

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 16. March 2022

The state of financial stability is favourable, and the systemically important banks are highly resilient. Their capital and liquidity are well above regulatory minima, giving them ample scope to support households and businesses.

In 2022, the economic recovery will probably be weaker than was previously expected, owing to the pandemic and the Russian invasion of Ukraine, particularly if the war drags on.

Icelandic households are generally well positioned, and household credit growth has eased. Real disposable income has been rising year by year, and households' equity position has grown stronger. Unemployment has fallen and the labour participation rate has risen. Households' sound position will better enable them to cover higher debt service if interest rates rise further, and they have access to various types of mortgages in order to react to inflation. Arrears have declined since the onset of the pandemic and now account for less than 1% of the banks' loans to households.

Many companies were not adversely affected by the pandemic, but those that suffered severe revenue losses are still vulnerable. It is vital that the banking system continues to work on restructuring their debt.

In its quarterly review of the countercyclical capital buffer (CCyB), the Financial Stability Committee (FSN) has decided to hold the buffer unchanged. The decision taken in September 2021 to increase the buffer from 0% to 2% will take effect at the end of September 2022. The Committee has also decided to hold the systemic risk buffer unchanged at 3%.

Developments in the real estate market and household indebtedness are monitored closely. The FSN considers the current stance regarding borrower-based measures sufficient, as the effects of previous decisions have not yet come fully to the fore.

The FSN stresses the importance of safeguarding Iceland's cybersecurity and the operational security of telecommunications and financial market infrastructure. The current situation underscores how vital it is to bolster resilience in payment intermediation and expedite the implementation of an independent domestic retail payment solution. The Committee reiterates that it is critical for operators to guarantee payment system security and business continuity.

The Financial Stability Committee will continue to apply the policy instruments at its disposal so as to preserve financial stability, thereby enabling the financial system to mediate credit and payments and redistribute risks appropriately.

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



The economic outlook has deteriorated since Russia invaded Ukraine, and the economic recovery in Iceland could lose steam as a result. Global commodity prices have skyrocketed, and inflation is expected to rise further. Iceland's terms of trade will probably deteriorate, and pressure on the domestic price level is likely to affect consumption. Weaker GDP growth among trading partners could have a dampening effect on Iceland's exports, particularly to include tourism. Increased global uncertainty and the deterioration in terms of trade could also put downward pressure on the exchange rate of the króna, although Icelandic households are well positioned, with significant accumulated savings and strong equity. The magnitude of these effects is highly uncertain and will be determined both by global developments and by how long the war lasts.



Foreign exchange transactions have been unrestricted in Iceland since mid-2021. Since the end of 2020, investors and companies have speculated on the appreciation of the króna via forward foreign exchange contracts, which totalled 139 b.kr. at the end of February. Because of this, future foreign currency flows have already had some upward impact on the exchange rate. If the exchange rate develops unfavourably as a result of external conditions such as the war in Ukraine, growth in derivatives positions on one side of the market, like those currently in place, could put downward pressure on the króna, particularly if they involve volatile investments. There are limits, however, as the Central Bank's rules on derivatives trading require that each commercial bank's gross forward position be no greater than 50% of its capital base.



Real estate prices have continued to rise in recent months, and the market is characterised by severe mismatches between supply and demand. By February 2022, the number of flats advertised for sale in the capital area had fallen by 69% since the beginning of 2020. At the same time, the average time-to-sale has fallen to a historical low. The twelve-month rise in the capital area house price index measured 13.8% in real terms in January. Imbalances between property prices and their determinants have grown more pronounced. Concurrent with this, household debt has grown apace, and first-time homebuyers have higher loan-to-value ratios and heavier debt burdens than before. All of this indicates that risk in the housing market has mounted in the recent term, and the likelihood of stagnation or a correction in the market has increased.



The large commercial banks are strong. Profits have increased, cost-to-income ratios are down, and arrears have declined on both household and corporate loans. At the end of 2021, the banks held 280 b.kr. in liquidity over and above the minimum required by the Central Bank, and their excess liquidity has increased by 48 b.kr. thus far in 2022. Credit spreads in the banks' foreign funding markets have risen rapidly in recent weeks, as they have in credit markets around the world. The banks' strong foreign liquidity position and their limited near-term refinancing risk enables them to cover all of their upcoming payments without refinancing in the next several months.



