80% of foreign currency

¹⁷ Excluding new pension fund loans, as information on their interest rate structure was not available.

¹⁸ The DSTI ratio is defined as the ratio of monthly mortgage debt service to the borrower's monthly disposable income.

Chart I-29
DSTI ratio on new consumer mortgages¹

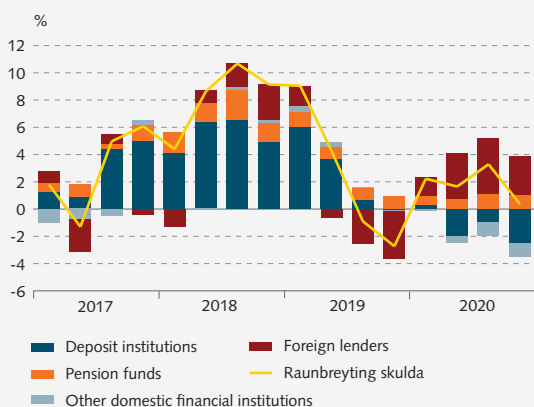


1. Average debt service to income ratio (DSTI) on new consumer mortgages issued by the D-SIBs and the Housing and Construction Authority and share of new loans with DSTI over 30%, 35%, and 40%. Including new loans from the largest pension funds from August 2020 onwards.

Source: Central Bank of Iceland.

denominated corporate debt is denominated in euros. In price- and exchange rate-adjusted terms, corporate debt declined by 1% in 2020. The domestic firms that have direct access to foreign credit markets are primarily large companies with substantial foreign-denominated revenues and companies owned by the Government. Corporate debt to domestic financial institutions has contracted overall in the recent term, particularly debt to deposit institutions. The pension funds' contribution to credit growth has remained positive, however, as the funds are large investors in corporate bonds. It should be borne in mind that issuers of such bonds are a relatively homogeneous group consisting mainly of larger real estate firms and energy companies.

Chart I-30
Corporate debt, by lender¹



1. Annual real change. Debt to domestic and foreign financial institutions and issued marketable bonds.

Sources: Statistics Iceland, Central Bank of Iceland.

There was a marked contraction in new deposit institution lending to companies in 2020, with net new lending totalling only 8 b.kr. for the year as a whole, down from 109 b.kr. in 2019 and 224 b.kr. in 2018.¹⁹ The year-on-year contraction would probably have been even more pronounced were it not for Government and Central Bank measures incentivising lending. In most sectors, there was a marked year-on-year contraction in new loans, and net new lending was close to zero. New loans to construction companies rose by about 20 b.kr. between years, however. Nevertheless, net new lending was negative by 24 b.kr., owing to large-scale debt retirement during the period. Increased debt retirement may well be due to stronger sales of new buildings in 2020. In the first two months of 2021, net new lending to the construction industry remained negative. On the whole, net new corporate lending has been on the rise in recent months, perhaps indicating reduced uncertainty.

Average interest rates on the D-SIBs' new corporate loans declined in 2020, but reductions in the Central Bank's key rate have been transmitted less effectively to corporate lending rates than to rates on household loans. Increased uncertainty and greater risk attached to corporate loans are offsetting factors. If progress is made in fighting the pandemic in the coming months – including increased inoculation rates – this uncertainty could subside, thereby creating scope for lenders to offer lower rates on corporate loans.

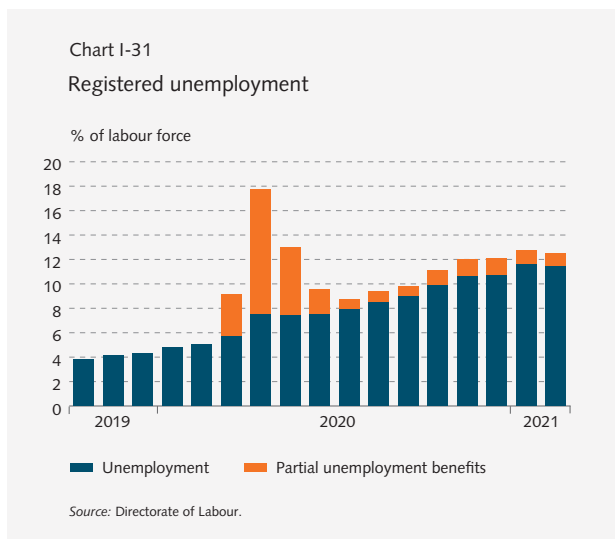
Risk associated with households' and businesses' position

Households better positioned than might have been expected

In many respects, households appear better positioned than might have been expected at the onset of the pandemic, as purchasing power has been preserved and households have benefited from various Government support measures. That said, unemployment has soared, reaching 11.5% in February, according to data from the Directorate of Labour, as compared with 5% a year earlier. It has now overtaken the peak during the last financial crisis. Unemployment has risen most in tourism and other sectors whose activities have been restricted by public health measures, although job numbers have fallen in most segments of the economy.

Household arrears have not increased, however, despite the rise in unemployment. The number of individuals on the default register declined by over 8%

¹⁹ At constant end-2020 prices.



in 2020. The non-performing loan (NPL) ratio on the D-SIBs' loans to individuals was 1.2% at the end of February 2021, after falling by nearly a percentage point since year-end 2019. Although the decline in the NPL ratio is due in part to an increase in the stock of D-SIB loans to individuals during the year, the total amount in arrears fell over the same period.²⁰ On the other hand, there has been an increase in frozen household loans over the past twelve months. At the end of February 2.2% of loans to individuals were frozen, an increase of 1.2 percentage points between years. But this is not a large increase in view of the significant number of individuals who applied for and received special moratoria on their loans last year.²¹ The share of D-SIB loans to individuals that were protected by moratoria peaked at 9% in May 2020. As yet, only a small percentage of those who applied for moratoria appear to have needed continued shelter after the moratoria ended. To some degree, this is a sign that the shock has not affected households to the extent feared at the beginning of the pandemic.

Various factors have contributed to households' current position. At the onset of the pandemic, households were highly resilient and well able to withstand shocks. They had paid down debt in the years beforehand and strengthened their balance sheets. Government support measures have been broad-based and, among other things, have counteracted rising unemployment and offset the income losses suffered by those who have lost their jobs. Interest rate cuts have been transmitted effectively to households, lowering debt service and

20 The facility-level non-performing loan ratio is calculated according to European Banking Authority (EBA) standards. Under this method, a customer's loan is classified as non-performing if it is in arrears by 90 days or more, or if the borrower is deemed unlikely to pay their obligations when due.

21 For further discussion of loans in pandemic-related moratorium, see Chapter II on the D-SIBs' returns and capital position.

increasing the amount of money available to them for other purposes. Moreover, household savings increased markedly in 2020, and wages have generally been on the rise. In February 2021, the general wage index had risen by 10.6% year-on-year and the real wage index by 6.2%. Private consumption contracted by 3.3% in 2020, somewhat less than had been projected at the beginning of the pandemic, but eased upwards in H2. The shock from the pandemic has affected sectors and societal groups to differing degrees. Immigrants' jobs have declined in number much more than jobs held by people of Icelandic background.²² It is probable that the former group are less in debt to Icelandic financial institutions than the latter, which could to some extent explain the proportionally small increase in arrears given the high unemployment rate.



According to the Central Bank's most recent baseline forecast, unemployment will begin to taper off around mid-2021.²³ If the episode of high employment drags on, households' difficulties will increase. As household resilience deteriorates, arrears can be expected to rise, particularly after the Government begins to unwind its support measures. The magnitude of the problem will be determined by the length of the unemployment episode and the pace at which pandemic-related job losses are recouped.

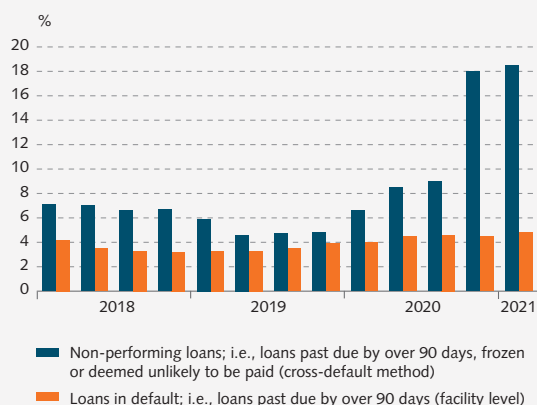
Firms' prospects are shrouded in uncertainty

The effects of the pandemic on businesses have varied widely from sector to sector. Firms in tourism and related activities have lost most of their revenues, and many

22 For further discussion, see *Monetary Bulletin* 2021/1.

23 See *Monetary Bulletin* 2021/1.

Chart I-33
D-SIB default ratios on corporate loans¹



1. Parent companies, book value. Non-performing loans according to the cross-default method, according to which all of a borrower's loans are considered non-performing if one loan is frozen or in arrears by 90 days or more, or if the borrower is deemed unlikely to pay their obligations when due. Q1 2021 figures are for end of February. Source: Central Bank of Iceland.

have suffered severe revenue losses because of public health-related restrictions on their activities. At the same time, other sectors have been less affected, and some have even flourished. The actual position of the companies that have suffered most is highly uncertain.

Government support measures have been relatively extensive. As of end-March, subsidy payments for business closures and revenue losses totalled 11.5 b.kr., as closure subsidies were reinstated in response to the wave of the pandemic, which started in September. Until 30 June 2021, firms may apply for so-called resilience

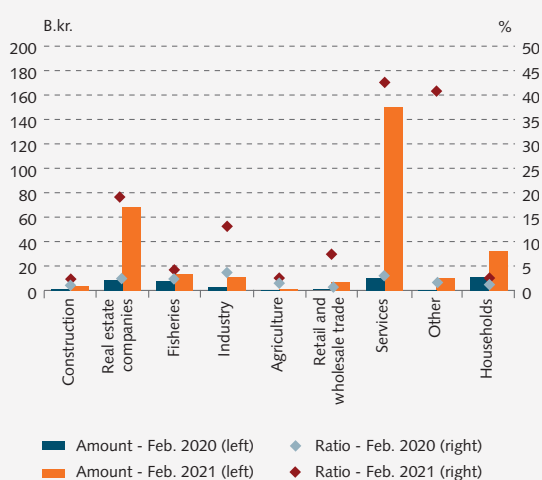
subsidies, which are conceived as a follow-on to revenue loss subsidies. The estimated cost to the Treasury of the revenue loss and resilience subsidies is about 19.8 b.kr. Subsidies paid in March came to just over 1 b.kr. Other measures include deferral of tax payments (which came to a cumulative total of 12 b.kr. in March), wage payments during the termination notice period (12.1 b.kr. as of March), and reimbursement of value-added tax on the labour component of home maintenance, vehicle repair, etc. (6.1 b.kr. as of March), to mention a few. A large share of the measures announced to date are still available to companies and will remain in place at least until mid-2021.

Although Central Bank rate cuts have not been transmitted in full to corporate lending terms, the transmission to household lending terms has supported companies indirectly. As is mentioned above, lower interest rates on loans to individuals boost households' consumption capacity, thereby supporting demand for goods and services. In addition, lower mortgage rates have helped maintain demand for housing, supporting the construction industry.

Government measures have cushioned effectively against the shock and have helped companies to remain afloat during the pandemic. Corporate arrears have only increased marginally as yet. In February 2021, the NPL ratio on the D-SIBs' corporate loans was 4.4% and had increased by 0.6 percentage points since the end of 2019. Arrears are discernibly highest in the tourism industry, where the NPL ratio was nearly 12%. In 2020, a large number of firms availed themselves of the moratoria offered by the banks, and the share of D-SIB loans in moratorium peaked at 18% in July. It is clear that a large share of the companies that received moratoria needed continued protection after the moratoria expired, as the share of D-SIB loans that are frozen has risen steeply since then. At the end of February, nearly 17% of loans were frozen, an increase of 13.3 percentage points from the same month in 2020. The increase in frozen loans is greatest by far in the services sector, which largely overlaps with tourism, where the share of frozen loans had risen to 42% by end-February. Furthermore, the share of frozen loans to real estate firms has risen markedly, to nearly 19%.

The high percentage of frozen loans illustrates the substantial uncertainty about the position of companies in certain sectors. As the pandemic recedes and Government support measures are unwound, a clearer view of the long-term impact on companies will emerge. Corporate arrears are expected to increase and insolvencies to follow suit. Experience shows, however,

Chart I-34
D-SIB: Frozen loans¹



1. Parent companies, book value. Frozen loans according to the cross-default method, according to which all of a borrower's loans are considered non-performing if one loan is frozen or in arrears by 90 days or more, or if the borrower is deemed unlikely to pay their obligations when due. Source: Central Bank of Iceland.

that it can take quite some time to work through such shocks. Firms' future prospects now depend primarily on how successfully the pandemic can be quelled, both in Iceland and abroad.

The financial cycle

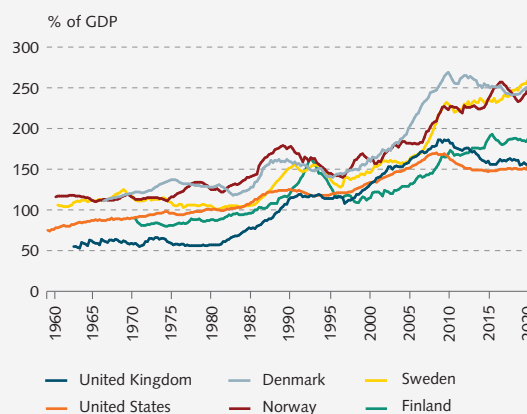
The private sector credit-to-GDP ratio

The private sector credit-to-GDP ratio places the size of the financial system into the context of the real economy. If credit grows in line with GDP growth, the ratio remains unchanged, and the private sector is neither more nor less reliant on the financial system than before. In recent decades, the private sector credit-to-GDP ratio has risen in most Western countries, as can be seen in Chart I-35. Furthermore, the credit-to-GDP ratio has been used as a simple metric of financial depth in most research on the topic since the 1970s. It has been shown that financial deepening has a positive impact on GDP growth and prosperity, but when it is too pronounced or too rapid, the benefits can be eroded and instability can emerge.²⁴

A rise in the credit-to-GDP ratio above its long-term trend, termed the *credit-to-GDP gap*, can be used as a metric of whether credit has accumulated too quickly, and it can also function as an early indicator of financial shocks.²⁵ The European Systemic Risk Board (ESRB) has therefore issued a recommendation that defines the credit-to-GDP gap as a common starting point for member states' analysis of cyclical systemic risk and financial cycle position in their decisions on setting the countercyclical capital buffer rate.²⁶ The ESRB Recommendation also provides a linear projection of the credit-to-GDP gap to the benchmark buffer rate. According to the Recommendation, the buffer should be activated when the gap measures 2 percentage points and should be imposed in full when the gap is 10 percentage points. Chart I-37 illustrates the benchmark buffer rate extending back to 1986, although the countercyclical capital buffer was not introduced in Iceland until EU Directive 2013/36/EU (CRD IV) was incorporated into Icelandic law in 2015.

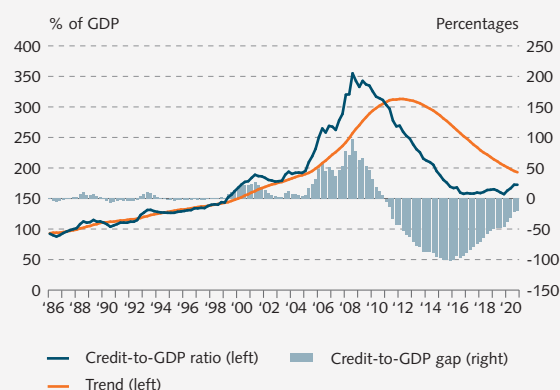
It can be questionable to draw strong conclusions from the metric in the case of Iceland because the overheating that preceded the financial crisis of 2008 pushed the estimated long-term trend upwards. This

Chart I-35
Global credit-to-GDP ratios



Source: Bank for International Settlements.

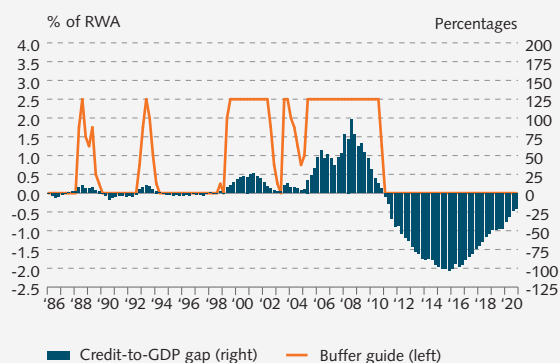
Chart I-36
Credit-to-GDP gap¹



1. Total credit to the non-financial private sector over GDP for the last four quarters. Trend component is obtained with a one-sided HP-filter with $\lambda=400,000$.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-37
The buffer guide¹



1. The buffer guide is a simple function of the credit-to-GDP gap, which is the deviation of the credit-to-GDP ratio from its long term trend.

Sources: Statistics Iceland, Central Bank of Iceland.

24 Sahay et al. (2015). *Rethinking Financial Deepening*. IMF Staff Discussion Notes 2015/8.

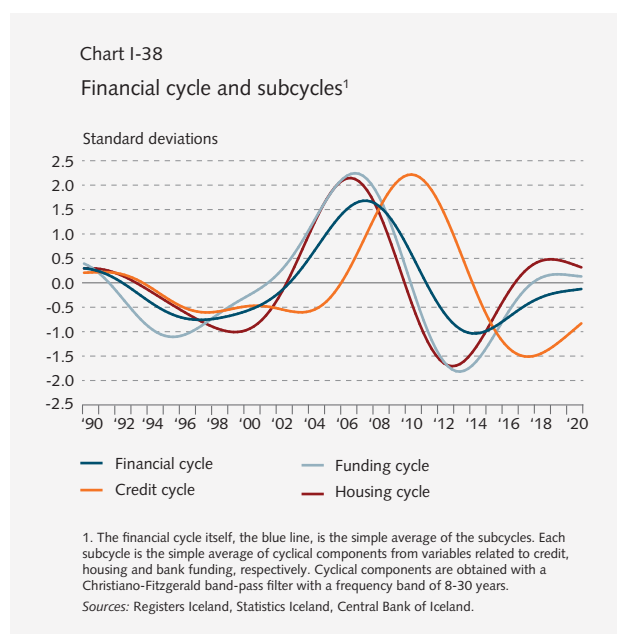
25 Drehmann et al. (2012). *Anchoring countercyclical capital buffers: the role of credit aggregates*. BIS Working Paper no. 355.

26 Recommendation ESRB/2014/1.

was followed by a period of deleveraging, so the negative gap was very large in international context, reaching as much as -103 percentage points by the end of 2015. The credit-to-GDP ratio has been relatively stable since 2015 but spiked in 2020, even though credit rose by only 2.4% in real terms, as GDP, the nominator in the ratio, declined sharply. The gap has therefore narrowed significantly, measuring -21 percentage points at the end of 2020. It is possible that the credit-to-GDP gap will be positive in coming years, but when that happens will depend on how fast GDP recovers. The signalling from the credit-to-GDP ratio and the credit-to-GDP gap should therefore be interpreted with caution during times when GDP fluctuates widely.²⁷

The financial cycle

The numerical presentation of the financial cycle is based on the credit-to-GDP ratio and other indicators of developments in credit, together with indicators of real estate prices and commercial banks' funding. It therefore gives a more comprehensive view of developments in the financial system than the credit-to-GDP ratio alone does. Sub-cycles of the financial cycle are in different phases at present, but the financial cycle itself has risen in recent years, although the pace has eased.



The upward phase of the credit cycle continues, driven mainly by the credit-to-GDP ratio, which rose by over 15 percentage points in 2020, from 157% of GDP to 172.5%. Although real credit growth was positive during the year, the rate of growth was slower than in

previous years. The distribution between households and businesses is unequal, as is discussed in the section entitled *Risk associated with private sector debt*. Households feel the effects of interest rate cuts and a lively real estate market, as mortgage lending has been very stable throughout the pandemic. At the same time, pronounced economic uncertainty has held net new lending to businesses close to zero in most sectors. When the uncertainty recedes, this part of the market could recover and the credit cycle could rise more quickly, owing to a pent-up need for investment; for instance, in residential construction.