Cyberattacks are a growing problem, and financial market infrastructure is not excluded from the risk they entail. Attempted cyberattacks have grown more frequent in the wake of the Russian invasion of Ukraine. Financial institutions must be prepared for this risk. They must ensure that their systems are secure and adopt contingency measures to guarantee business continuity. It is also important to strengthen the framework for the system as a whole, develop alternate routes, and coordinate action plans in response to increased risk in this area. This work requires the participation of financial institutions, financial market infrastructure operators, the Central Bank, and the Government.

Financial Stability: Developments and prospects

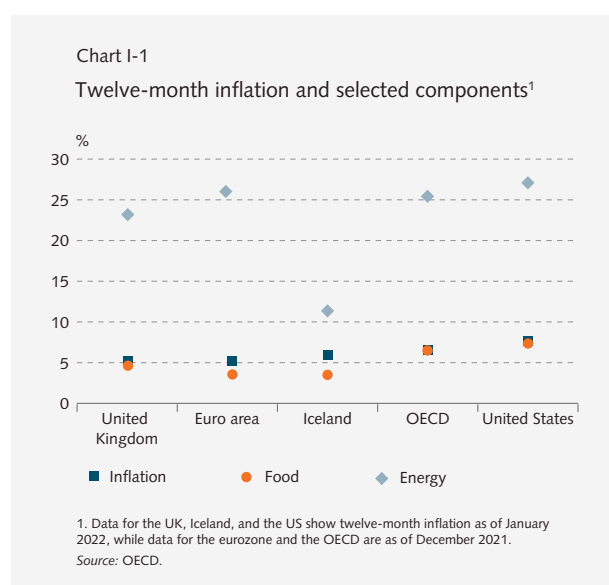


Risks relating to the external position and currency flows

The economic outlook has worsened and uncertainty has escalated following Russia's invasion of Ukraine ...

The Russian invasion of Ukraine is likely to have widespread economic implications. Oil and commodity prices have surged, and the world's leading industrialised countries have responded to the invasion by imposing broad economic sanctions on Russia. For example, Russian aircraft have been prohibited to fly in many countries' airspace, the Russian central bank's assets have been frozen, certain Russian banks' access to the SWIFT payment system has been restricted, and a host of foreign corporations have suspended activity in Russia. Furthermore, international credit rating agencies Fitch, Moody's and S&P have downgraded Russia's sovereign credit rating from investment-grade to junk. Sanctions and rising energy and commodity prices will undermine the post-pandemic economic recovery. The inflation outlook has worsened, particularly because of spiking energy and commodity prices. For instance, energy prices in the eurozone rose by 26% in 2021 and are now expected to keep climbing. It is unclear what the direct and indirect effects on the Icelandic economy will be.

In view of the rapid spread of the Omicron variant of COVID-19 at the start of this year, GDP growth forecasts for Iceland and many other countries were revised downwards. Governmental authorities in most countries have now eased public health measures significantly or scrapped them entirely in response to a widespread decline in hospitalisation rates. In Iceland, GDP growth measured 4.3% in 2021, according to preliminary figures from Statistics Iceland. This is somewhat below the 4.7% provided for in the Central Bank's most recent

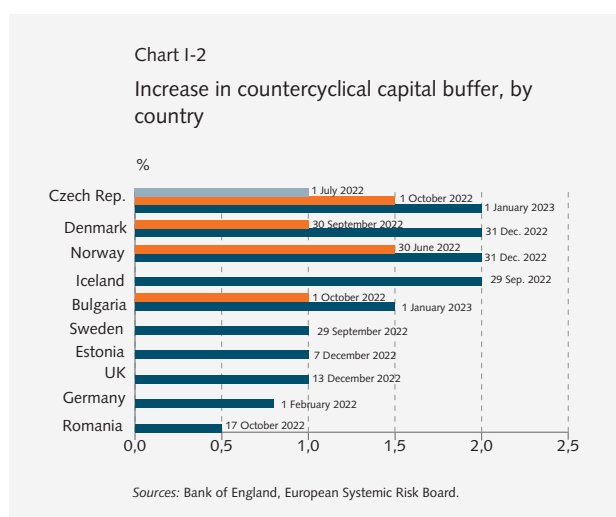


macroeconomic forecast, published in the February 2022 *Monetary Bulletin*. Job creation has continued to increase rapidly, and unemployment is approaching its pre-pandemic level. Inflation has surged widely, driven by rising energy prices and persistent supply-chain disruptions, particularly in the US and many emerging market economies. In Iceland, soaring house prices and a rapidly rising domestic price level, compounded by higher global commodity prices and shipping costs, pushed headline inflation up to 6.2% in February, its highest in nearly a decade.

Terms of trade are estimated to have improved by 3.7% in 2021, much more than was expected. The difference stems mainly from larger-than-expected rises in marine product prices and generic goods exports, particularly to include silicon products. Because of the war in Ukraine, it is highly uncertain how terms of trade will

develop this year. The real exchange rate rose by 4% month-on-month in February and was 7.7% higher than in February 2021.

According to the International Monetary Fund's (IMF) most recent global economic forecast, published in January, the GDP growth outlook has deteriorated markedly since the Fund's October 2021 forecast. The IMF now projects global output growth in 2022 at 4.4%, as opposed to 4.9% in the October forecast. The IMF specifies several factors that explain the shift, among them the poorer outlook for large economies such as the US and China. For the US, the outlook is strongly affected by the prospect of less fiscal stimulus than was projected in October, continuing supply-chain disruptions, and expected interest rate hikes to combat inflation. China is affected by stringent public health measures and a vulnerable real estate market. It can be assumed that the GDP growth outlook has deteriorated still further in light of developments in Ukraine.



... but high asset prices and increased indebtedness have prompted widespread macroprudential tightening

Most European countries eased their macroprudential stance following the spread of the COVID-19 pandemic, with the aim of affording financial institutions the scope to address losses and maintain the supply of credit. Demand for housing has been strong, and household debt has risen in many economies. Central banks and governmental authorities have responded to increased systemic risk by tightening the macroprudential stance once again, either by increasing capital buffers such as the countercyclical capital buffer (CCyB) or by imposing tighter borrower-based measures. There has also been some discussion of a positive neutral CCyB value, which is explored more fully in Box 4.

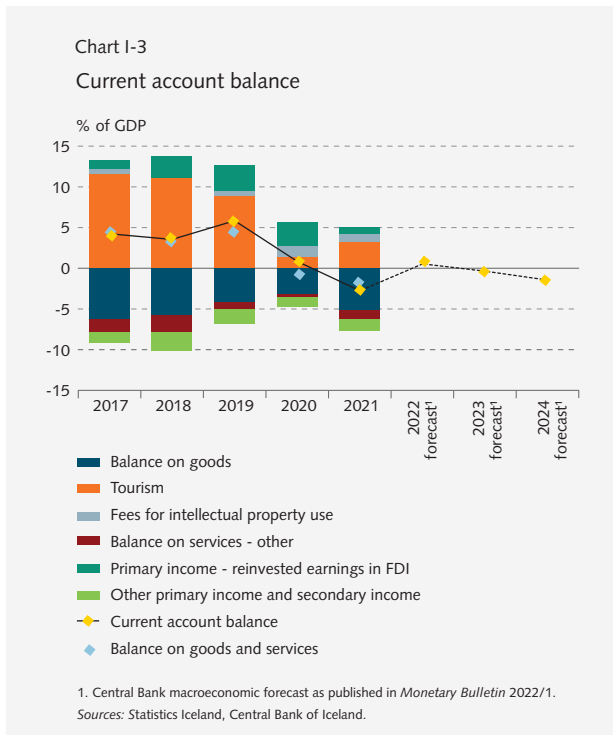
In January, Germany announced that it would increase its CCyB to 0.75% in response to elevated systemic risk. Last December, Norway announced an increase in its CCyB to 2%, owing to rising house prices and increased household indebtedness. In November 2021, the Czech Republic responded to rising asset prices by announcing a CCyB hike to 2%, introducing new rules on debt service-to-income and debt-to-income ratios, and lowering maximum loan-to-value ratios. Other countries that have announced an increase in their CCyB in recent months are the UK, Bulgaria, Estonia, and Romania (see Chart 2). The Central Bank of Iceland Financial Stability Committee (FSN) decided in September 2021 to increase the CCyB to 2% in response to increased household indebtedness and rising asset prices. The increase takes effect in September 2022. The FSN also set new rules on debt service-to-income ratios.