The housing cycle has fallen since end-2018 and continues downward, even though real house prices rose by 4% in 2020. This increase is modest in comparison with 2016 and 2017, when house prices rose by nearly 22% over a twelve-month period. House prices have risen more slowly than household income in the recent term, and the ratio of house prices to income declined until the end of 2020, when it rose year-on-year for the first time since 2017. The foreseeable contraction in housing supply coupled with favourable mortgage loans should support the housing market – and therefore the cycle – in the coming term.

The funding cycle has declined since mid-2019. Households' deposits with the commercial banks have grown significantly since the onset of the pandemic, thereby boosting net stable funding ratios. Furthermore, the banks' foreign borrowing has tapered off in recent years. Both of these factors are generally considered to entail reduced risk, which shows in a decline in the funding cycle. The conditions are in place for a turnaround, however, as deposit rates are very low and private consumption is expected to rise again this year, potentially causing a reduction in deposits, as is discussed in Chapter II, *Liquidity and funding risk*.

According to this review of the components of the financial cycle, there are no signs that it will do otherwise than continue to rise gradually. The pace could accelerate, however, if more optimistic forecasts about the end of the pandemic materialise.

27 Jokipii et al. (2020). *The BIS credit-to-GDP gap and its critiques*. Voxeu.

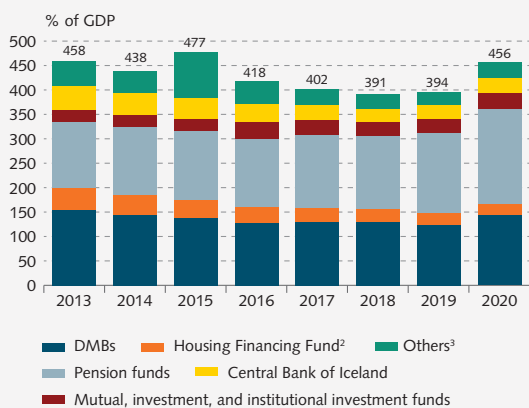
The financial system



Financial system assets totalled 456% of GDP at the end of 2020, after rising steeply between years. The increase was due in part to the decline in GDP, as well as to exchange rate movements. Deposit institutions' assets now account for just under a third of total financial system assets, with some 97% of them held by the systemically important banks.¹ The pension funds hold roughly 43% of total assets, a share that has grown steadily in recent years. The proportion held by other financial system entities has shrunk in the recent term.

Pension fund assets measured 194% of GDP at the end of Q1/2021, an increase of 30 percentage points year-on-year. The weight of loans to fund members declined somewhat in their asset portfolios. As borrowers turned increasingly to non-indexed loans, demand for residential mortgages from the pension funds contracted sharply. The banks offered better terms on non-indexed loans, and pension funds' net new mortgage lending was negative in 2020. A large share of the growth in the banks' mortgage lending was due to a shift from the pension funds and ÍL Fund to the banks. The pension funds are the largest investors in the Icelandic financial market. They are direct mortgage lenders as well as financing the banks' mortgage lending by buying their bonds, they finance businesses by buying corporate bonds, and they are the largest investors in the Icelandic

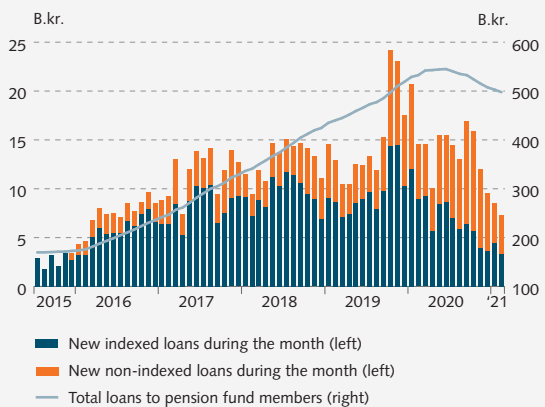
Chart II-1
Financial system: Assets as % of GDP¹



1. Parent companies. 2. The Housing Financing Fund (HFF) merged with the Iceland Construction Authority on 1 January 2020. HFF assets as of end-Q1/2020 are the assets of the ÍL Fund, which took over the processing of the HFF's assets and liabilities at the beginning of 2020. 3. Other: Failed financial institutions that have undergone composition are included with other financial institutions as of the time their composition agreements were approved. The Central Bank of Iceland Holding Company ehf. (ES) is also included with other financial institutions from its establishment in December 2009 until its dissolution in February 2019.
Sources: Statistics Iceland, Central Bank of Iceland.

¹ Iceland's domestic systemically important banks (D-SIB) are Landsbankinn hf., Arion Bank hf., and Íslandsbanki hf.

Chart II-2
Loans to pension fund members¹



1. Figures are based on balance sheet summaries submitted to the Central Bank by the pension funds.
Source: Central Bank of Iceland.

stock market. The pension funds' investment strategies also assume that a large share of their asset portfolio is devoted to foreign assets. Because of their size, the pension funds' strategies and conduct have an enormous impact on other market agents and the economy as a whole. There is good reason to be constantly on the watch to determine whether changes may be needed to ensure that the funds' strength translates to a strong financial market.

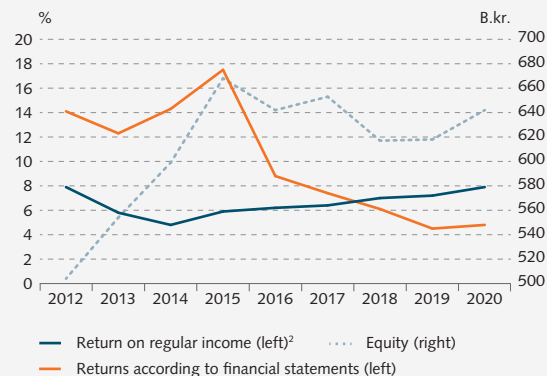
Profitability

The COVID-19 pandemic affected Iceland's systemically important banks (D-SIB) less in 2020 than was expected when the pandemic struck. In Q1/2020, the banks lost 7.2 b.kr., owing to significant impairment, but their situation solidified in Q2 and continued to improve in H2. For the last nine months of the year, they recorded a profit of 36.9 b.kr., and their profit for 2020 as a whole was therefore 29.7 b.kr., an increase of 2 b.kr. relative to 2019. Their return on equity for the year as a whole was 4.8%. Returns varied from quarter to quarter. They were negative by 4.6% in Q1/2020 and then turned positive, measuring 4.3%, 7.6%, and 12.6% in the three quarters to follow. The strong returns in Q4 can be attributed in part to limited impairment (220 m.kr.) and increased revenues from financial activities, as asset prices rose markedly in H2.² Their banks' return on equity increased by 0.3 percentage points year-on-year in 2020, a favourable result given that impairment increased by 200% during the year and, all else being equal, lower interest rates had a negative impact on returns. Increased impairment in 2020 lowered the banks' return on equity by over 2 percentage points between years. The outlook is for the D-SIBs to record better returns this year than in 2020, as uncertainty about the pandemic has receded and the banks themselves expect impairment to normalise to a greater degree.

Lower interest rates and reduced scope to cut interest rates on the D-SIBs' funding have narrowed their interest rate spreads. In 2020, the interest rate spread on the D-SIBs' total assets was 2.56%, which is 0.15 percentage points lower than in 2019 and 0.32 percentage points lower than in 2018. Despite the narrower differential, net interest income was unchanged year-on-year, at 103 b.kr., and 0.5% higher than in 2018. To a large extent, this is due to an increase in interest-bearing assets, loans in particular (Chart II-4). Lower interest

² Increased income from financial activities is due primarily to share price movements.

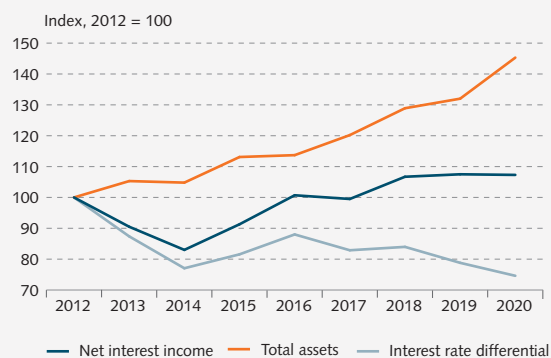
Chart II-3
D-SIBs' returns¹



¹ Returns are calculated on average equity. Domestic systemically important banks, consolidated figures. ² The return on regular income is based on net interest income and fee/commission income net of regular expenses. The tax rate is 20% and is based on average equity. Valitor is excluded in 2017-2020 and Borgun in 2020.

Sources: Commercial banks' financial statements.

Chart II-4
D-SIB: Net interest income, total assets, and interest rate differential¹



¹ Domestic systemically important banks, consolidated figures.

Sources: Commercial banks' financial statements.

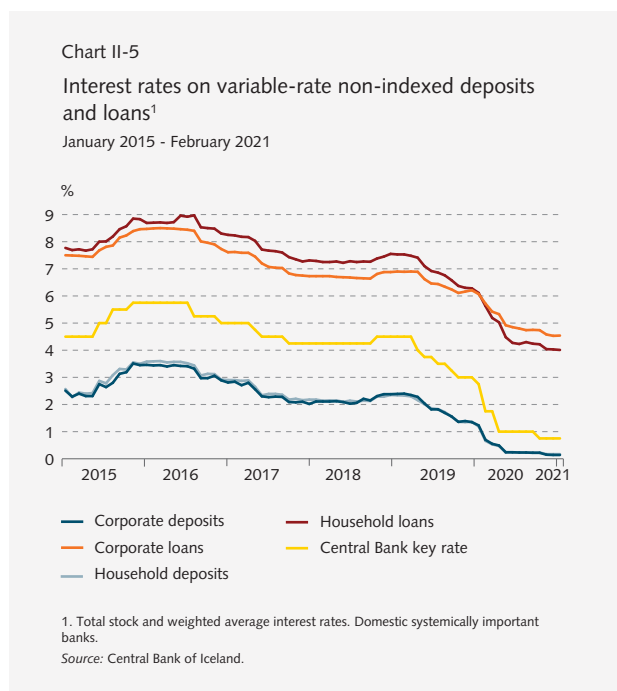
rates have also affected the composition of loan portfolios, as non-indexed króna-denominated loans have increased by more than 400 b.kr. in the past two years, while the stock of indexed loans has shrunk by 160 b.kr. over the same period. Concurrently, the banks' indexation balance has declined by nearly half, to 150 b.kr. at the end of 2020. This is a favourable development, as it is best to keep indexed and non-indexed assets and liabilities in balance as much as possible.

Non-indexed floating-rate loans and deposits denominated in krónur have seen the largest declines in interest rates in the recent term. Rates on non-indexed sight deposits held by individuals and firms have developed similarly, although on the lending side, variable non-indexed rates have fallen more on household loans than on corporate loans (Chart II-5). Even though variable rates on non-indexed loans have fallen most, the

spread between these loans and comparable funding is greatest (for further discussion of interest rate spreads on funding and lending, see Box 4).

Net fee and commission income totalled 29.8 b.kr. in 2020, an increase of 0.7 b.kr., despite a steep decline in card turnover among both foreign tourists in Iceland and Icelanders abroad. Therefore, the D-SIBs' regular income (i.e., net interest income and fees/commissions) has not fallen as a result of the pandemic and lower interest rates. In recent years, the D-SIBs' regular income has accounted for around 90% of total income, thereby constituting the backbone of their operations. Core operations have continued to improve, owing to a year-on-year reduction in operating expenses, and returns on regular income were 7.9% in 2020, up from 7.2% in 2019.³

The banks' income from financial activities totalled 6.2 b.kr. in 2020, due to the steep rise in share prices in Q4, when income from financial activities amounted to 7.7 b.kr. Compared with 2019, income from financial activities declined by 4.1 b.kr. Other operating income fell by 1.7 b.kr. year-on-year, to 6 b.kr. in 2020.



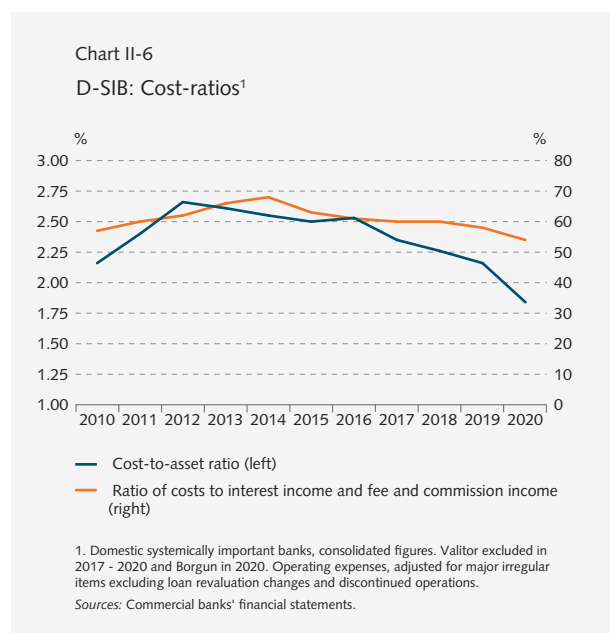
The benefits of streamlining

The banks' combined operating expenses totalled 71.7 b.kr. in 2020, a decline of nearly 4.6 b.kr. from the prior

3 Returns on regular income are based on net interest income and net fee and commission income, less regular expenses, which are defined as salaries and related expenses plus other operating expenses, apart from one-off cost items. The tax rate of 20% is based on the average balance of capital.

year. In real terms, costs fell 9.3% between years, with wages falling by 10.4% and other operating expense by 7.8%. The streamlining undertaken by the banks in recent years has delivered lower costs. Staffing levels declined by 40 employees in 2020 and around 200 in 2019. The banks plans suggest that they will continue finding ways to streamline. Their expense ratio was 49.7% in 2020 – the first time since 2015 that it has fallen below 50%. The banks' expense ratio has been trending downwards in the recent term. When viewed in terms of economies of scale – i.e., expenses relative to total assets – the improvement is even more visible. The ratio of expenses to total assets was 1.84% in 2020 and had declined by 0.24 percentage points from the prior year.

According to the banks' profit and loss accounts for 2020, their tax payments totalled 12.5 b.kr. This represented a decline of 10.9 b.kr. year-on-year and had a positive effect on operations. Some 6 b.kr. of the reduction was due to the lower bank tax. When the tax was lowered, the banks stated that the savings would be passed on to customers in the form of more favourable terms. It is difficult, however, to assess the impact of the bank tax reduction on the terms offered to customers.⁴



Surge in lending despite sharp economic contraction

Loans to households and businesses totalled 3,103 b.kr. at the end of 2020, an increase of 10.3% year-on-year. In nominal terms, 95% of the increase was in loans to households, but after adjusting for the depreciation of

4 The special tax on financial institutions (bank tax) was 0.376% of total liabilities in excess of 50 b.kr. as of end-2019 but was cut to 0.145% for 2020.

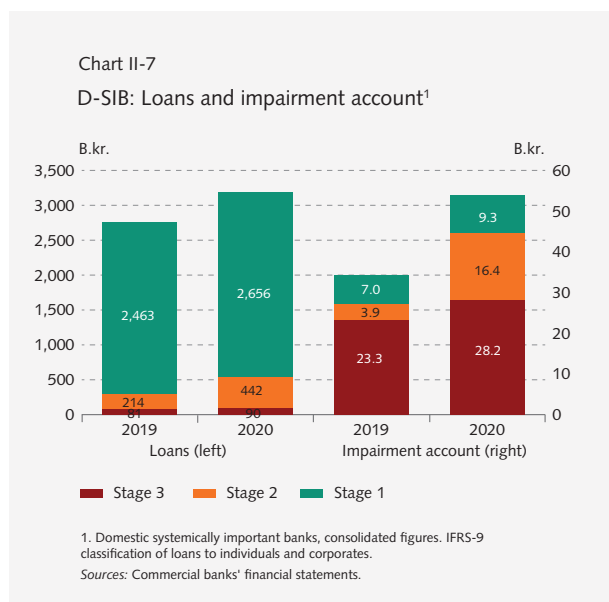
the króna in 2020, it can be said that non-indexed household loans account for the entire increase during the year.

Central Bank interest rate cuts have been transmitted effectively to non-indexed mortgages, boosting demand for these loans and supporting the housing market and construction sector. The banks assume that growth in mortgage lending will ease in 2021, however. Reserve requirements due to residential mortgages are much lower than those on general corporate loans. Residential mortgages are usually backed by strong collateral, and it therefore comes as no surprise that all of the D-SIBs have strongly emphasised mortgage lending in the recent term. Concurrent with the increase in mortgage lending, the credit risk base fell from over 82% of outstanding loans to 80% in 2020.

One of the measures adopted by the Government in response to firms' payment difficulties was to grant support loans with 85% and 100% Treasury guarantees and, for larger firms, supplemental loans bearing a 70% Treasury guarantee. Credit institutions have overseen the issuance of these loans. At the end of February, 9.4 b.kr. in support loans had been granted, up from 8.9 b.kr. at the turn of the year. As these figures show, the pace of support loan issuance has slowed markedly, and the banks are of the view that most of the companies that are able to apply for them have already done so.⁵ At the end of 2020, when the measure expired, supplemental loans had been issued in the amount of 2.8 b.kr.

Significant impairment

It was clear early on that the pandemic would have a strong negative economic impact and that the public health measures adopted in response to it would upend the tourism industry and related sectors. As a result, the Government, the Central Bank, and credit institutions took a broad range of mitigating measures to support households and businesses. In March 2020, lenders made an agreement among themselves to support firms and individuals by, for instance, offering debt restructuring, refinancing, and moratoria on payments for up to six months. According to the agreement, the deadline for moratorium applications was at the end of September, and the measure expired at the end of the year. In July, moratoria peaked in krónur terms at 7% of household loans (88 b.kr.) and nearly 18% of corporate loans (295 b.kr.).⁶ Of that total, 55% of loans to tourism companies



were in moratorium. According to the guidelines from the European Banking Authority (EBA), these loans were not classified as non-performing or forbore. Lenders did not extend the agreement, although it would have been possible under the EBA guidelines. In autumn 2020, businesses' and individuals' moratoria began to expire, and the grant of further measures was in the hands of the individual lenders concerned. The vast majority of individuals have not needed further support measures, but the same cannot be said of businesses. The decline in tourist arrivals and the imposition of public health measures have caused a large number of firms' revenues to collapse, and the banks have provided additional assistance to many moratorium recipients. In such instances, the loans are most commonly classified as forbore and performing. Information from the banks on non-performing loans has therefore changed little, although the amount of the loans not being paid in accordance with the original loan terms is much higher now than before the pandemic. According to special loan portfolio reports submitted to the Central Bank by the D-SIBs, 17.2% of corporate loans (292 b.kr.) and 2.2% of loans to individuals (33 b.kr.) were frozen at the end of February 2021.⁷ For businesses, the situation regarding moratoria and frozen loans has changed little, but uncertainty has receded since the vaccination roll-out began.

According to the IFRS-9 financial reporting standard, loans are classified in three stages. A loan is classified as Stage 1 (performing) when it is granted. It is

⁵ The first support loans were granted in July 2020, and the deadline for applications is at the end of May 2021.

⁶ Based on aggregate figure for individuals and companies. Moratoria peaked in July for companies and in May for individuals, when 9%, or 111 b.kr., were protected by moratorium.

⁷ The amount is based on the cross-default method, according to which the outstanding balance of all of the customer's loans is defined as frozen if one loan has been frozen. Loan freezes can now take different forms – i.e., without the agreement – as some customers may have frozen both instalments and interest, whereas others may have frozen only the instalments.

moved from Stage 1 to Stage 2 (underperforming) if credit risk has increased significantly relative to the initial position, and to Stage 3 if it is in serious default and impairment can be expected. The pandemic has had a profound impact on IFRS-9 classification of loans, with a large share of loans to tourism companies moved from Stage 1 to Stage 2. The claim value of D-SIB loans in Stage 2 was 442 b.kr. at the end of 2020, an increase of 107% between years. Loans in Stage 3 totalled 90 b.kr. at the end of 2020, an increase of 11% year-on-year, but the share of loans in Stage 3 is unchanged between years at 2.8%. Most loans that have been frozen (and were previously in moratorium) are classified as Stage 2.

Impairment has increased concurrent with the transfer of loans from Stage 1 to Stages 2 and 3. In 2020, total impairment came to 25.9 b.kr., some 17.2 b.kr. more than in 2019. This represents 0.83% of the D-SIBs' loan portfolio as of end-2020. Landsbankinn and Íslandsbanki recorded similar impairment, at 0.94% and 0.88% of the loan portfolio, respectively, while Arion Bank's was 0.61%. The banks are of the opinion that pandemic-related loan impairment is largely complete and that year-2021 impairment will be closer to the figures seen in a normal environment, or 0.3-0.5% of the loan portfolio.

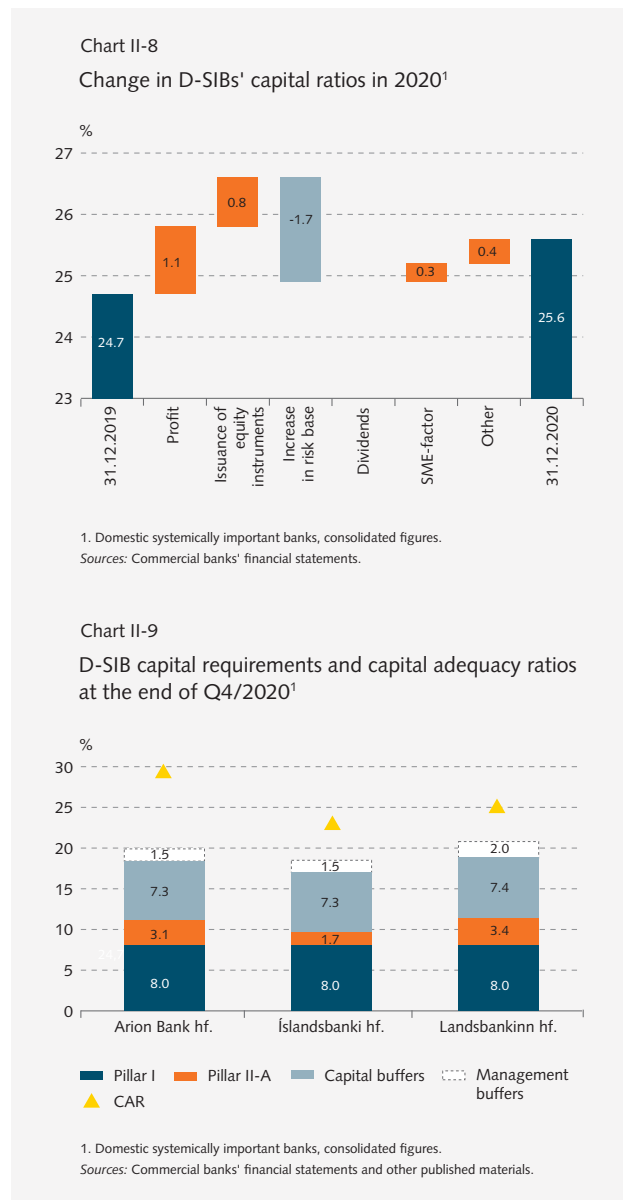
The impairment account amounted to 54 b.kr. at the end of 2020, after increasing by nearly 20 b.kr. during the year. In terms of amounts, the largest increase was in the Stage 2 impairment account, or 12.5 b.kr. (up 320%), followed by Stage 3, at 4.9 b.kr. (up 21%) and then Stage 1, at 2.3 b.kr. (up 33%). Just over half of the impairment account is due to Stage 3 loans.

Capital position

The D-SIBs' capital increased by 25 b.kr. year-on-year, to 642 b.kr. at the end of 2020. Their combined capital ratio was 25.6% at the end of 2020, after rising by 0.9 percentage points during the year.⁸ The factors that have caused the capital ratio to increase since end-2019 are profit (1.1 percentage points), equity instruments (0.8 percentage points), and discounts on risk weights of small and medium-sized enterprises (0.3 percentage points).⁹ On the other hand, the risk base rose during the year, lowering the capital ratio by 1.7 percentage points. Other factors increased the capital ratio by 0.4 percentage

8 Foreseeable dividend payments by Arion Bank in 2020 and 2021, totalling 14.2 b.kr. and 18 b.kr., respectively, are not deducted from the capital base, as is done in the bank's annual accounts, because this is not done in Íslandsbanki and Landsbankinn's annual accounts. At the end of 2020, Arion Bank's capital ratio was 29.4%, Íslandsbanki's was 23%, and Landsbankinn's was 25.1%.

9 The discount on risk weights for SMEs took effect on 1 January 2020.



points, mainly because the banks took advantage of the implementation of transitional IFRS-9 rules that allow a portion of impairment to be classified as common equity Tier 1 (CET1) capital. If losses materialise and impairment is used to offset depreciation, the impairment can no longer be used to increase the capital base. In compliance with the Central Bank's recommendation, the D-SIBs did not pay dividends in 2020. On the other hand, they have proposed dividend payments in 2021, including share buybacks, in the amount of 25.9 b.kr. Their capital ratio will decline by 1 percentage point as a result.¹⁰

The banks all use the standardised approach to assess risk-weighted assets, which totalled 2,801 b.kr. at the end of 2020, an increase of 176 b.kr. during the year. Total assets increased by 373 b.kr., however, low-

10 Based on the year-end capital base and risk base.

ering the ratio of risk-weighted assets to total assets by 2.2 percentage points, to 68.6% at the year-end. The D-SIBs' leverage ratios lay in the 13.6-15.4% range at the end of 2020, and their combined ratio fell by 0.1 percentage points between years, to 14.7%.

The Icelandic banks' leverage ratios are high in international context. The EEA average was 5.6% at the end of September 2020.

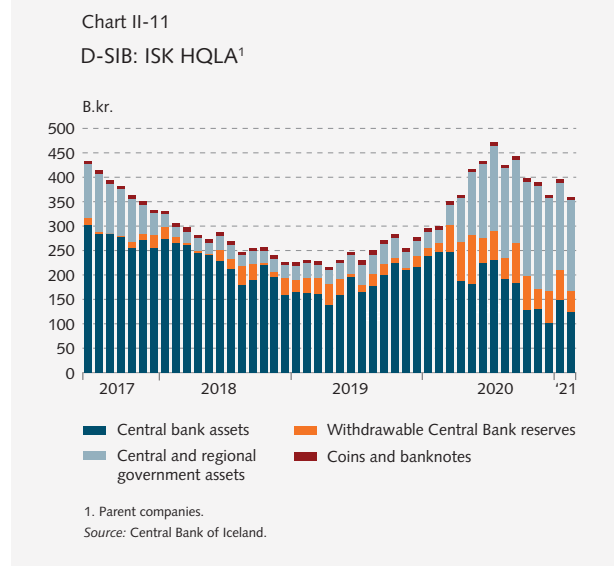
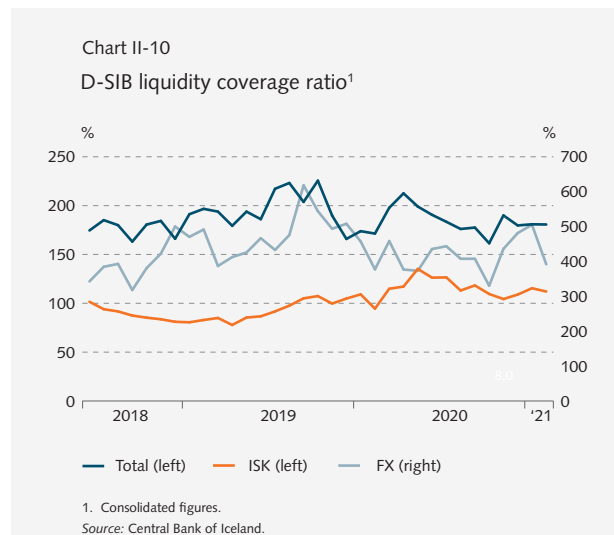
The minimum capital ratio required of the D-SIBs by the Central Bank ranges between 17% and 18.8%. The portion based on Pillars I and II has been unchanged since October 2019, as it was decided that the results of the SREP assessment concerning additional capital requirements (Pillar II-R) should remain unchanged because of COVID-related uncertainty. The Central Bank's overall requirement takes into account the reduction of the countercyclical capital buffer from 2% to 0% in March 2020, which released about 52 b.kr. in capital. The banks' capital ratios are now roughly 6-9 percentage points above Central Bank requirements, after adjusting for planned dividend payments in 2021. As a result, it is not considered necessary to strengthen the D-SIBs' capital base further in response to the pandemic.

Liquidity and funding

D-SIBs liquidity well above regulatory minimum despite economic uncertainty

The domestic systemically important banks (D-SIB) have maintained strong liquidity despite the high level of uncertainty in the recent term, and their liquidity ratios are above the minimum prescribed in Central Bank rules. Their liquidity ratios rose in 2020, in response to measures implemented by the Central Bank, including measures relating to changes to reserve requirements. The banks paid no dividends in 2020, which had a positive effect on their liquidity. From mid-2020 onwards, their liquidity ratios began to fall alongside the surge in residential mortgage lending. At the end of February, the D-SIBs' combined liquidity ratio in all currencies was 181%, well above the regulatory minimum of 100%, and the liquidity ratio in foreign currencies was 392%, whereas the ratio in Icelandic krónur was 112%. At the same time, their disposable liquid assets were 234 b.kr. above the minimum required for all currencies combined according to Central Bank rules. Liquid assets over and above requirements have risen by 56 b.kr. in the past twelve months but have fallen by 15 b.kr. in the past six months.

As before, the banks' liquid assets consist largely of deposits with the Central Bank, Treasury bills, and short Treasury bonds denominated in krónur and foreign cur-



rencies. The share of Treasury bills and Treasury bonds issued in krónur has risen since the Central Bank stopped offering one-month term deposits in a bid to support monetary policy transmission. Treasury bonds and bills accounted for 52% of total liquid assets at the end of 2020, up from 11% at the end of 2019. The banks have therefore financed the Treasury in the amount of 155 b.kr. in the past year, using funds previously held in the Central Bank.

Before the end of 2020, the Central Bank lengthened the adaptation period for credit institutions to meet the minimum liquidity ratio in Icelandic krónur by one year. At the end of 2022, the minimum ratio for Icelandic krónur will be 50%. This was done to ease the banks' liquidity. The banks' scope for lending is based on regulatory requirements, but their internal benchmarks strongly affect their lending activity. The banks have internal liquidity ratio criteria, and if the minimum is assumed to be 120%, for instance, their excess liquidity was 176

b.kr. at the end of February. Estimates of excess liquidity therefore depend greatly on which benchmark is used.

If demand for credit significantly outpaces demand for the banks' market issues, their liquidity position could restrict the amount they can lend. Under current conditions, the banks need to have access to enough liquidity to ensure that they can intermediate credit to households and businesses and help resolve borrowers' payment difficulties. To this end, the Central Bank has significantly increased their access to liquid assets, thereby giving them greater scope for action.

Limited domestic issuance concurrent with brisk lending activity

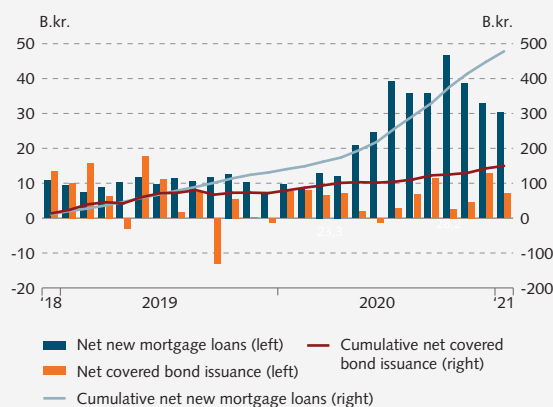
As before, the majority of the banks' funding is in the form of deposits and marketable bonds. At the end of February, deposits comprised about half of their funding. Roughly 60% of all deposits are owned by individuals and small and medium enterprises (SME), and another fifth are owned by large companies. The banks' deposits increased by 240 b.kr., or 13%, in 2020, owing largely to a 110 b.kr. increase in deposits held by individuals. Furthermore, the commitment period on financial institutions' term deposits grew shorter during the year, which had an adverse effect on liquidity ratios. Deposit rates have fallen in line with Central Bank rate cuts, boosting depositors' incentive to invest their savings elsewhere. Such a shift would have a negative impact on the banks' liquidity. It is therefore important to keep close track of developments in the banks' deposits.

The banks' domestic bond issuance was limited in 2020, apart from covered bonds, but there has been no demand for other domestic funding. It would be favourable if they increased the weight of domestic market funding so as to reduce concentration risk on the funding side. Moreover, the surge in demand for non-indexed mortgage loans from the banks has increased their need for funding through nominal bond issues. Covered bond issuance increased by 84 b.kr. in 2020, while net new lending to households totalled 317 b.kr. over the same period.¹¹ The banks expect their covered bond issuance to be about the same in 2021 as in recent years, although the actual amount will be determined by market conditions and the banks' own need for funding. The large difference between covered bond issuance and net new lending has had a negative effect on the banks' liquidity. The banks have also issued covered bonds for their own use in the recent term.

¹¹ Net new loans are defined as new loans less loan retirement and loan prepayments in excess of contractual requirements.

Chart II-12

D-SIB: Net covered bond issuance and net new mortgage lending from December 2018



Source: Central Bank of Iceland.

Credit spreads on foreign issues at pre-pandemic levels

The banks' foreign bond issuance was limited until late last year, but they have been relatively active in recent months. In November, Arion Bank issued a 3.5-year eurobond in the amount of 48,5 b.kr. and used a portion of the proceeds to buy back bonds maturing this year. In the same month, Íslandsbanki issued Iceland's first sustainable bank bond, a three-year eurobond in the amount of 48.5 b.kr., and the first green bond issued by a domestic bank, a five-year króna-denominated bond in the amount of 2.7 b.kr. In February 2021, Landsbankinn also issued a green eurobond, using a portion of the 46 b.kr. proceeds to buy back eurobonds maturing this year. The banks have also issued smaller bonds in Swedish kronor and Norwegian kroner in recent months.

Chart II-13

D-SIB: Foreign bonds by maturity¹



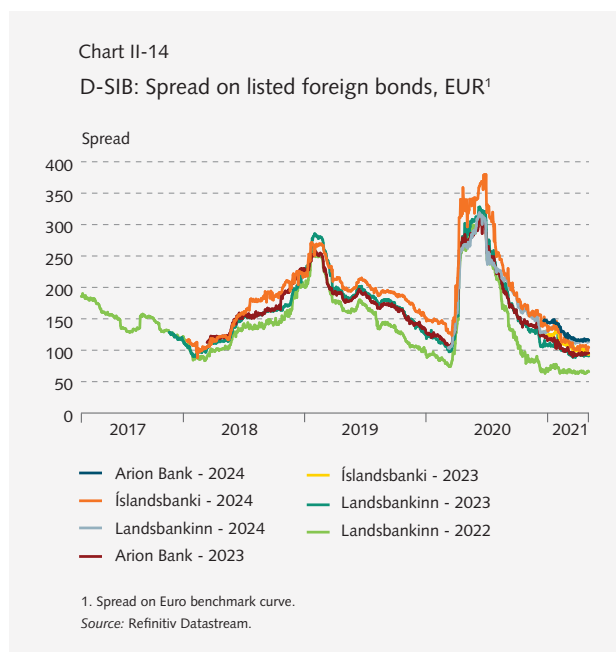
1. At 9.4.2021 exchange rate.

Source: Nasdaq Iceland.

Foreign bonds issued by the D-SIBs that are scheduled to mature later this year amount to 45 b.kr., or 9% of the banks' foreign market funding and 1% of total funding as of end-February 2021. The banks' ample foreign liquidity gives them the flexibility to retire all of this year's maturities without refinancing. They do need to consider refinancing next year's maturities, however, which total 171 b.kr. in foreign currency. The banks' outstanding foreign-denominated bonds have declined markedly as a share of their balance sheet in the past few years, and their foreign refinancing risk has been reduced accordingly.

Credit spreads on the banks' foreign issues rose rapidly in spring 2020, as investors grew more risk-averse in response to the pandemic. They began to taper off again in the summer and have been easing more or less steadily since then. Spreads are now lower than they were at the beginning of 2020.

guidelines. The requirements to be imposed later this year are based on Regulation (EU) no. 2019/876, the amended Capital Requirements Regulation (CRR2), which specifies that credit institutions must maintain a net stable funding ratio of at least 100% for all currencies combined. The Central Bank is considering adopting net stable funding requirements for individual currencies above a specified threshold, referred to as significant currencies.



The key ratios that capture the banks' funding risk have risen slightly in the recent term, alongside new long-term foreign bond issues, indicating reduced funding risk. The net stable funding ratio (NSFR) in foreign currencies was 153% at the end of February, an increase of 10 percentage points over a twelve-month period.

New rules on minimum NSFR are set to take effect later this year. The aim of the rules is to prevent credit institutions from relying too heavily on unstable short-term funding to finance long-term assets. The Rules on Funding Ratios in Foreign Currency, no. 1032/2014, which took effect in 2014, are based on the Basel Committee on Banking Supervision's stable funding

Testing for resilience



The Central Bank has carried out a reverse stress test to determine the resilience of Iceland's domestic systemically important banks (D-SIB), which entails identifying scenarios that could lead to a predetermined decline in their capital ratios. The starting point for the test was that the capital ratio of at least one bank should approach the second quartile provided for in the rules on maximum distributable amount (MDA), or the sum of Pillar I and Pillar II capital, plus 75% of the combined buffer requirement. This capital position would be well above the minimum required level and would not lead to onerous regulatory intervention apart from limitations on distributions such as dividends, share buybacks, and employee bonuses. But such a deterioration in the capital ratio could change the lending behaviour of the bank concerned. As of end-2020, the Icelandic D-SIBs' capital ratios ranged from 23% to 27%, or 6.0-8.6% above the required level. The economic outlook would have to change markedly for the worse in order to reach the MDA trigger point. A protracted wait for a rebound in tourism, further export shocks leading to a continued economic contraction, high unemployment, and falling real estate prices could cause at least one of the banks' capital ratio to close in on the trigger point. The results of numerical analysis show that, over a three-year period, the aggregate contraction in GDP would have to equal 10%, unemployment would have to average 9%, and nominal house prices would have to fall by over 10%. In addition, both interest rates and inflation would have to be very low for a long period of time in order to put further pressure on the banks' core operations.

Stress testing in the time of COVID-19

Each year, the Central Bank carries out a stress test, as well as overseeing a number of stress tests conducted by the commercial banks and other financial institutions. From 2014 through 2019, the Bank conducted stress tests with cyclical scenarios, which are often used when the financial cycle is in an upswing. The objective of the tests is to identify risks in the financial system, but they are also used to set capital requirements, particularly the countercyclical capital buffer.

The stress tests the Bank conducted in 2020-2021 differed from the earlier ones in that they were carried out during a period of stress. At such times, it is particularly important to assess whether the banking system can maintain its activities effectively and can intermediate credit. In view of this, a scenario analysis¹ was carried out last year in order to assess the potential impact of available macroeconomic forecasts and alternative forecast scenarios on the D-SIBs' capital position, lending capacity, and scope to absorb arrears.

This chapter describes the reverse stress test, which, unlike a conventional scenario analysis, aims to identify the economic developments that could trigger a predetermined drop in the banks' capital ratios. The analysis is based primarily on obtaining an idea of how large a shock would have to strike in order for financial stability to be severely jeopardised, and how far the current position is from that point.