In addition to tightening the macroprudential stance, many central banks have responded to higher inflation by tightening their monetary stance, either raising interest rates or signalling rate hikes in the next few months. In the same vein, the US Federal Reserve has indicated that it plans to discontinue its bond purchases this March, and the European Central Bank aims to scale down its bond purchases significantly in Q2 and Q3/2022. In addition, the central banks in the UK, Norway, New Zealand, and the Czech Republic have increased their key interest rates in the past few months. The Central Bank of Iceland has raised interest rates three times since the last *Financial Stability* report was published, bringing the key rate to 2.75%.

Current account deficit in 2021

Owing to the direct and indirect effects of the pandemic, Iceland showed a current account deficit measuring 2.8% of GDP in 2021, its first full-year deficit since 2008.¹ The balance on services was positive by 2.9% of GDP, as net revenues from tourism totalled 3.2% of GDP, more than doubling year-on-year. The increased surplus from tourism in 2021 was offset in full by a larger goods account deficit, which grew by nearly 2% of GDP between years. The deficit on goods trade measured 5.1% of GDP. The balance on income was negative by 0.7% of GDP in 2021, as the primary income surplus shrank markedly between years. This is due mainly to an improved performance by foreign-owned domestic

¹ Based on the underlying current account balance; i.e., excluding the effects on the primary income balance of the failed financial institutions in 2008-2015 and pharmaceuticals company Actavis in 2009-2012, and excluding the failed financial institutions' financial intermediation services indirectly measured (FISIM).



companies, primarily those in energy-intensive industry, and companies in the pharmaceuticals sector.

According to the Central Bank's most recent macroeconomic forecast, Iceland's current account surplus is not expected to be as large in coming years as it has been in the recent past. The tourism sector can be expected to recover to some extent this year, lifting the current account balance into positive territory, but with an increasing goods account deficit and a negative contribution from net factor income, the current account is expected to show a deficit again in 2023 and 2024.² The forecast above was published before Russia invaded Ukraine, but global commodity markets have been turbulent, which could affect Iceland's external trade and general price level (see Box 1).

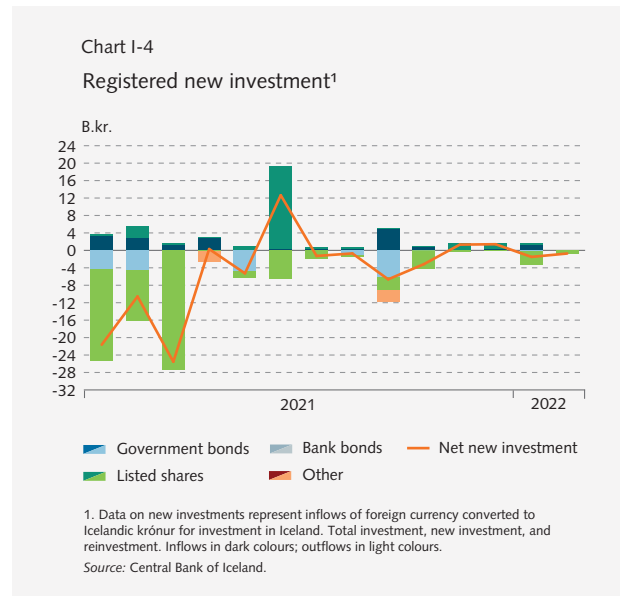
Some of Iceland's goods account deficit in 2021 and in the years to come stems from imports of aircraft, as Statistics Iceland has recently changed its national accounts treatment of certain aircraft leasing agreements. According to the new methodology, certain leasing agreements are now classified as aircraft imports, with the associated impact on the goods account balance, whereas previously, the lease payments affected only the balance on services.³ Iceland's year-2021 current account deficit was larger by about half a percentage point of GDP as a result of the change.