Selecting a threshold

At present, the Icelandic banks' capital is above regulatory requirements. According to their end-2020 balance

¹ See *Financial Stability* 2020/1.

sheets, their excess capital amounted to 6.0-8.6% of their risk base. In general, a reverse stress test should aim to breach the combined capital buffer threshold and significantly deplete the buffers.

Because the Icelandic banks' capital is far above the regulatory minimum, the threshold selected for this analysis is 75% of the combined capital buffer requirement, which is imposed on the total SREP capital requirement. Distributions made by banks – dividends, bonuses and other variable remuneration, and share buybacks – that satisfy 75-100% of the combined capital buffer requirement may not exceed 60% of their profit, according to Rules no. 1270/2015 on the maximum distributable amount and restrictions on financial undertakings' distributions in connection with capital buffers. If they satisfy only 50-75% of the combined requirement, distributions are restricted to 40% of their profit. Because the D-SIBs' dividend policies provide for the payment of at least 40-50% of their profit as dividends, they are likely to take action themselves so as to protect their capital ratio but could cut back on lending if they are in danger of breaching the 75% threshold.

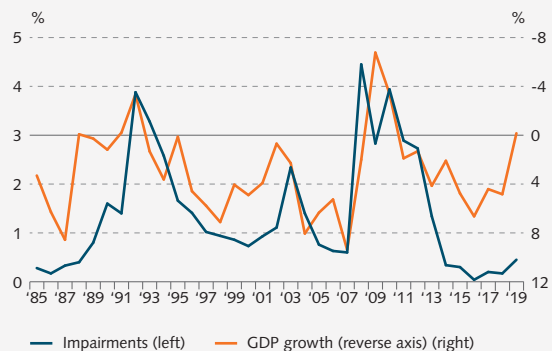
Based on this assumption, the banks' CET1 ratios would have to fall by 7.8-10.4 percentage points relative to the end-2020 position. The severity of the shock needed to push a bank below the threshold differs from one bank to another because their excess capital varies, as does the sectoral distribution of their loan portfolios. The scenario used for this test is set up so as to ensure that at least one of banks approaches or breaches the threshold.

Because of the size of the decline in capital ratio required for this analysis, the predictive power of the statistical models is challenged for marginal values, which are underrepresented in historical data. For instance, the relationship between economic variables and various items in the banks' financial statements could become non-linear when the changes are large or when economic shocks persist for as long a time as is assumed in the scenario. As a result, the results should be interpreted with caution because of the significant statistical uncertainty involved.

Finding a scenario

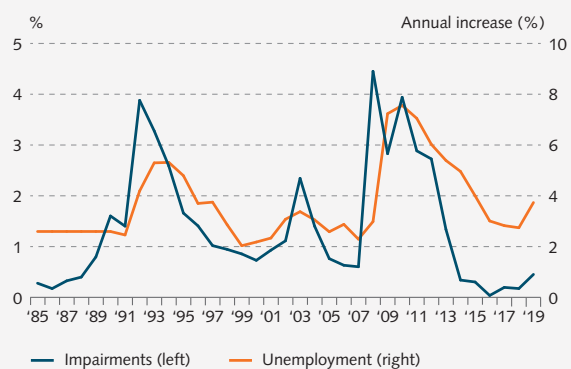
The search for a suitable scenario began with an informal survey of previous stress tests and a simple statistical correlation between various economic variables. Because it is not possible to run the Central Bank's stress testing models in reverse – i.e., to swap the dependent and independent variables – the process begins with simple models and assumptions about impairment and net

Chart III-1
GDP and impairments



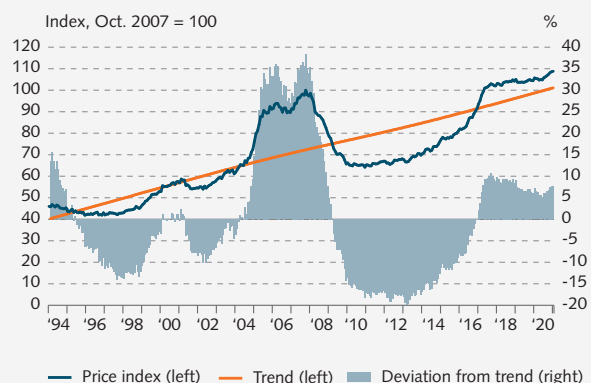
Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-2
Unemployment increase and impairments



Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-3
Deviation of residential real estate prices from trend¹



1. Price index for capital area residential real estate, deflated with the CPI index. Trend estimated with Hodrick-Prescott filter with smoothing parameter 32,400,000, as prescribed in Ravn, M.O. og Uhlig, H. (2002). Notes on adjusting the Hodrick-Prescott filter for the frequency of observations. Review of Economics and Statistics.

Sources: Statistics Iceland, Registers Iceland, Central Bank of Iceland.

interest income, which are the banks' largest income and expense items. At later stages in the process, more specific assumptions are added, until it is possible to carry out initial runs on the Central Bank's macroeconomic and stress testing models.

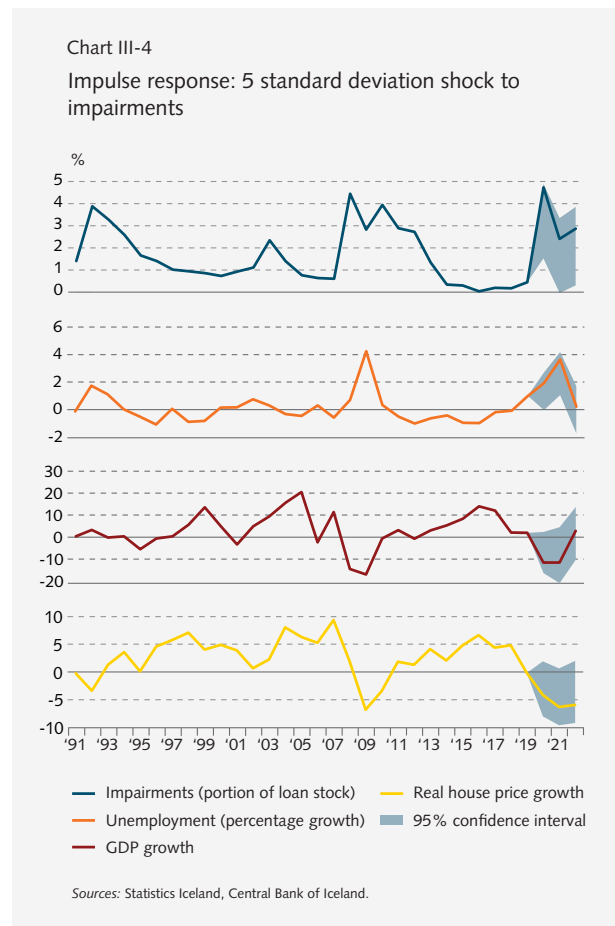
The most pessimistic scenario in the analysis published in Financial Stability 2020/1 is based on assumptions similar to those considered suitable for this analysis. If it is assumed that the banks' income and risk-weighted assets develop broadly in line with that scenario, their cumulative impairment over a three-year period would have to equal 10-11% of their loans, or about 300 b.kr., in order for at least one bank's capital ratio to equal or approach the threshold selected for the analysis. In comparison, the cumulative three-year impairment provided for in the worst-case scenario in Financial Stability 2020/1 was 8%.

The historical relationship between impairment and key economic variables such as GDP, unemployment, and property prices was estimated using several simple models; furthermore, property price movements in previous crises and in the past few years were examined with particular focus on the deviation from long-term trend. A number of other variables were considered as well, including exchange rate, inflation, and interest rates, as they could affect banks' operations and thereby affect their capital ratios.

The historical relationship between impairment and key economic variables

Data on loan impairment extend back to 1985. The data from 1985-2007 are based on the annual accounts of various financial institutions, and the data from 2008 onwards are based on the D-SIBs' annual accounts. The period concerned included two crises, in 1992 and 2008. To begin with, simple linear equations were estimated for developments in impaired loan ratios at various levels of GDP and unemployment. Expert opinion was also applied, as it can be expected that the relationship between extreme values of the variables is non-linear. Based on this analysis, the cumulative contraction in GDP could reach about 10-11%, and unemployment could average 8-9%, in order for cumulative impairment to equal around 10%.

Loan impairment also depends on the value of the underlying collateral; therefore, real estate price movements in previous crises and in recent years were examined. Given a cumulative contraction in GDP of 10-11%, the current real estate price level relative to its long-term trend, and a low-interest environment, real house prices could fall by 15% and commercial property



prices by more than 33% over and above the decline that occurred in 2020. It is worth noting that commercial property prices were highly volatile in 2020 but have moved much closer to long-term trend since end-2019.

Multivariate analysis

In the next step, a vector autoregression (VAR) model was estimated in order to estimate developments in key economic variables relative to impairment and to one another. The model was then used to carry out an impulse response function, which entails that one of the variables – impairment in this case – is subjected to an external shock. The size of the shock is scaled so that cumulative impairment is 10% over a three-year period. According to the model, GDP could contract by 9.4% in the first two years and unemployment could average 8.2% in an event leading to the predetermined impairment level. Expert analysis showed, however, that unemployment would be hit harder relative to GDP than it has been in previous shocks – partly because of how labour-intensive the sectors are that have been most severely affected – and that as a result, unemployment is probably underestimated by the model. The model is calibrated so that a deviation in house prices from long-term trend has an impact, and according to this, real

prices could fall by 20%. This is a smaller decline than in the 2008-2009 crisis, but at that time prices were much further above long-term trend than they are now. This accords with the expert analysis, as lower interest rates and insufficient housing supply in the recent term have strongly affected the situation.

Further scenario development using QMM and the Bank's stress testing models

The Central Bank's macroeconomic model (QMM) was used to generate coherent time series for other economic variables in the scenario. Two pessimistic alternative scenarios published in the Bank's macroeconomic forecast in *Monetary Bulletin 2020/4* were used as a point of departure, with one key difference: the shocks were combined. The assumptions in the model were then adjusted until the severity of the shock was comparable to the results of the analysis described above. The most important change was that the rebound in exports was assumed to occur even later than was provided for in the alternative scenarios.

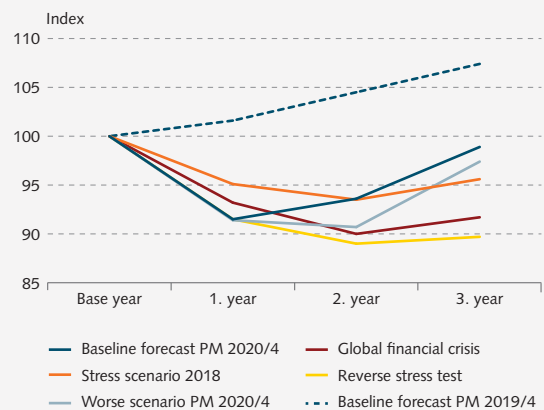
Finally, the Central Bank's stress testing models were used, with the assumptions given by QMM. The results were used to adjust QMM further, and the process was repeated until at least one bank's capital ratio reached the threshold defined at the outset. It would be possible to create any number of scenarios that would generate the same reduction in capital by exacerbating the shock in one variable and mitigating it in another; however, the process described here aims to produce a plausible combination of these variables that could generate the shock.

Conclusions

In order for the banks' capital ratios to deteriorate by as much as 7.8-10 percentage points, the economic recovery must be delayed until at least late 2022 and GDP must first begin to gain steam in 2023. GDP would then be more than 10% lower in 2022 than it was in 2019 (according to the national accounts), and unemployment would be historically high and persistent, averaging around 9% over the period from 2020 through 2022. Such a bleak scenario would entail a marked decline in real estate prices.

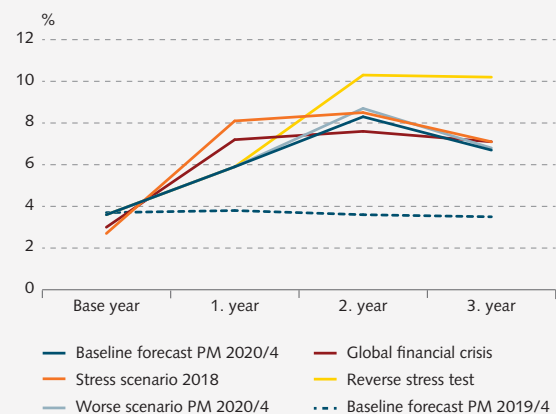
In 2020, exports contracted by 30%, but in the simulated scenario, the contraction would not be larger than this; instead, the recovery would not begin until late 2022, much later than in the Bank's baseline forecast. An additional shock to the fishing sector would be required, in addition to the delayed recovery of exports; therefore, marine product exports are assumed to be weaker, in

Chart III-5
GDP developments in scenarios¹



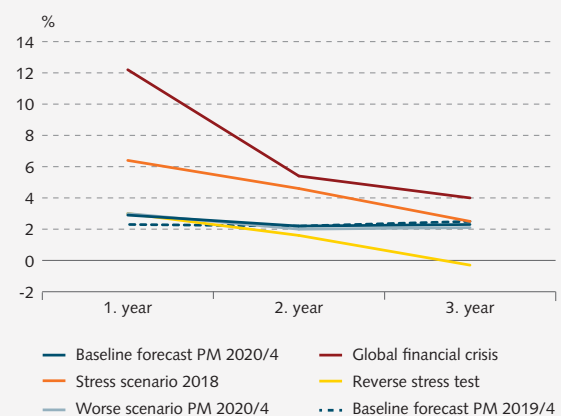
1. Index for GDP, starting at 100 points.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-6
Unemployment developments in scenarios¹



1. Unemployed as a share of workforce, annual average.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-7
Inflation developments in scenarios¹



1. Annual average of 12 month CPI growth.
Sources: Statistics Iceland, Central Bank of Iceland.

part due to catch failures. Exports would therefore be roughly unchanged between 2020 and 2021 in the scenario, but then grow by 9% in 2022.

Unemployment is assumed to be very high, topping 10% in 2021 and 2022, and then start to decline in 2023. Because of this, purchasing power would be eroded by 2.6%, after having declined by almost 10% in 2020, and private consumption would continue to contract in 2021.

The króna would depreciate even further in 2021, and the real exchange rate would fall by 3.4%, on top of a 5.5% decline in 2020. The sizeable slack in the economy would keep inflation in check, however, lowering it from 3% in 2020 to around 0% by 2023. Interest rates would fall thereafter and hover around 0% in 2022-2023. Low interest rates and low inflation would put pressure on the banks' net interest income, which would contract sharply in the scenario. Nominal house prices would fall by a total of 11% between end-2020 and end-2022, and commercial property prices would fall by more than 29%.

After a historically large contraction of 8.5% in 2020, GDP would shrink by an additional 2.7% in 2021. GDP growth would turn positive again the following year, measuring 0.7% in 2022 and 3.7% in 2023. By 2022, GDP would be a full 10% lower than in 2019, and nearly 18% lower than in the Bank's last pre-pandemic forecast, published in *Monetary Bulletin* 2019/4.

It is assumed that the countervailing measures taken by the banks in order to mitigate arrears – such as moratoria on payments – would taper off as the crisis continued. At the end of 2020, as much as 9.6% of loans were frozen. The combined amount of loan impairment described here is consistent with its historical relationship with economic variables, and the effects of moratoria, loan freezes, or other actions by the banks are not included in the analysis. The scenario therefore assumes that impairment will be postponed from 2020 as a result of moratoria and will peak in 2021 and 2022.

In the scenario, cumulative loan impairment amounts to 10-11% of the banks' loan portfolio over the period, although it differs from one bank to another because of the sectoral distribution of their loans. The banks' risk-weighted assets increased in 2020, fuelled by strong growth in lending, but credit growth is assumed to ease in the latter part of the scenario, owing to falling demand. As a result, the banks' capital ratios would fall by as much as 7-8 percentage points, and they would need to deplete their capital buffers to the point where one or two of them would come very close to the third quartile specified in Rules no. 1270/2015. No dividend

payments are assumed, but these could affect the banks' capital ratios in excess of what is provided for in the scenario.

It should be borne in mind that various combinations of key variables could have a similar impact on the banks, and the scenario presented here is just one of many possibilities. The combinations chosen would have to be of the same overall magnitude, however. In addition, it should be noted that the analysis does not provide for mitigating measures taken by the banks, which could prevent the capital position from deteriorating as much as is assumed here. It is also important to interpret the results with caution because the analysis is based on historical relationships between variables – particularly the relationship between impairment and economic variables – but these relationships could be altered by various structural changes that are not captured in the models.

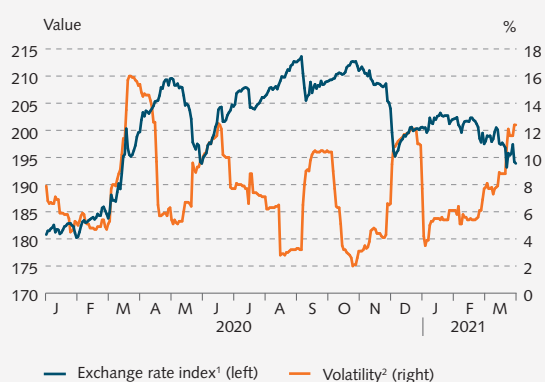
Banking system highly resilient

The reverse stress test conducted on the commercial banks indicates that in order for their combined impaired loan ratio to measure 10-11% over a three- to four-year period and for their CET1 ratio to fall by 7-8 percentage points, a number of things would have to deteriorate relative to the current economic outlook. Such an outcome would require a protracted delay in the recovery of exports, other shocks to key export sectors, a dramatic drop in household consumption, a continued economic contraction, high unemployment, and a steep decline in property prices. It is important to bear in mind that excess capital differs from one bank to another and that this scenario assumes that one or two of them would approach their capital adequacy threshold, but not necessarily all of them. Furthermore, it is possible that the banks' liquidity position would undermine their lending capacity before the above-described effects on capital occurred.

Foreign exchange market stabilises after a wave of capital outflows

The króna was under downward pressure last autumn, after having depreciated by nearly 16% since the beginning of the year. There was considerable uncertainty about Iceland's foreign exchange revenues, the country's largest export sectors – tourism in particular – had suffered severe revenue losses, and the pension funds were disinclined to extend the six-month hiatus on foreign currency purchases. Capital outflows had been modest, however, especially in comparison to global flows, which were characterised by unprecedented flight from emerging market economies to secure assets after the pandemic struck in early 2020. Foreign currency inflows into Iceland's interbank foreign currency market were negligible, however, and given the way the pandemic was developing, there was no reason to expect that to change. As a result, price formation in the market was ineffective, and the Central Bank accounted for an increasing share of market turnover. On 14 September 2020, the Central Bank launched a programme of regular foreign currency sales in the interbank market, selling 3 million euros per day with the aim of deepening the market and improving price formation.

Chart 1
Exchange rate of the króna and volatility
1.1.2020-31.3.2021

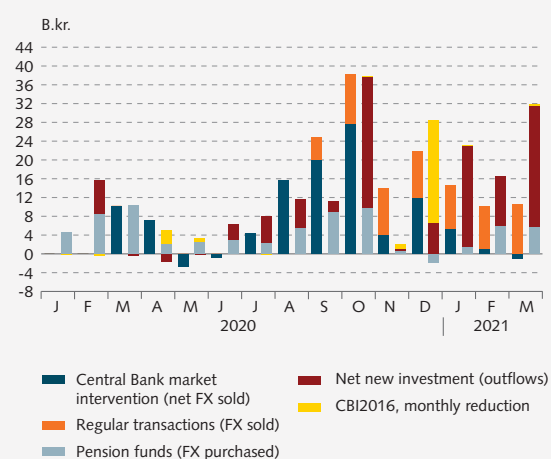


1. Exchange rate index based on average imports and exports, narrow trade basket (1%). 2. 20 business day volatility, annualised.
Source: Central Bank of Iceland.

The Bank's announcement about the currency sales programme affected the market immediately, prompting a 4% appreciation of the króna. At that point, however, a spate of capital outflows began when several non-resident holders of large securities portfolios in Iceland began selling highly liquid króna-denominated assets and, later on, selling

domestic equities as well.¹ Between September 2020 and March 2021, non-residents sold 29 b.kr. in Treasury securities, 23 b.kr. in offshore krónur (primarily CBI2016 certificates of deposit), and 62 b.kr. in equities, then exporting the proceeds. Over the same period, the pension funds bought currency for 31 b.kr., most of it in September and October.

Chart 2
Central Bank and pension funds' FX transactions and non-resident portfolio outflows



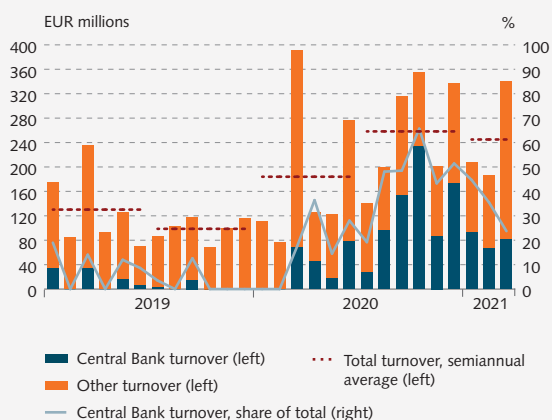
Source: Central Bank of Iceland.

To prevent excess pressure on the króna, the Central Bank countered the outflows to a large extent and as it deemed necessary by intervening in the interbank market in addition to its regular currency sales programme. Between September and February, the Bank sold currency for 69 b.kr. through market intervention and another 66 b.kr. under the regular sales programme. The Bank accounted for roughly half of market turnover during this period.

The stock of highly liquid króna-denominated assets held by non-residents has therefore contracted markedly. At the end of February, these assets plus foreign-owned deposits totalled 114 b.kr., as compared with 204 b.kr. at the end of 2019. Over the period September to March, the Bank's international reserves declined by 116 b.kr., or 32 b.kr. at constant exchange rates. Despite large-scale outflows of foreign-owned assets, the reserves are ample in terms of both the

1 Highly liquid króna-denominated assets are Treasury securities, CBI2016 certificates of deposit and Housing Financing Fund bonds held by non-residents.

Chart 3
Interbank foreign exchange market turnover



Source: Central Bank of Iceland.

International Monetary Fund's (IMF) reserve adequacy metric and other reserve adequacy criteria, as the Bank had used the sizeable current account surplus in recent years to build up the reserves during the tourism boom before the capital controls were lifted (see the discussion of the international reserves in Chapter on risk linked to international developments and capital flows).

Because foreign investors have reduced their securities holdings in Iceland, the likelihood of sizeable capital outflows has diminished. Furthermore, the pension funds have scaled down their foreign currency purchases. The foreign exchange market has therefore been more stable in recent weeks, as can be seen in the reduction in Central Bank-generated turnover in the interbank market since the beginning of the year. In addition foreign currency flows in the interbank market no longer travel a one-way street. As a result, the Bank scaled down its regular sales programme for April, selling currency three times a week instead of every business day.

Table 1 Foreign holdings of liquid assets and deposits

B.kr.	ISK		FX		Total		Total, % of GDP	
	2021 M2	2019	2021 M2	2019	2021 M2	2019	2021 M2	2019
Nominal Treasury bonds	44	106	0	0	44	106	1.5	3.5
Indexed Treasury bonds	0	4	0	0	0	4	0.0	0.1
Treasury bills	0	0	0	0	0	0	0.0	0.0
Housing Financing Fund bonds	3	4	0	0	3	4	0.1	0.1
Deposits with DMBs	52	49	38	28	90	77	3.1	2.5
Deposits with CBI	3	2	10	5	12	8	0.4	0.3
CBI 2016 - certificates of deposit	12	38	0	0	12	38	0.4	1.2
	114	204	47	34	161	237	5.5	7.8

Sources: NASDAQ Iceland, Statistics Iceland, Central Bank of Iceland.

Box 2

Climate issues and financial stability

Iceland has set ambitious goals for carbon neutrality and reduced greenhouse gas emissions, thereby contributing to the achievement of the aims provided for in the 2015 Paris Agreement on limiting global warming. The objectives of the agreement cannot be achieved without decisive measures and associated changes in many areas of society. This includes the financial system, which can play a role by fostering and enhancing positive environmental impact, as well as by preparing for and assessing the risk of direct climate impact and potential changes in the economy as a result.

Icelandic financial companies have behaved responsibly in this regard and, on their own initiative, have placed increased emphasis on sustainable finance.

The Central Bank of Iceland has an important role to play in this, as climate issues are pertinent to all of the Bank's three major functions. The Government formulates the policy, but the Bank implements policy applying to the financial market. The Bank recently joined the Network for Greening the Financial System (NGFS), an international network of central banks and financial supervisors whose goal is to sup-

port the international community in the measures needed to achieve the aims of the Paris Agreement. Members of the NGFS have declared their willingness and commitment to working together to promote and develop best practices for managing climate- and environment-related risk in the financial sector and to promote sustainable and environment-friendly investment.

Climate issues affect Central Bank activities in a number of ways. The effects on monetary policy show in changes to macroeconomic models and the impact on interest rates and collateral. In financial supervision, the effects will show in changes to risk assessment, new requirements for risk management and stress testing, and new challenges in consumer protection, including the need to be aware of the risk of greenwashing.¹ The impact on financial stability will show in a new type of systemic risk in the financial market, which thereby affects scenario analysis and stress testing and can affect the capital requirements imposed on banks. Finally, climate issues affect the internal operations of the Bank, which has formulated its own environmental policy

Climate risk is real and could affect financial stability in the long run. Among the factors concerned are the direct impact of climate change – i.e., physical risk – and the indirect impact that follows from changes in the economy as a result of government action and dwindling demand for certain goods and services – i.e., transition risk.

Green swans

In the financial stability literature, the term “green swans”² refers to environment-related events that are so rare that they are impossible to predict. It was inspired by another term, “black swans”, first described in Nassim Nicholas Taleb’s 2007 *The Black Swan*. “Black swan” refers to highly improbable, unpredictable events. Such events have three main characteristics:

- i. they are unexpected and rare and therefore difficult to predict using conventional forecasting models;
- ii. their impact is large in scale and scope;
- iii. they can only be explained retroactively.

These so-called fat-tailed events are characterised by the fact that the predictive value of conventional probability models is limited.

What distinguishes green swans from black ones is that most scientists agree that there is a strong probability that cli-

mate risk will materialise in the future. The impact of climate disaster could also become more widespread than the impact of many other shocks or crises and, if worse comes to worst, jeopardise the existence of mankind. The complexity relating to the materialisation of green swan events will most likely become even greater than that associated with black swan events. Most conventional financial crises can be resolved using known economic methods, whereas various repercussions of climate change are currently unknown.

Stress testing and scenario analysis

Green swan events are considered likely to materialise and to have a major negative impact, yet at the same time, it is difficult to predict the timing and effects of the events. In view of this, it is important to include environmental impact in the stress testing and scenario analysis that is carried out in the financial market. In this way, authorities responsible for financial stability, such as the Central Bank, expand their knowledge of the impact of climate change on financial institutions’ assets and liabilities, and how well prepared the institutions are to respond to shocks stemming from climate change.

Examples of scenarios involving transition risk include risks due to stranded assets – securities issued by companies that do not satisfy the requirements that will be made in the future due to commitments under the Paris Agreement. Such companies are under strong pressure to adapt their operations to new requirements so as to prevent their investors from being stuck with stranded assets. Financial institutions must prepare scenarios involving stranded assets and try to prevent that risk from materialising.

Another example of transition risk can be seen in the technological advances that stem from responses to climate disaster; for example, increased use of renewable energy and the associated reduction in demand for other energy sources.

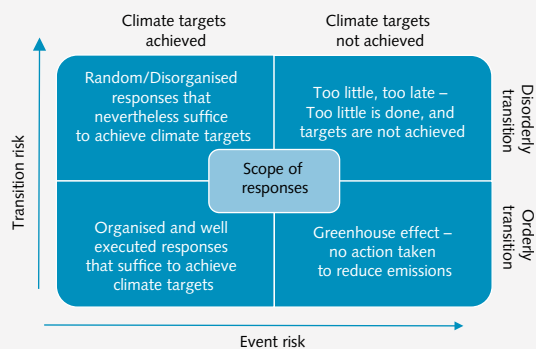
A greater challenge lies in preparing scenarios for physical risk, although significant developments are taking place in this area at present. It is possible to imagine various potential events – the consequences of ocean warming, for instance, or changes in the Gulf Stream – but it is difficult to predict the probability that they will occur. In designing such scenarios for financial institutions, it is important to consider where the institution is located and whether physical risk affects its counterparties (i.e., borrowers), and to monitor climate developments. Climate-related events such as avalanches can occur in Iceland, for example, and scientific study of the probability that they will occur because of climate change is essential.

Chart 1 shows how possible climate scenarios could be placed into four categories, based on potential developments

¹ In the financial market, the term *greenwashing* is used when products offered are labelled “green” or environment-friendly when they actually are not.

² Bank for International Settlements 2020: *The Green Swan* (<https://www.bis.org/publ/othp31.htm>)

Chart 1
Categories of scenarios for responses to climate risk¹



1. Bank for International Settlements 2020: The Green Swan (<https://www.bis.org/publ/othp31.htm>).

in physical risk and transition risk. Financial institutions should be prepared for all four categories and include them in their stress tests. Gaining an overview of the scope of the risk within each category is more difficult in some instances than in others. For instance, it can be assumed that the type of scenario in the lower right corner will materialise over a long period of time – perhaps several decades – and it is difficult to predict the events that could occur. In comparison, scenarios of the type in the upper left corner materialise over a shorter horizon than the others do, as it can be argued that transition risk has already begun to materialise in some sectors.

Impact of climate change on the banking system

It is important that the financial system be prepared for the four types of scenarios in Chart 1, as the financial system must be required to support the real economy during the necessary transition.

All of the risks facing the banks must show in their capital requirements. International institutions, including the European Banking Authority (EBA) are currently working on determining whether amendments to the relevant regulatory framework are needed. For example, if the banks' exposures are considered environment-friendly, they entail reduced transition risk, making it possible to apply a so-called green supporting factor and lower the risk weights for those exposures. Conversely, it would be possible to apply a so-called brown penalising factor by increasing the risk weights on exposures to entities that have not satisfied increased climate requirements. The European Union has issued a taxonomy regulation providing for the classification of exposures vis-à-vis environmental factors. According to the taxonomy, firms' activities must satisfy one of the following six conditions in order to be considered environmentally sustainable:

1. Mitigation of climate change
2. Adaptation to climate change

3. Sustainable use and protection of water and marine resources
4. Transition to a circular economy
5. Prevention and control of pollution
6. Protection and restoration of biodiversity and ecosystems.

In addition, companies that satisfy one of the conditions may not materially damage or compromise any of the other conditions. Furthermore, their activities must be conducted in accordance with minimum prudential requirements and must comply with screening criteria to be explained more fully in a delegated regulation.

Even though the taxonomy makes it possible to determine whether exposures satisfy environmental sustainability requirements, it could be risky to lower risk weights solely for this reason because such exposures could entail other types of risk. Authors of scholarly papers on this topic favour the use of a penalising factor; i.e., increasing risk weights for investments and obligations vis-à-vis brown activities. In the analysis of Pillar 1, all prudential requirements on banks are under scrutiny: capital requirements, liquidity requirements, capital buffers, minimum leverage ratios, and rules on large exposures.

In the short term, climate impact is more likely to be included in Pillar 2; i.e., as regards supervision of risk management and the imposition of additional capital requirements. For example, the UK already requires that banks assign responsibility for analysis and management of climate risk to a senior management employee. On 30 October 2020, the EBA issued a discussion paper³ on management and supervision of environment, social, and governance (ESG) risks for credit institutions and investment firms. The discussion paper defines these risks, proposes risk indicators, specifies requirements that could be made in risk management, and explores how ESG factors can be incorporated into financial supervision (including the supervisory review and evaluation process (SREP)). The consultation on the paper concluded in early February, and the EBA is now reviewing comments received during the process. The paper will be submitted to the European Commission in late June, and the proposals will probably be developed by means of amendments to the Capital Requirements Directive (CRD).

Finally, there are increased information disclosure requirements under Pillar 3. Disclosing the scope of climate risk makes it easier to price that risk effectively. In the European Economic Area (EEA), financial institutions fall under the requirements in the Non-Financial Reporting Directive (NFRD), on which the above-mentioned taxonomy regulation is based.

3 <https://www.eba.europa.eu/eba-launches-consultation-incorporate-esg-risks-governance-risk-management-and-supervision-credit>

The EBA is currently working with other European supervisory agencies on analysing the means by which financial market entities can disclose relevant information on climate risk.

Climate change entails both threats and opportunities for the financial system. The discussion presented here has focused mainly on the challenges ahead and the responsi-

bilities placed on the financial system. Demand for green financial products is growing apace, and Icelandic banks have increased their green product offerings. It can be assumed that those entities that respond swiftly to the challenge and reduce the physical and transition risks in their activities will be better prepared for a carbon-neutral world.

Box 3

Does COVID-19 jeopardise financial stability abroad?

The situation abroad affects Iceland

The position of foreign financial systems is very important for financial stability in Iceland. Iceland's banks could be directly affected by financial instability abroad – through reduced access to foreign credit and increased borrowing costs, on the one hand, and through capital outflows, on the other. If financial intermediation by foreign banks is disrupted and has an adverse impact on foreign demand, it could also cut into domestic firms' export revenues, thereby indirectly affecting financial stability in Iceland by eroding Icelandic households' and businesses' income. Nevertheless, it can be said that the Icelandic economy has seldom been better positioned to withstand external shocks of this type than it is now.

Varying initial positions across Europe

In a recent report, the International Monetary Fund's (IMF) European Department analyses the probable impact of the COVID crisis on European banks' capital.¹ The report presents a scenario analysis based on a sectoral breakdown of banks' exposures. It also considers government responses to the pandemic and evaluates their impact on bank balance sheets.

European banks' capital position was much stronger at the onset of the pandemic than it was when the 2008 financial crisis began, as capital requirements had been tightened significantly in response to the earlier crisis. Even so, many banks suffered from weak returns, inefficient operations, narrow interest rate spreads, and distressed assets dating from the financial crisis. Furthermore, they were heavily exposed to sectors that would come under fire during the pandemic.

Although the European banking system was sound overall, the situation differed from one country to another as regards capital ratios, returns on total assets, and sectoral distribution of corporate loans.² The countries with poor returns on total assets and low capital ratios at the onset of the pandemic – which can be a reflection of impaired resilience – include Greece, Italy, Portugal, and Spain; however, Austria, the UK, France, Cyprus, and Germany were similarly positioned. According to the Bank for International Settlements' (BIS) March 2021 *Quarterly Review*, commercial banks with low returns recorded much less impairment in 2020 than others did.³ This could be due to either of two things: banks with stronger returns may be more able to record impairment without their returns turning negative; or their loan portfolios are fundamentally riskier, generating better returns before the pandemic but now requiring more impairment.

At the beginning of 2020, over 60% of European banks' corporate loans were to sectors subsequently battered by the pandemic.⁴ The percentage in Iceland was broadly the same. Among banks in the euro area, such loans totalled an average of roughly two times Tier 1 capital, and outside the eurozone the share was even higher. In Iceland, the ratio was 135%. Within the eurozone, these sectors weighed heaviest in Finnish, Greek, Italian, and German banks' loan portfolios, although they accounted for more than the average in France, Cyprus, and Spain. Outside the euro area, these sectors weighed heaviest in the loan portfolios of Nordic and Bulgarian banks.

1 Aiyar, S., Mai Chi Dao, Andreas A. Jobst, Aiko Mineshima, and Srobona Mitra (2021). COVID-19: How Will European Banks Fare? Departmental Paper no. 2021/008. European Department. International Monetary Fund. Forthcoming.

2 For the purposes of this discussion, the term *capital ratio* generally refers to the common equity Tier 1 (CET1) ratio, which is the ratio of CET1 capital to risk-weighted assets.

3 Bank for International Settlements. *Quarterly Review*. 1 March 2021. See: https://www.bis.org/publ/qtrpdf/r_qt2103w.htm

4 The sectors in question are lodging and restaurant operations, artistic and recreational activities, retail and wholesale trade, transit and storage, real estate and construction, and other services.

The economic shock brought on by the pandemic varied from country to country in its intensity. The European countries that introduced the most onerous public health measures and suffered the deepest economic contraction in H1/2020 were Belgium, the UK, France, Italy, and Spain.

It is clear from the foregoing discussion that the COVID-19 crisis put banking system resilience under varying amounts of pressure across Europe, with the pressure probably greatest in the countries listed most frequently here. On the other hand, these same countries are among those that have intervened most boldly in an attempt to cushion against the blow. Italy leads this group, with direct COVID-related government spending and government guarantees amounting to about one-fourth of GDP in 2020.

Stress testing European banks

With the above-mentioned factors in mind, the authors of the IMF report conducted a stress test on a sample of 90 banks in the eurozone and then expanded it to include 468 banks in 40 European countries. Two scenarios were studied: first, a baseline using the Fund's January forecast of GDP growth and unemployment; and second, an alternative scenario featuring a weaker recovery in 2021 due to delays in vaccine roll-out.

The results indicate that the European banking system is resilient enough overall to withstand the COVID-19 crisis, which to date has developed broadly as is depicted in the baseline scenario. At the same time, the stress test results indicate that government support for the private sector is of vital importance to the banks.

The banks' capital is somewhat depleted in the baseline example, with capital ratios in the smaller sample declining from 14.7% to 13%, on average, by the end of 2021, assuming that government support for households and businesses is maintained over the period. If the banks pay no dividends this year, the impact on capital ratios will be reduced by about a third. If government support stops and dividends are paid, however, the banks' capital ratios will fall by an average of twice as much, to just over 11%. The decline in capital ratios is similar for the larger sample.

In the baseline scenario, all eurozone banks satisfy the 4.5% capital ratio requirement, provided that government support continues. Without that support, two banks fall below the required ratio.

A decline in the capital ratio could also cause difficulties for banks even if they remain above the threshold. Rules on maximum distributable amounts (MDA) are designed to protect the capital position of vulnerable banks. If capital is depleted to the point where the MDA rule is activated, the

banks in question may need to stop paying subordinated debt, which could affect their credit ratings and funding costs and make it more difficult for them to issue such instruments in the future. In general, the trigger point for the MDA rules lies close to a 9% capital ratio for European banks. In the baseline scenario, one of every 20 banks falls below this trigger point.

In other words, the results of the baseline scenario suggest that the decline in capital ratios will be relatively manageable. This outcome depends in large part on the assumptions provided for in the scenario, however. If the GDP growth assumption is changed, for instance, so that combined GDP growth in 2020 and 2021 is 1.2 percentage points lower, one of every 10 eurozone banks will fall below the MDA trigger point. These banks are located mainly in southern eurozone countries such as Greece, Italy, Portugal, and Spain. If it is also assumed that government measures are halted, nearly one in three eurozone banks will fall below the MDA trigger point. As the assumptions worsen, countervailing government measures become more important for financial stability.

The alternative scenario mentioned above is a relatively benign one. If the GDP growth assumption is adjusted to accord with the European Central Bank's (ECB) July 2020 vulnerability analysis, in which the additional output loss was three times greater, nearly half of eurozone banks would end up with a capital ratio below the MDA threshold by end-2021.⁵

These results accord broadly with the BIS' assessment of loan losses on total corporate debt in the G7 countries plus China and Australia. According to that assessment, corporate insolvencies will increase when government subsidies are unwound and changed consumption patterns become established. In the recreation and tourism sector, which accounts for 15-30% of total corporate debt in the specified countries, substantial loan losses are expected; therefore, total losses are estimated to be closer to those in the 2001 crisis than in the global financial crisis of 2008.