2 A more detailed discussion of the Bank's macroeconomic forecast can be found in *Monetary Bulletin* 2022/1.

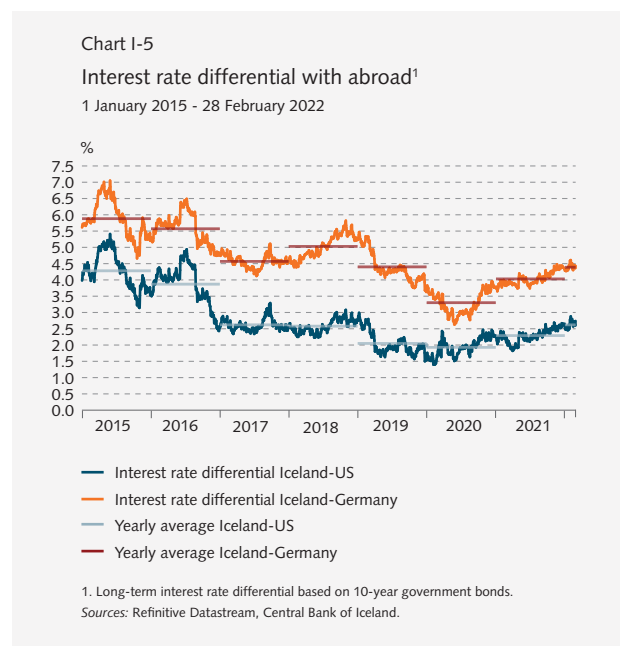
3 Certain leasing agreements were revised retroactively to 2018.

Relatively brisk trading in domestic stocks

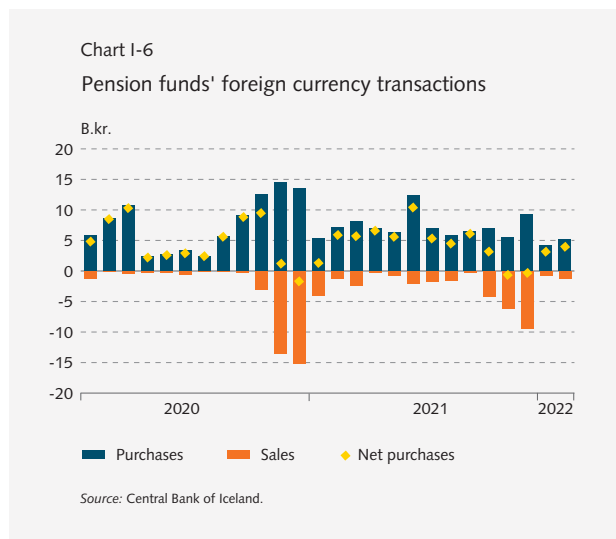
Net new investment was negative by 60 b.kr. in 2021, mainly because of non-resident investors' sales of domestic equities. Shares in domestic commercial banks traded heavily during the year, with foreign investors selling Arion Bank shares for 55 b.kr. and buying Íslandsbanki shares for 10 b.kr.



Large-scale securities sales by foreign investors over the past two years have greatly reduced their total position, thereby reducing the risk of capital outflows in the coming term. In recent months, non-residents have traded mainly in listed Icelandic shares included in the MSCI FM 100 index. If Icelandic shares are moved from the frontier market to the secondary emerging market