These results indicate that European banks are relatively well positioned overall to face the impact of COVID-19 if the baseline scenario of the stress test materialises. On the other hand, until the population is fully vaccinated, the possibility of a severe blow to financial stability cannot be ruled out if setbacks occur.

5 European Central Bank. COVID-19 Vulnerability Analysis. Results Overview. 28 July 2020. See: https://www.bankingsupervision.europa.eu/press/pr/date/2020/html/ssm.pr200728_annex-d36d893ca2_en.pdf

Government support until recovery takes hold

Based on their results, the authors of the IMF report recommend that payment moratoria, state guarantees, and direct support for debtors be maintained until the economic recovery is securely established. Furthermore, governmental authorities should provide explicit guidance on which measures will be available, and for how long.

In particular, the authors note that banks need ample time to build their capital buffers up again and that required levels should not be tightened too quickly. If the banks' post-pandemic returns are similar to those during the pre-pandemic period, it could take until year-end 2025 to restore their end-2019 capital ratios. In order to strengthen their capital position more quickly, it is recommended that restrictions on dividend payments and share buybacks be maintained until the recovery is well in hand.

In addition, the authors recommend that emphasis be placed on efficient processing of non-performing loans, strengthening of resolution authorities, and rapid winding-up and resolution for those financial institutions that do fail. Finally, they recommend further cross-border mergers and acquisitions as an element in boosting returns and efficiency in the financial system while fostering increased risk diversification.

Conclusion

Most indicators imply that the banking systems in Iceland's main trading partner countries are able to sustain their financial intermediation role and provide liquidity facilities to customers throughout the pandemic. Early in 2020, for instance,

US companies were able to draw on large credit lines from banks in order to strengthen their liquidity without putting excessive pressure on the capital and liquidity position of the banks themselves.

Furthermore, cross-border intermediation of capital has not been disrupted. Numerical data from the BIS show that banks' aggregate cross-border claims increased in the first nine months of 2020, fluctuating widely in Q1 and Q2 but holding broadly steady in Q3.⁶ Countries with stronger economies borrowed more, and better funded banks loaned more, than their weaker counterparts did.

New features of the IFRS9 financial reporting standard and the US Generally Accepted Accounting Principles (GAAP) also play a role in ensuring that the economic crisis is systematically portrayed in banks' accounts. Banks must make increased impairment provisions for expected credit losses, thereby distributing the impact of the crisis over a longer period. According to a BIS survey of 70 large international banks, impairment provisions totalled 161 billion US dollars in H1/2020, as compared with 50 billion dollars in H2/2019.⁷ As the year advanced and the economic outlook improved, impairment provisions returned to the pre-pandemic level. This indicates that the banks have set funds aside for most of the pandemic-related credit losses they expect to incur based on current projections of the pandemic endgame.

6 Bank for International Settlements. BIS international banking statistics at end-September 2020. 22. January 2021 See: <https://www.bis.org/statistics/rppb2101.htm>

7 Bank for International Settlements. Quarterly Review. 1 March 2021. See: https://www.bis.org/publ/qtrpdf/r_qt2103w.htm

Box 4

Credit spreads: differentials between the D-SIBs' lending and funding rates

Short-term interest rates in the financial market are determined by the Central Bank key rate. If the Bank's Monetary Policy Committee (MPC) changes the key rate, the impact shows first in yields on short-term debt, but in general, the effect on new variable-rate long-term loans has been comparable. All else being equal, interest rate movements do not affect rates on existing debt instruments if the interest rate on those instruments has been fixed or locked in for a specified period of time. In such cases, the interest rates change only when the fixed-rate period is over.

The domestic systemically important banks' (D-SIB) liabilities bear either fixed or variable interest, as do their assets – which in this context refers to the loans they have granted. For example, covered bonds issued in krónur bear fixed interest for the lifetime of the instrument. When the Central Bank's key rate changes, the banks' interest expense on outstanding covered bonds is not affected. The same applies to fixed-rate deposits and loans. As a result, the banks' funding and lending rates as a whole can only reflect developments in the Central Bank key rate with a time lag.

The Box examines recent developments in the banks' funding and lending rates in view of the decline in the Central Bank key rate from 4.5% to 0.75%.¹

Net interest income is one of the pillars of the banks' operations, providing 70-80% of their total income in the recent term. As a result, it is important for the banks to preserve their interest rate spreads and their net interest income. Chart 1 shows spreads on funding and lending rates, as the D-SIBs' loans to households and businesses accounted for 76% of their total assets at the end of 2020. Focusing on lending rates omits such items as interest on marketable bond, cash balances, and claims on other financial institutions.

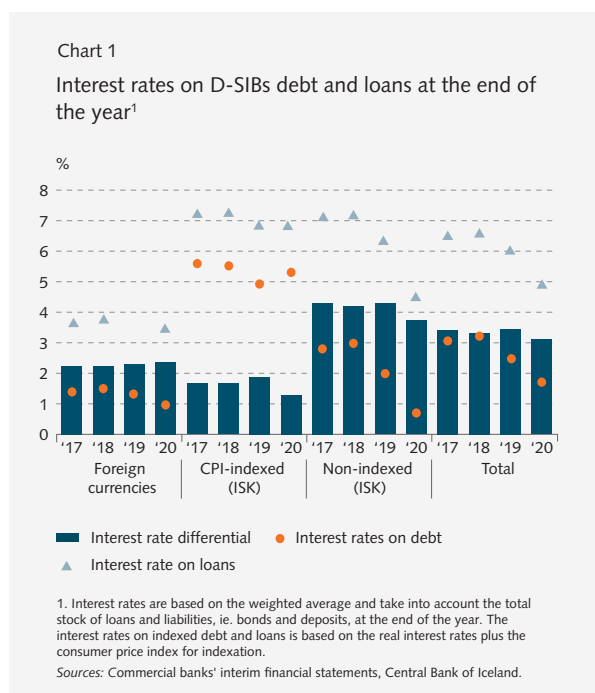


Chart 1 shows that the spread is widest between non-indexed króna-denominated assets and liabilities, and that Central Bank rate cuts affect non-indexed rates much more than indexed rates. This can be traced primarily to the decline in rates on non-indexed liabilities from 3% at the end of 2018 to 0.69% by end-2020, while interest on indexed liabilities remained broadly unchanged over the same period, partly due to rising inflation. Between 2018 and 2020, non-indexed lending rates fell from 7.2% to 4.4%, whereas indexed lending rates fell from 7.2% to 6.8%. Naturally, changes in the Central Bank key rate do not affect foreign-denominated

¹ This analysis is based on interest rate reports submitted to the Central Bank by all of the D-SIBs, which contain information about interest rates on all of the banks' deposits and loans. It also uses information from the banks' annual accounts, such as itemised interest income and expense, and issuance of covered bonds and foreign-denominated bonds.

deposit and lending rates. The D-SIBs' foreign-denominated funding terms have been improving since the end of 2018, owing to better terms on foreign bond issues and to lower deposit rates. More favourable terms on foreign-denominated funding have delivered lower lending rates, but credit spreads have widened as well. Wider credit spreads in foreign currencies offset narrower spreads in krónur.

At the end of 2020, the weighted average interest rate on loans to households and businesses in all currencies was 4.9%, a decline of 1.6 percentage points since 2018, whereas the interest rate on their liabilities was 1.8% and had fallen by 1.4 percentage points over the same period. The spread between lending and funding rates was therefore 3.1% at the end of 2020, a decline of 0.2 percentage points since end-2018 and 0.3 percentage points since end-2019.

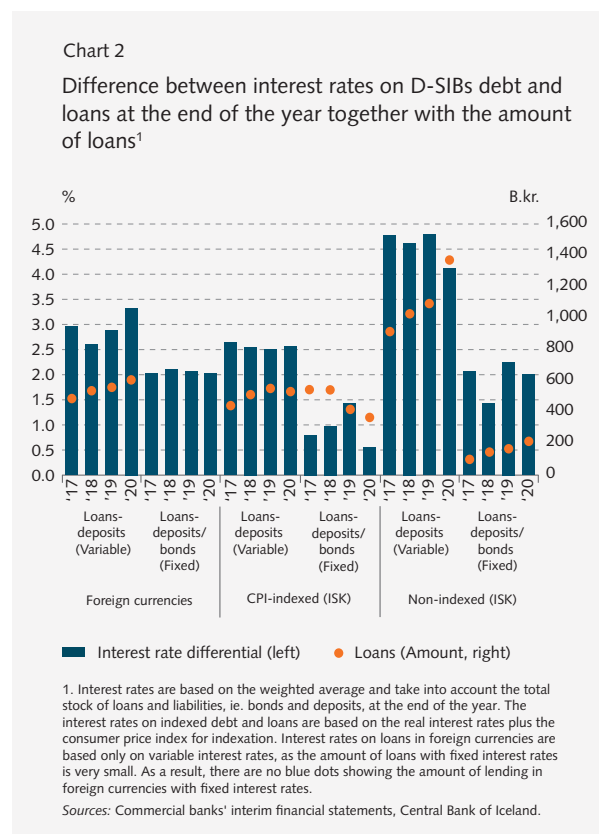


Chart 2 shows credit spreads – i.e., the difference between liabilities rates and lending rates – on indexed and non-indexed deposits and loans in krónur, as well as those in foreign currencies. Variable and fixed rates are shown separately, and the amount for each category is shown as well. It is assumed here that fixed-rate loans are funded with fixed-rate debt and that variable-rate loans are funded with variable-rate debt. Almost all foreign-denominated loans bear variable interest rates; therefore, the spreads on them

are determined by funding rates. The spread is somewhat wider on foreign loans funded with variable-rate foreign deposits than it is on loans funding with foreign bond issues and fixed-rate deposits.² This is because interest on variable-rate foreign deposits is less than 0.1%, while interest on outstanding bonds is just under 1.3%. The foreign-denominated credit stock has remained relatively stable in recent years, and the increase in 2020 is due in large part to the depreciation of the króna.

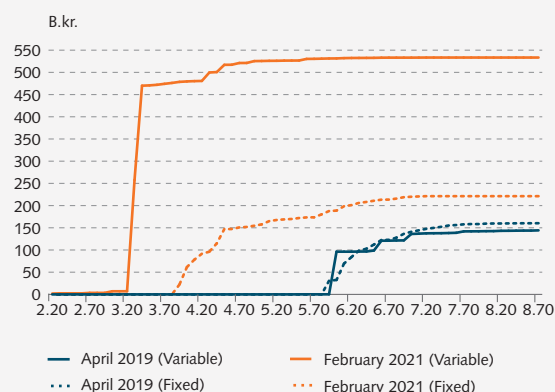
The spread between non-indexed variable-rate deposits and loans in krónur was widest at the end of 2020 in spite of a decline during the year. The stock of non-indexed variable-rate loans grew by 280 b.kr. in 2020. Since the beginning of 2019, the stock of non-indexed loans with variable and fixed interest has grown by 410 b.kr., whereas the indexed credit stock has shrunk by 160 b.kr. As these figures show, demand for non-indexed loans has soared at the expense of demand for indexed loans.

As is mentioned above, the spread in krónur has narrowed in the wake of Central Bank rate cuts. The D-SIBs' net interest income was unchanged year-on-year, totalling 103 b.kr. in 2020. The D-SIBs have sustained their interest income by expanding their loan books, particularly with non-indexed mortgage loans. Reserve requirements are lower on residential mortgages than on general corporate loans, and default is relatively rare and the risk of loss limited. Returns on mortgage lending are therefore considered good.

Charts 3 and 4 show clearly the impact that Central Bank rate cuts have had on non-indexed residential mortgage rates and deposit rates since April 2019. The current monetary easing phase began in May 2019. The stock of non-indexed residential mortgages bearing variable rates of 3.4% or lower totalled 470 b.kr. at the end of February 2021. At the same time, the stock of non-indexed deposits bearing variable rates of 0.25% or lower totalled 940 b.kr., or 78% of all króna-denominated deposits held by households and businesses.

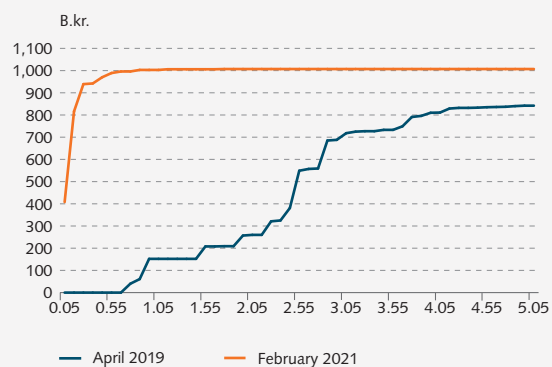
² Foreign-denominated fixed-rate deposits do not weigh heavily here, as the stock of such deposits is only a fraction of the stock of foreign bond issues.

Chart 3
Interest rates on D-SIBs non-indexed mortgage loans¹



1. Total stock of non-indexed mortgage. Weighted average interest rates.
Source: Central Bank of Iceland.

Chart 4
Interest rates on variable-rate króna-denominated deposits¹



1. Total stock of private sector deposits. Weighted average interest rates.
Source: Central Bank of Iceland.

Central Bank of Iceland Resolution Authority

The Act on Resolution of Credit Institutions and Investment Firms, no. 70/2020 (referred to hereinafter as the Resolution Act), entered into force on 1 September 2020. The Act entrusts the Central Bank with powers of resolution, which entails the authority to take decisions on resolution and to apply resolution measures in the case of a financial undertaking that cannot service its liabilities or is deemed unlikely to be able to. According to Article 4 of the Act, the Central Bank of Iceland Resolution Authority shall be separate from other activities within the Bank's organisational structure, particularly the Financial Supervisory Authority (FSA Iceland). The Central Bank's Office of the Resolution Authority formally commenced operation in November 2020.

Objectives and conditions for resolution

All decisions taken by the Resolution Authority are based on the objectives laid down in the Resolution Act. These objectives provide the foundation for an assessment of which measures should be taken and which resolution strategy is most suitable for financial institutions in Iceland. The purpose of the Act comprises five objectives, which are described as follows in Article 1: to preserve financial stability and minimise the adverse implications of financial shocks by protecting insured deposits and investors, customers' assets, and vital company operations; and minimise the risk that capital contributions from the Treasury will be needed. It follows from this that the Central Bank Resolution Authority is intended to:

- Safeguard the critical functions¹ of financial institutions; i.e., to ensure the continuity of such functions;
- Preserve financial stability and minimise adverse repercussions of financial shocks, including by limiting contagion and maintaining market discipline;
- Minimise the risk that capital contributions from the Treasury will be needed;
- Protect insured investors and depositors; and
- Protect customers' assets.

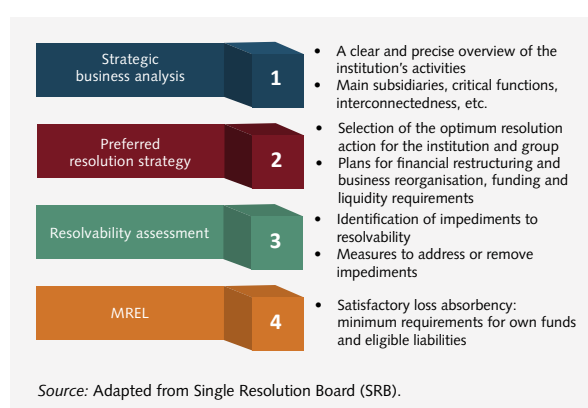
In order to achieve these objectives, the Resolution Authority is to minimise resolution costs and avoid the destruction of value unless it is necessary to achieve the

¹ *Critical functions* are activities, services, or operations that are so important to the real economy or financial stability that their discontinuance would be likely to lead to disruption of economic activity or stability, owing to their scale or scope, market share, interconnectedness to other activities, complexity, or cross-border activities, provided that substitutable activities, services, or operations are not available.

above-mentioned objectives. Part of the objective of preserving financial stability implies that the Resolution Authority must work to avoid moral hazard. Moral hazard could weaken market discipline, as businesses' and investors' risk appetite will increase if they rely on the Government to rescue them if they end up in difficulty.

In addition to the above, the following three conditions must all be satisfied in order for the Central Bank of Iceland Resolution Authority to be authorised to take action and apply the measures entailed in resolution. First, FSA, in consultation with the Resolution Authority, must have concluded that the institution is failing or likely to fail; cf. Article 34, Paragraph 1 of the Resolution Act. This implies that the institution cannot service its liabilities or is highly unlikely to be able to do so.

Upon being notified that an institution is failing or likely to fail, the Resolution Authority decides, based on Article 35, Paragraph 1 of the Resolution Act, whether resolution is needed in order to achieve the objectives laid down in the Act. In taking such a decision, the Resolution Authority determines whether the latter two conditions are met regarding whether the Authority is authorised to take action and apply the measures entailed in resolution proceedings. The second condition is that the Resolution Authority must have legitimate reason to believe action by a private entity or other public entities, including early intervention as described in Articles 86(h)-86(j) of the Act on Financial Undertakings, no. 161/2002, with subsequent amendments, or write-down or conversion of capital instruments according to Chapter VI of the Resolution Act, will not prevent the failure of the institution within a reasonable length of time. The last condition is that the resolution action must be deemed by the Resolution Authority to be necessary in the public interest. A decision



on resolution is subject to prior approval by the Minister of Finance and Economic Affairs; cf. Article 5 of the Act.

General information on resolution plans

It follows from the Resolution Act, the purpose of the Act, and the conditions for resolution action that it is unlikely that resolution measures will be taken in connection with the activities of all financial institutions in Iceland. Elsewhere in the European Economic Area (EEA), for instance, resolution is only applied in some cases. The Resolution Authority prepares resolution plans for financial institutions if the above conditions are satisfied. In general, it can be said that more influential and systemically important financial institutions are more likely to be subject to resolution, while less significant companies would be subjected to conventional winding-up proceedings. The resolution plans will not be made available to the financial institutions concerned, but they will be prepared on the basis of information the Resolution Authority has obtained from the institutions themselves and FSA, including the institutions' recovery plans. Preparation of resolution plans entails several steps that ultimately lead to minimum requirements for own funds and eligible liabilities (MREL).² The steps are as follows: 1) a strategic business analysis; 2) the preferred resolution strategy; and 3) a resolvability assessment. The fourth and last step in the preparation of resolution plans is the determination of specific MREL for each institution.

A strategic business analysis entails, among other things, an overview of core business lines and critical functions at institutional and group levels. Based on the business analysis, which includes consideration of the institution's recovery plan, the Resolution Authority determines the preferred resolution strategy. The preferred resolution strategy entails the measures the Resolution Authority will take in the event that the conditions for resolution apply to a given institution. This involves, among other things, selecting the optimum resolution action for the financial institution concerned; i.e., the measures best suited to that institution's activities. All available resolution measures are considered: bail-in, establishment of a new bridge institution, divestment of assets or operational units of the institution, or transfer of assets or operations to an asset management company. Bail-in entails the write-down of liabilities or their conversion

to new equity. The Resolution Authority may tap a so-called resolution fund to cover the cost of resolution and fund the measures it has decided to apply.

The preparation of a resolution plan also includes an assessment of the institution's resolvability. This entails ascertaining that there are no impediments to resolution; i.e., that it will be possible to take decisions on the application of resolution measures quickly and effectively. If impediments do exist, however, and the institution in question cannot remove them, the Resolution Authority is obliged to demand that the institution take the following actions, including:

1. revising intra-group financing agreements according to the Act on Financial Undertakings or determining whether such agreements should be made;
2. preparing service agreements with intra-group or third parties in order to guarantee continuity of critical functions;
3. limiting its individual and aggregate exposures;
4. providing, more frequently or on a regular basis, additional information relevant to the resolution process;
5. divesting specific assets; and
6. limiting or ceasing specific activities, either existing or proposed.

MREL

Based on the resolution plan for the institution, including the selected resolution strategy, the Resolution Authority takes a decision on each institution's MREL. MREL entail that the institution must have enough capital to ensure that it can be recapitalised, or that debt can be written down or converted to equity, if the institution should fail. Institutions that do not satisfy the conditions for resolution will only be required to satisfy general capital requirements for financial institutions.

MREL are therefore intended to ensure that instead of bailing a failed financial institution out using Government funds, it will be possible to bail in and recapitalise it using creditors' funds. MREL also have another objective: to ensure that the institution has adequate loss absorption capacity.

There is no single answer to the question of what the MREL should be for financial institutions in Iceland. There are several formulae for the calibration of MREL,³ and countries within the EEA have come to different conclusions on appropriate MREL for each country.⁴ This is because the legislation

2 The minimum requirements for own funds and eligible liabilities (MREL) are calculated as the amount of own funds and eligible liabilities expressed as a percentage of the institution's total liabilities and own funds. Eligible liabilities are capital instruments that are not included in institutions' own funds and are not explicitly excluded from the scope of the Resolution Authority's bail-in tool; i.e., the write-down of debt or conversion of debt to equity. The term *total liabilities and own funds* is often abbreviated as TLOF. MREL are often expressed as a proportion of the the total risk exposure amount, or TREA.

3 In this context, it is worth mentioning the guidelines and methodology developed by the EU Single Resolution Board, as well as the technical standards on the criteria and methodology for setting MREL, issued as Commission Delegated Regulation (EU) 2016/1450.

4 In this context, it is worth noting that Denmark, Norway, and Sweden have all created their own versions of the MREL formula. Their point of departure is that MREL shall be approximately double the overall capital requirement (i.e., Pillar I x 2, Pillar II x 2, and capital buffers x 2).

has a certain amount of built-in flexibility, owing to the fact that MREL are supposed to be based on the activities of the financial institution concerned and the measures to be taken under the resolution plan. The eligible liabilities mentioned are only part of a financial institution's liabilities; i.e., they are the liabilities that satisfy two main conditions: i) they include only financial instruments that do not comprise the own funds items as provided for in the Act on Financial Undertakings; and ii) they are not exempted from bail-in, or the Resolution Authority has not expressly exempted them from bail-in according to the relevant provisions of the Resolution Act.

In addition to these main conditions, eligible liabilities must satisfy certain conditions in order to qualify for inclusion in MREL. This entails that they must be issued and fully paid up, and they may not be owed to, secured by, or guaranteed by the institution itself. Furthermore, they must not be funded directly or indirectly by the institution itself, and the remaining maturity must be at least one year. Moreover, such liabilities may not arise from derivatives or from guaranteed or guarantee-eligible deposits of microfirms or small and medium-sized enterprises.

Conclusion

With the entry into force of the Resolution Act, the implementation of Directive 2014/59/EU – the Bank Recovery and

Resolution Directive (BRRD) – is well underway and the most important provisions of the directive have been enshrined in Icelandic law. In coming months, a number of EEA regulations containing more detailed provisions on the substance of the directive will be implemented by means of Governmental directives from the Ministry of Finance and Economic Affairs and the Central Bank of Iceland. Furthermore, a bill of legislation on the ranking of claims in resolution and winding-up proceedings has recently been introduced before Parliament. Moreover, permanent arrangements for the financing of a resolution fund will be made with amendments to the Resolution Act. It can be assumed that the incorporation of the BRRD into the Icelandic regulatory framework will be largely complete by the end of 2021.

Resolution of financial institutions is a multi-faceted process that will require the involvement of numerous Governmental bodies in Iceland. In the coming term, the tasks of the authorities concerned – including the Ministry of Finance and Economic Affairs, the Central Bank of Iceland, and the Depositors' and Investors' Guarantee Fund – will be to continue developing and fine-tuning the tools and measures currently in place. It will be the joint responsibility of these Governmental bodies to ensure that the requirements made of financial institutions are coordinated and are appropriate for the Icelandic financial system.

The new interbank payment system

In recent years, the payment intermediation infrastructure in Iceland has been undergoing renewal, a process that is still underway. Last year, the Central Bank launched a new interbank payment system that can handle both large-value payments (over 10 m.kr.) and retail payments. The new system is based on solutions in use by the other Nordic central banks, except that their systems do not include retail payment intermediation. In Iceland, unlike in other countries, both retail and large-value payments are intermediated in real time via a direct claim on the Central Bank. In addition, both Landsbankinn and Íslandsbanki have recently installed new deposit and internal payment intermediation systems that link to the interbank system via standardised solutions. The other commercial banks are expected to do the same this year. The objective of installing a new interbank payment system, apart from maintaining real-time payment intermediation nationwide, was to establish a new, standardised, independent solution to take the place of the previous real-time gross settlement and retail netting systems. It was also

required that the new system be compliant with Icelandic law and international regulatory provisions; i.e., the BIS/IOSCO Core Principles for Financial Market Infrastructures (PFMI). With the launch of the interbank system, a standardised solution supplanted an outdated domestic system that needed replacing. Furthermore, the technological boundaries between different infrastructure elements are better than before, and responsibilities for each are more clearly defined. With a standardised solution, the tech environment is more secure and more flexible, and in terms of business efficiency, the new system far outperforms its predecessors.

The interbank system launch began on Friday 23 October 2020, and the new system was brought fully into use by Monday 26 October 2020. The process went smoothly, and there were no serious incidents directly related to the system itself. At the time of the launch, there were 11 registered participants in the new interbank system, including two foreign participants.

Household payment behaviour

Electronic payments predominate

The Central Bank of Iceland compiles data on a regular basis in order to analyse developments and prospects for retail payment intermediation and use of cash as a means of payment in Iceland. A part of this work involves surveys of households' payment behaviour. This Box is based on the results of a Gallup survey carried out in October 2020 in cooperation with the Central Bank of Iceland.

Consumers have a number of payment options to choose from when paying for goods or transferring funds, and they use them readily.¹ Which solutions they opt to use depends on the purpose of the payments. According to the above-mentioned Gallup survey, over half of households said they do not use cash at all. Of the more than 40% who

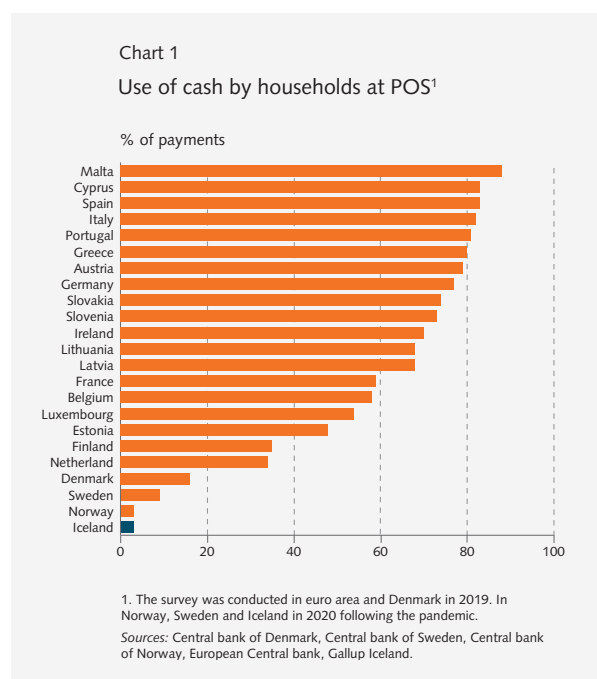
do, they did not necessarily use cash to pay for goods and services; instead, they were more inclined to use cash as gifts or as person-to-person payments. When households buy goods and services, they use electronic payment solutions in 90% of cases.² Of that total, over 31% use card-based payment apps in their smart devices and 10% use cash. In a comparable Gallup survey from December 2018, electronic payment solutions were used in physical trade in 87% of cases, and 13% of all payments were made in cash. Use of cash has therefore declined by 3 percentage points in two years. Among households that shop on a weekly basis or more often, as most households do, only 2.9% used cash as a means of payment. The results were similar in a 2020 survey of households in Norway (Chart 1).

¹ *Payment solution* is an umbrella term used for various methods or options for the intermediation or execution of payment. For further discussion, see Central Bank of Iceland *Special Publication no. 13 (2018)*.

² In the survey, participants were asked whether they used a specified payment solution and how often, based on a scale ranging from daily to less than once a month. The percentage shows total use.

Cash payments accounted for an estimated 8% of the total transaction value in physical trade in 2020, down from 9% in 2018, while payment cards accounted for around 90%, including slightly more than 17% via smart devices.³

In the survey, households were also asked whether COVID-19 had changed their payment behaviour, including whether they used contactless payments more than before (i.e., smartphones, smart watches) and whether they bought goods and services online more often than before. If they answered in the affirmative, they were asked whether they would continue to use such solutions and shop online more often after the pandemic was over. About 40% of respondents said they would continue to use contactless payments more often, and just under a third said they would continue to shop online. These results are consistent with those from surveys taken abroad.⁴



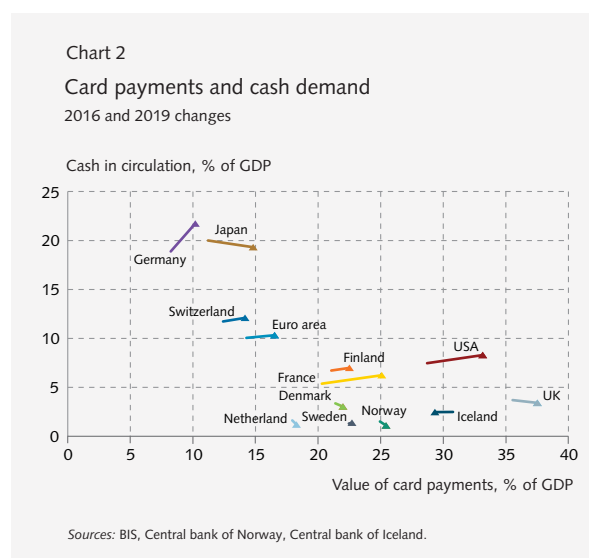
3 The value of cash and card-based smart device payments was estimated based on the average amount and average use per transaction, by type of payment solution, using data from the Gallup survey. Payment card data were obtained from the Central Bank of Iceland.

4 In a July 2020 survey conducted by the European Central Bank, 40% of respondents said they used cash as a means of payment less often since the onset of COVID-19. Of that group, about 90% said they would continue to use less cash after the pandemic was over. A survey carried out by Danmarks Nationalbank gave similar results. Sources: Danmarks Nationalbank (2020). *Payments before, during and after the corona lockdown*, no. 16; European Central Bank (2020). *Study on the payment attitudes of consumers in the euro area (SPACE)*.

Continued demand for cash

At the same time as use of cash transactions in physical trade has declined, the amount of cash in circulation has increased. This has also been the case during the COVID-19 pandemic.⁵ By the same token, households participating in the survey said that merchants had refused to accept cash for goods and services purchases more often than in 2018.⁶ Moreover, foreign tourists have used Icelandic cash less often than before, and less cash is withdrawn from ATMs using Icelandic payment cards. In this regard, there are two conflicting trends in the use of cash. But developments in electronic payments and cash in circulation in Europe between 2016 and 2019 show that Iceland is not alone in this respect.

In the Gallup survey, households were asked whether they had cash on hand at the time the survey was taken. About 70% of respondents answered in the affirmative. The average amount of cash holdings was just over 11,000 krónur. This means that in 2020, about 2 b.kr. in cash was held in the pockets and wallets of Icelanders aged 18 or over. This amount had increased by 14% from the 2018 Gallup survey.



Households were also asked whether they had savings in the form of cash held somewhere else than in a bank account or securities (cash in storage). Various studies show that there is a link between perception of risk in electronic payment services and precautionary demand for cash. In other words, households choose to hold cash elsewhere than in a bank when they experience a sense of economic uncertainty. According to the Gallup survey, it appears that this

5 Cash in circulation equalled 2.3% of GDP in 2017, 2.4% in 2019, and close to 2.8% in 2020.

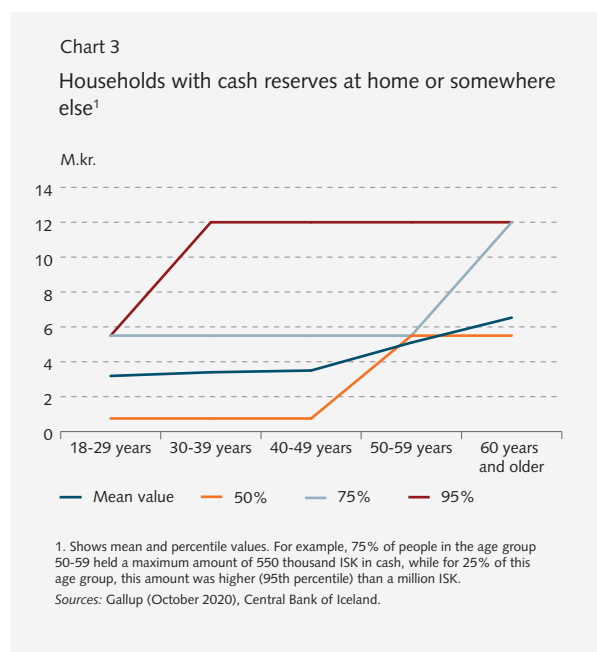
6 About 40% of respondents in the Gallup survey said merchants had refused to accept cash several times/often during the pandemic, up from 9.8% in 2018.

has not been Icelandic households' first response to the pandemic, unlike the pattern in other countries.⁷ Icelandic households were more likely to hoard food and cleaning products. The survey results indicate that over 19% of households had cash in storage. This is virtually the same percentage as in the 2018 survey. The response ratios were similar across all age groups, indicating that 80% of households rely solely on electronic payment services. On the other hand, 16% of those who stored cash said they had withdrawn more of it from banks because of the pandemic. Of this group, older people were significantly more likely to hold larger amounts in storage. On average, each household held about 440,000 kr., which means that roughly 24 b.kr. in cash was held in safes, strongboxes, safe deposit boxes, or other non-bank locations.

Furthermore, households were asked why they held cash outside banks. According to the survey results, nearly half said they held cash so that they would need to go to the bank or ATM less often. Just over a third said they did so for precautionary reasons. The share who said they did not trust banks was smaller than before, or 17%, as opposed to nearly 38% in 2018.

The impact of changed circumstances in retail payment intermediation

Clearly, an increasing number of Icelandic households opt out of using cash as a means of payment, and fewer



7 Bank for International Settlements (2020). Central banks and the new world of payments: Pietrucha, J. and Maciejewski, G. (2020). Precautionary Demand for Cash and Perceived Risk of Electronic Payments. MDPI.

than 20% of them hold cash for precautionary reasons. The trend is in the direction of new tech solutions for intermediation of payments. Innovation and competition are positive, provided that the security and efficacy of payment solutions and systems are safeguarded. It is also clear that the Central Bank does not have the same retail payment intermediation instruments as it did when cash dominated the payment market and domestic clearing systems were used. The same applies in many places abroad. Many central banks worldwide are examining, among other possibilities, the issuance of central bank digital currency (CBDC) concurrent with conventional physical currency, with the aim of being better able to promote secure payment intermediation in the future.⁸ To some extent, the arguments for and against digitisation of cash are the same everywhere, but they can also differ because of varying frameworks and conditions in individual countries. According to a study by the Bank for International Settlements (BIS), central banks have grown more positively disposed towards digitisation, but their reasons may vary.⁹

The question of what happens to cash not used in cash payments remains unanswered, as it is difficult to trace an anonymous and unregistered payment solution. As the Gallup survey showed, a portion of it is held in storage by households. Another share is held by merchants, and some is perhaps lost.

Risk in retail payment intermediation

One of the Central Bank of Iceland's roles is to promote a safe, effective financial system, including domestic and cross-border payment intermediation. The Bank also has the exclusive right to issue cash, which is designated as legal tender for all payments. On the other hand, electronic payment solutions have long been dominant in the retail payment market,¹⁰ but they are issued by private entities and do not enjoy the same protection as cash. Nevertheless, they are often more convenient and efficient.¹¹

The vast majority of electronic retail payments in Iceland are routed first through an international clearing system for approval before they are sent for settlement.

8 The Central Bank of Iceland has issued an interim report on digital currency, entitled *Rafkróna? Central bank digital currency* (see https://www.cb.is/library/Skraarsafn---EN/Reports/Special_Publication_12.pdf).

9 Bank for International Settlements (2020). Central banks and the new world of payments.

10 The retail payment market comprises retail payment intermediation and cash.

11 Cash (banknotes and coin) is central bank money. It constitutes a claim on the central bank and is available to the general public, as well as to institutions and companies. Further information on central bank money and commercial bank money (which is issued by private entities) can be found in Central Bank of Iceland Special Publication no. 12 (2018).

When retail payment intermediation infrastructure is not under domestic jurisdiction, the domestic authorities are less able to take action so as to protect domestic intermediation of electronic retail payments in the event of a disruption or shock to payment intermediation.¹² Furthermore, from the

standpoint of retail payment intermediation, digital payment innovations could pose greater risk. If anything goes awry during intermediation of payments – due to a cyberattack, for instance – the credibility of payment intermediation could be compromised.

¹² For further information, see *Financial Stability 2020/2*.

Appendix

Tables

Table 1 Financial system assets¹

Assets, b.kr	31.12.2016	31.12.2017	31.12.2018	31.12.2019	31.12.2020	Change from 31.12.2019,%
Central Bank of Iceland	901	765	755	840	844	0
Deposit-taking corporations excluding the Central Bank	3,222	3,405	3,681	3,775	4,212	12
– Commercial banks	3,199	3,381	3,656	3,748	4,183	12
– Savings banks and other deposit-taking corporations	23	24	26	26	288	
Money market funds	177	158	147	144	145	1
Non-WMF investment funds ²	668	686	668	766	846	10
Other financial intermediaries ^{3, 4}	781	456	397	290	260	-10
Treasury	992	969	941	936	1,046	12
– Housing Financing Fund	787	761	731	718	684	-5
Financial auxiliaries	18	20	25	25	49	95
Insurance corporations	206	220	232	259	290	12
Pension funds	3,540	3,944	4,245	4,975	5,716	15
Total assets	10,505	10,623	11,091	12,010	13,408	12

1. Including the old banks' holding companies from 31 December 2015 onwards.

2. Effective 31 December 2016, specialised investment companies are included with equity, investment, and institutional investment funds.

3. Effective 31 December 2015, after finalisation of composition agreements, the old banks' holding companies are classified as other financial corporations.

4. Beginning on 27 February 2019, Byr, ESI, the Framtíðin credit fund, and Sparisjóðabankinn (SPB) are classified among other financial institutions. Data are as follows: for Byr, from January 2016 onwards; for ESI, from December 2009 onwards; for Framtíðin, from May 2017 onwards; and for SPB, from February 2016 onwards.

Source: Central Bank of Iceland

Table 2 DMB assets

Assets, b.kr	31.12.2016	31.12.2017	31.12.2018	31.12.2019	31.12.2020	Change from 31.12.2019,%
Cash and deposits with Central Bank	385,056	378,700	293,870	329,923	213,018	-35
Deposits in domestic deposit-taking corporations	4,176	6,075	658	633	1,711	170
Deposits in foreign deposit-taking corporations	56,299	77,887	107,039	63,887	85,059	33
Domestic credit	2,187,741	2,407,764	2,708,062	2,784,748	3,070,658	10
Foreign credit	132,419	133,857	153,272	137,546	168,635	23
Domestic marketable bonds and bills	206,056	116,001	95,842	104,980	306,068	192
Foreign marketable bonds and bills	53,590	85,778	137,139	145,433	146,996	1
Domestic equities and unit shares	130,720	114,561	101,026	121,132	123,345	2
Foreign equities and unit shares	2,197	14,276	3,077	2,622	2,262	-14
Other domestic assets	56,906	57,445	68,435	67,047	74,037	10
Other foreign assets	6,703	12,478	13,068	16,693	19,845	19
Total	3,221,861	3,404,821	3,681,488	3,774,645	4,211,636	12

Source: Central Bank of Iceland.

Table 3 Other credit institutions' assets¹

<i>Assets, b.kr.</i>	<i>31.12.2016</i>	<i>31.12.2017</i>	<i>31.12.2018</i>	<i>31.12.2019</i>	<i>31.12.2020</i>	<i>Change from 31.12.2019,%</i>
Cash and deposits with Central Bank	61,949	34,285	29,493	21,067	0	-100
Deposits in domestic deposit-taking corporations	67,765	32,261	20,511	8,639	17,125	98
Deposits in foreign deposit-taking corporations	60,762	37,924	36,088	28,597	25,380	-11
Domestic credit	104,128	106,382	137,595	154,903	178,714	15
Foreign credit	136,426	64,940	57,731	17,413	17,692	2
Domestic marketable bonds and bills	79,799	107	258	1,430	5,431	280
Foreign marketable bonds and bills	3,501	998	266	0	0	0
Domestic equities and unit shares	164,198	108,096	92,915	29,765	2,742	-91
Foreign equities and unit shares	68,443	46,305	3,602	6,681	1,426	-79
Other domestic assets	21,612	17,975	12,068	18,126	8,862	-51
Other foreign assets	12,323	6,268	6,544	3,445	2,551	-26
Total	780,906	455,541	397,071	290,065	259,922	-10

1. Beginning on 27 February 2019, Byr, ESI, the Framtíðin credit fund, and Sparisjóðabankinn (SPB) are classified among other financial institutions. Data are as follows: for Byr, from January 2016 onwards; for ESI, from December 2009 onwards; for Framtíðin, from May 2017 onwards, and for SPB, from February 2016 onwards.

Source: Central Bank of Iceland.

Table 4 Pension fund assetsa

<i>Assets, b.kr.</i>	<i>31.12.2016</i>	<i>31.12.2017</i>	<i>31.12.2018</i>	<i>31.12.2019</i>	<i>31.12.2020</i>	<i>Change from 31.12.2019,%</i>
Deposits in domestic deposit-taking corporations	116,608	150,812	142,872	151,565	164,910	9
Deposits in foreign deposit-taking corporations	18,450	20,451	13,776	24,174	34,229	42
Domestic credit	237,973	332,554	428,474	522,485	511,477	-2
Foreign credit	199	268	309	378	495	31
Domestic marketable bonds and bills	1,720,558	1,808,280	1,909,858	1,970,450	2,103,081	7
Foreign marketable bonds and bills	926	524	3,980	8,516	8,531	0
Domestic equities and unit shares	671,691	656,680	647,835	805,115	986,451	23
Foreign equities and unit shares	748,503	925,454	1,071,412	1,465,596	1,882,854	28
Domestic insurance and pension assets	17,155	19,227	21,003	22,660	19,642	-13
Foreign insurance and pension assets	44	63	69	48	50	4
Other domestic assets	7,860	30,025	5,083	4,015	3,964	-1
Other foreign assets	1	1	0	0	46	0
Total	3,539,967	3,944,339	4,244,671	4,975,002	5,715,729	15

Source: Central Bank of Iceland.

Table 5 Insurance company assets

<i>Assets, b.kr.</i>	<i>31.12.2016</i>	<i>31.12.2017</i>	<i>31.12.2018</i>	<i>31.12.2019</i>	<i>31.12.2020</i>	<i>Change from 31.12.2019,%</i>
Cash and deposits with Central Bank	7,354	7,011	1,563	40	3	-93
Deposits in domestic deposit-taking corporations	4,586	4,861	6,589	10,571	6,944	-34
Deposits in foreign deposit-taking corporations	208	149	75	48	28	-41
Domestic credit	1,487	3,449	3,523	2,490	1,819	-27
Foreign credit	0	0	0	0	0	0
Domestic marketable bonds and bills	89,989	94,177	98,628	109,161	133,121	22
Foreign marketable bonds and bills	3,740	4,467	16,801	20,378	20,351	0
Domestic equities and unit shares	60,664	65,696	61,159	65,790	74,850	14
Foreign equities and unit shares	5,945	8,182	8,821	10,200	12,168	19
Domestic insurance and pension assets	17,869	20,662	22,228	24,772	25,786	4
Foreign insurance and pension assets	7,451	5,815	6,310	6,997	6,311	-10
Other domestic assets	5,798	4,350	5,197	8,005	8,691	9
Other foreign assets	1,312	1,546	1,542	750	319	-58
Total	206,404	220,365	232,436	259,202	290,392	12

Source: Central Bank of Iceland.

Table 6 D-SIB: Income and expenses¹

<i>Income and expenses, b.kr.</i>	31.12.2016	31.12.2017	31.12.2018	31.12.2019	31.12.2020	<i>Change from 31.12.2019, %</i>
Arion Bank hf.						
Operating income	54,774	49,532	46,171	47,998	50,764	6
Net interest income	29,900	28,921	29,319	30,317	31,158	3
Net fee and commission income	13,978	10,211	10,350	9,950	11,642	17
Other operating income	10,896	10,400	6,502	7,731	7,964	3
Operating expenses	30,540	25,562	26,278	26,863	24,441	-9
Change in loan values	-7,236	-312	3,525	382	5,044	1,220
Income tax	9,731	9,138	7,432	6,698	4,532	-32
Net after-tax gain from discontinued operations	0	-725	-1,159	-12,955	-4,278	-67
Profit	21,739	14,419	7,777	1,100	12,469	1,034
Íslandsbanki hf.						
Operating income	52,716	44,189	44,987	45,165	43,153	-4
Net interest income	31,802	29,999	31,937	32,822	33,371	2
Net fee and commission income	13,723	13,750	12,227	10,899	10,525	-3
Other operating income	7,191	440	823	1,444	-743	-151
Operating expenses	26,478	27,638	28,823	25,424	23,425	-8
Change in loan values	-735	-1,556	-1,584	3,480	8,816	153
Income tax	9,754	7,456	8,015	7,437	4,060	-45
Net after-tax gain from discontinued operations	2,939	2,575	912	-370	-97	-74
Profit	20,158	13,226	10,645	8,454	6,755	-20
Landsbankinn hf.						
Operating income	49,018	51,727	52,558	56,344	50,273	-11
Net interest income	34,650	36,271	40,814	39,670	38,074	-4
Net fee and commission income	7,809	8,431	8,157	8,219	7,638	-7
Other operating income	6,559	7,025	3,587	8,455	4,561	-46
Operating expenses	26,487	27,103	27,797	28,196	25,646	-9
Change in loan values	318	-1,785	-1,352	4,827	12,020	149
Income tax	5,570	6,643	6,853	5,086	2,086	-59
Net after-tax gain from discontinued operations	0	0	0	0	0	-
Profit	16,643	19,766	19,260	18,235	10,521	-42
D-SIB						
Operating income	156,508	145,448	143,716	149,507	144,190	-4
Net interest income	96,352	95,191	102,070	102,809	102,603	0
Net fee and commission income	35,510	32,392	30,734	29,068	29,805	3
Other operating income	24,646	17,865	10,912	17,630	11,782	-33
Operating expenses	83,505	80,303	82,898	80,483	73,512	-9
Change in loan values	-7,653	-3,653	589	8,689	25,880	198
Income tax	25,055	23,237	22,300	19,221	10,678	-44
Net after-tax gain from discontinued operations	2,939	1,850	-247	-13,325	-4,375	-67
Profit	58,540	47,411	37,682	27,789	29,745	7

1. Figures are based on methodology used by SNL Financial. Figures on operating income and expense could differ from those published in the banks' annual accounts.

Source: SNL Financial.

Table 7 D-SIB: Key ratios

%	31.12.2016	31.12.2017	31.12.2018	31.12.2019	31.12.2020
Return on equity	8.9	7.4	6.1	4.5	4.8
Return on assets	1.8	1.4	1.1	0.7	0.7
Expenses as a share of net interest and commission income	62.0	59.0	60.0	57.8	54.1
Expenses as a share of total assets	2.6	2.3	2.3	2.1	1.8
Net interest and commission income as a share of total income	85.0	89.4	92.4	88.2	91.8
Net interest income as a share of total assets	3.0	2.8	2.9	2.7	2.6
Capital ratio	27.7	25.1	23.2	24.2	24.9
Foreign exchange as a share of the capital base	-0.5	0.5	0.3	2.1	0.3
Liquidity coverage ratio (LCR), total	163.0	165.9	166	165.9	179.7
Liquidity coverage ratio (LCR), FX	403.8	412.8	509.6	508	481.3
Net stable funding ratio (NSFR), total	123.0	122.2	117.9	117	118.7
Net stable funding ratio (NSFR), FX	161.8	161.5	159.8	141.2	147

Source: Central Bank of Iceland.

Tafla 8 Erlendar útgáfur bankanna sl. 12 mánuði (12.4.2020 - 12.4.2021)

Issuer	Date	Currency	Amount (b.kr.)	Maturity (years)	Premium on interbank rate ¹ %
Arion Bank	nov.20	EUR	48,5	3,5	1.15
Total			48,5		
Íslandsbanki	nov.20	EUR	48,5	3,0	0.5% fixed
	Mar.20	NOK	2,2	3,0	
	Mar.20	NOK	11,1	4,0	
	Mar.20	SEK	3,7	3,0	
	Mar.20	SEK	6,6	4,0	
			72,1		
Landsbankinn	oct.20	SEK	7,9	3,0	1.55
	oct.20	NOK	7,5	3,0	1.55
	Feb.21	SEK	13,9	1,5	0.75
	Feb.21	EUR	45,9	4,3	0.38 fixed
Total			75,2		

1. Interest premium on three-month interbank rate in the relevant currency unless otherwise specified.

Source: Nasdaq Iceland.

Table 9 Capital buffers

Capital buffer	FSC recommendation	FME decision/ announcement ¹	Value %	Effective date
Systemic risk buffer, D-SIB	22.1.2016	1.3.2016	3	1.4.2016
Systemic risk buffer, other DMBs	30.6.2020	15.5.2018	3	1.1.2020
Capital buffer on systemically important institutions	22.1.2016	1.3.2016	2	1.4.2016
Countercyclical capital buffer	18.3.2020	18.3.2020	0	18.3.2020
Capital conservation buffer			2,5	1.1.2017

1. Effective 1 January 2020, the Central Bank of Iceland sets rules on capital buffers, subject to prior approval from the Financial Stability Committee (FSC).

Sources: Financial Supervisory Authority, Ministry of Finance and Economic Affairs.

Table 10 Indicators pertaining to the international investment position

	<i>Unit</i>	<i>Frequency</i>	<i>2017</i>	<i>2018</i>	<i>2019</i>	<i>2020 or M2</i>
Net IIP	% of GDP	Q	2.0	9.4	21.3	35.3
External debt ¹	% of GDP	Q	88.6	82.1	76.2	80.9
Net external debt ²	% of GDP	Q	32.3	22.6	20.7	21.7
Short-term debt based on remaining maturity ³	% of GDP	Q	14.3	17.3	13.9	11.3
Treasury FX debt as a share of total debt	%	M	12.8	14.9	21.1	26.6
Commercial banks' foreign-denominated bonds	% of GDP	Q	19.6	20.9	19.2	20.5
Current account balance ⁴	% of GDP	Q	4.2	3.8	6.4	1.1
International reserves	% of GDP	M	26.0	25.9	27.0	30.1
International reserves financed in krónur	% of GDP	M	20.9	20.8	20.1	17.0
International reserves/IMF RAM	%	Q	144.8	139.5	153.4	151.9
Terms of trade ⁵	Value	Q	96.4	91.2	94.2	90.7
Nominal exchange rate ⁶	Value	M	162.9	173.8	179.7	197.8
Real exchange rate ⁷	Value	M	99.2	90.3	91.3	89.3
Treasury's highest credit rating	Rating	-	A2/A	A2/A	A2/A	A2/A

1. External liabilities with a known payment profile; i.e., excluding equity securities, unit shares, derivatives, and FDI in corporate equity.

2. External debt, net of comparable assets.

3. Short-term liabilities based on original maturity, plus foreign long-term loans and marketable bonds maturing within 12 months, and non-residents' holding in CBI2016 certificates of deposit, Treasury bonds, and Housing Financing Fund bonds maturing within 12 months.

4. The quarterly value is based on the last four quarters.

5. Index. Q1/2000 = 100.

6. Trade-weighted exchange rate index – narrow trade basket (1%).

7. Index. March 2005 = 100. In terms of relative consumer prices.

Sources: Statistics Iceland, Central Bank of Iceland.

Glossary

Balance on goods

The difference between the value of exported and imported goods.

Balance on income

The difference between revenues and expenses due to primary income and secondary income.

Balance on services

The difference between the value of exported and imported services.

Bill

A debt instrument with a short maturity, generally less than one year.

Bond

A written instrument acknowledging the issuer's unilateral and unconditional obligation to remit a specified monetary payment.

Book value of a loan

The nominal value or outstanding balance of a loan once haircuts or loan loss provisions have been deducted.

Capital base

The sum of Tier 1 and Tier 2 capital after adjusting for deductions; cf. Articles 84-85 of Act no. 161/2002.

Capital buffer

Additional capital required by the Central Bank upon approval from the Financial Stability Committee. Capital buffers currently in effect are: capital conservation buffer, countercyclical capital buffer, capital buffer for systemically important institutions, and systemic risk buffer.

Calculated return on equity

The profit for a given period as a percentage of average equity over the same period.

Capital ratio

The ratio of the capital base to risk-weighted assets (risk base).

Claim value of a loan

The nominal value or outstanding balance of a loan before deducting discounts or loan loss provisions.

Commercial bank

A financial institution that has been granted an operating licence pursuant to Article 4, Paragraph 1, (1) of the Act on Financial Undertakings, no. 161/2002.

Credit institution (credit undertaking)

A company whose business is to receive deposits or other repayable funds from the public and to grant credit on its own account.

Cross-default nonperforming loans

Based on the cross-default method, all of a given customer's loans are considered to be in default if one loan is 90 days past due, frozen, or deemed unlikely to be repaid.

Current account balance

The sum of the goods, services, and income account balances.

Deposit institutions

Commercial banks and savings banks licenced to accept deposits.

Disposable income

Income net of taxes.

Domestic systemically important banks (D-SIB)

Banks that, due to their size or the nature of their activities, could have a significant impact on the stability of the financial system and the general economy, in the opinion of the Financial Stability Council. Currently, D-SIBs in Iceland are Arion Bank hf., Íslandsbanki hf., and Landsbankinn hf. In addition, the Housing Financing Fund (HFF) is considered a systemically important supervised entity.

Economic outlook index

Corporate expectations concerning economic developments and prospects, based on the Gallup survey carried out among executives from Iceland's 400 largest firms.

Encumbrance ratio

The proportion of a bank's assets that are hypothecated for funding.

Equity

Assets net of liabilities.

Expense ratio

The ratio of operating expense net of the largest irregular items to operating income, excluding loan valuation changes and discontinued operations.

Facility-level default

Based on the facility method, a given customer's loan is considered to be in default if it is past due by 90 days or more.

Financial system

Deposit institutions; miscellaneous credit institutions (including the Housing Financing Fund, HFF); pension funds; insurance companies; mutual, investment, and institutional investment funds; and State credit funds.

Foreign exchange balance

The Central Bank of Iceland sets rules on credit institutions' foreign exchange balance. According to the rules, neither the overall foreign exchange balance nor the open position in individual currencies may be positive or negative by more than 15% of the capital base.

Foreign exchange imbalance

Difference between assets and liabilities in foreign currencies.

Foreign exchange reserves

Foreign assets managed by monetary authorities and considered accessible for direct or indirect funding of an external balance of payments deficit.

Funding rules

The Central Bank of Iceland sets rules on foreign currency funding ratio. The rules are based on the net stable funding ratio (NSFR) developed by the BCBS. The rules are designed to limit the extent to which banks can rely on unstable, short-term foreign funding to finance long-term loans granted in foreign currency. The ratio is subject to a minimum of 100%.

Holding company

A company whose sole objective is to acquire stakes in other companies, administer them, and pay dividends from them without participating directly or indirectly in their operations, albeit with reservations concerning their rights as shareholders.

Indexation imbalance

Difference between indexed assets and indexed liabilities.

Interbank market

A market in which deposit institutions lend money to one another for a period ranging from one day to one year.

International investment Position (IIP)

The value of residents' foreign assets and their debt to non-residents. The difference between assets and liabilities is the net international investment position (NIIP), also referred to as the net external position.

Interest burden

Interest payments as a percentage of disposable income.

Interest premium

A premium on a base interest rate such as the interbank rate.

Key Central Bank of Iceland interest rate (policy rate)

The interest rate that is used by the Central Bank in its transactions with credit institutions) and is the most important determinant of developments in short-term market interest rates. The interest rate that has the strongest effect on short-term market rates and is therefore considered the Central Bank's key rate may change from time to time.

Liquidity coverage

The ratio of high-quality liquid assets to potential net outflows over a 30-day period under ratio (LCR) stressed conditions; cf. the Rules on Liquidity Coverage Requirements for Credit Institutions no. 266/2017.

Liquidity rules ratio (LCR)

The Central Bank's liquidity rules are based on the liquidity coverage requirements developed by the Basel Committee on Banking Supervision (BCBS) and are largely harmonised with European Union liquidity rules. Credit institutions must always have sufficient high-quality assets to cover potential liquidity needs over the coming 30 days under stressed conditions. The LCR may not fall below 100% for all currencies combined or for all foreign currencies combined.

Loan-to-value (LTV) ratio

A debt as a percentage of the value of the underlying asset (for instance, mortgage debt as a percentage of the value of the underlying real estate).

Net stable funding (NSFR)

The ratio of available stable funding to required stable funding; cf. the Rules on Funding ratio Ratios in Foreign Currencies, no. 1032/2014.

Payment card turnover balance

The difference between foreign nationals' payment card use in Iceland and Icelandic nationals' payment card use abroad.

Real exchange rate

Relative developments in prices or unit labour costs in the home country, on the one hand, and in trading partner countries, on the other, from a specified base year and measured in the same currency. The real exchange rate is generally expressed as an index.

Real wage index

An index showing changes in wages in excess of the price level. It is the ratio of the wage index to the consumer price index (CPI).

Risk-weighted assets

Assets adjusted using risk weights; cf. Article 84(e) of Act no. 161/2002.

Risk-weighted assets (risk base)

The sum of the weighted risks of financial institutions (e.g., credit risk, market risk, operational risk, etc.), cf. Article 84(e) of Act no. 161/2002.

Shadow bank

Definition based on the methodology of the Financial Stability Board (FSB). Shadow banking is defined as credit intermediation involving entities and activities outside the regular banking system. Shadow banks include money market funds, bond funds, equity funds, investment funds, specialized investment companies, securities companies, brokers, specialized funds and other credit institutions. Government operated credit institutions, pension funds, insurance companies and financial auxiliaries are excluded. A detailed discussion on the methodology can be found in the Committee on Shadow Banking's March 2015 report to the Ministry of Finance and Economic Affairs.

Terms of trade

The price of goods and services imports as a percentage of the price of goods and services exports.

The IMF's reserve adequacy metric (RAM)

The reserve was developed by the International Monetary Fund (IMF) as a criterion for desirable size of foreign exchange

reserves, which can be determined with respect to a number of factors that affect a country's balance of payments and could provide indications of potential capital outflows. The RAM consists of four elements: i. Export revenues: Reflect the risk of contraction in foreign currency accumulation ii. Money holdings: Reflect potential capital flight in connection with liquid assets iii. Foreign short-term liabilities: Reflect the economy's refinancing risk iv. Other foreign debt: Reflects outflows of portfolio assets The RAM is the sum of 30% of current foreign short-term liabilities, 15% of other foreign debt (20% at constant exchange rates), 5% of money holdings (10% at constant exchange rates), and 5% of export revenues (10% at constant exchange rates).

Trade-weighted exchange

The index measuring the average exchange rate in terms of average imports and exports, rate index (TWI) based on the narrow trade basket.

VIX implied volatility index

The expected volatility of the S&P 500 index according to the pricing of options related to it. It gives an indication of investors' risk appetite or aversion.

Yield

The annualised return that an investor requires on funds invested.

Yield curve

A curve that plots the interest rates, at a set point in time, of bonds with equal credit quality but differing maturity dates.