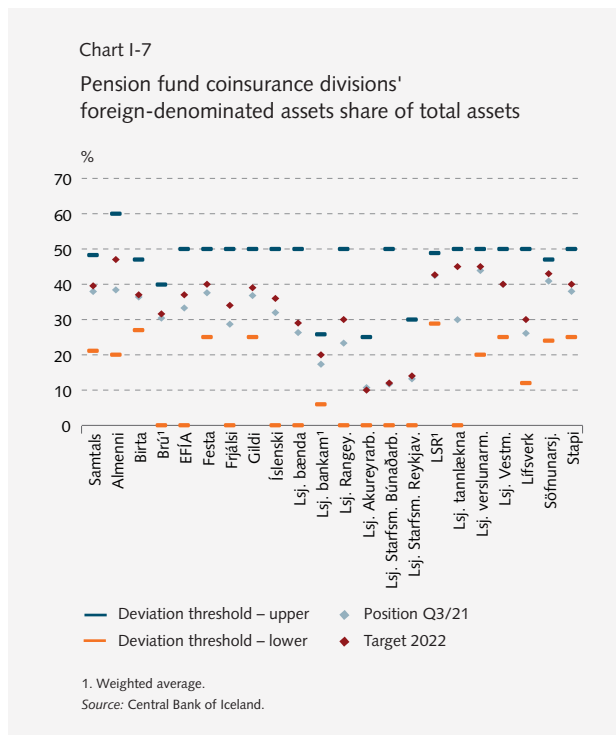


category, it could stimulate further flows of foreign-owned capital. The interest rate differential with abroad has widened in the recent term, if the trend continues it could catalyse capital inflows into Iceland. However, the differential vis-à-vis the US is still about 2 percentage points smaller than it was in 2015, when non-residents invested rather heavily in Icelandic Treasury bonds.



Pension funds' foreign currency purchases relatively unchanged

The pension funds bought foreign currency for about 87 b.kr. in 2021 and sold for roughly 34 b.kr., for a net purchase amount of 53 b.kr., about the same as in 2020. A larger number of pension funds sold currency, but over-

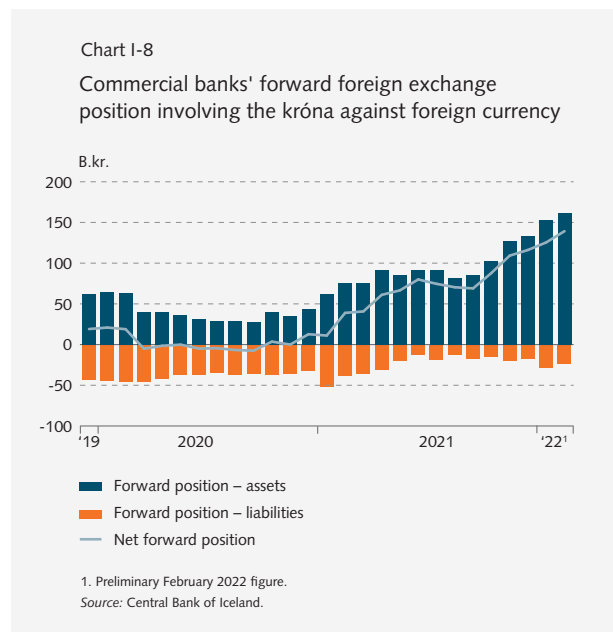


all, the sales are still limited to a few funds that are close to their internal benchmarks for foreign-denominated assets as a share of total assets.

The pension funds' foreign assets increased by just over a fifth year-on-year in 2021, to a year-end total of 2,535 b.kr., or 78% of GDP. Foreign-denominated assets came to 37.7% of total assets, the statutory maximum being 50%. The pension funds' internal benchmarks are often slightly lower, however. Because of the constantly growing share of foreign-denominated assets, fluctuations in the exchange rate of the króna have a stronger impact on the pension funds' asset portfolio value and annual returns. In this context, though, it is important to remember that the pension funds are long-term investors, as their obligations are also long-term. This could explain why they have not hedged their foreign-denominated assets against fluctuations in the króna. Furthermore, exchange rate hedging is expensive. If the pension funds' foreign-denominated assets approach the maximum permitted by law, their need for hedging could increase or they could opt to sell foreign assets; however, this depends in large part on the exchange rate of the króna and price movements abroad. Because of the size of the pension funds' foreign-denominated asset portfolio, minor changes in the portfolio could have a major impact on the domestic foreign exchange market.

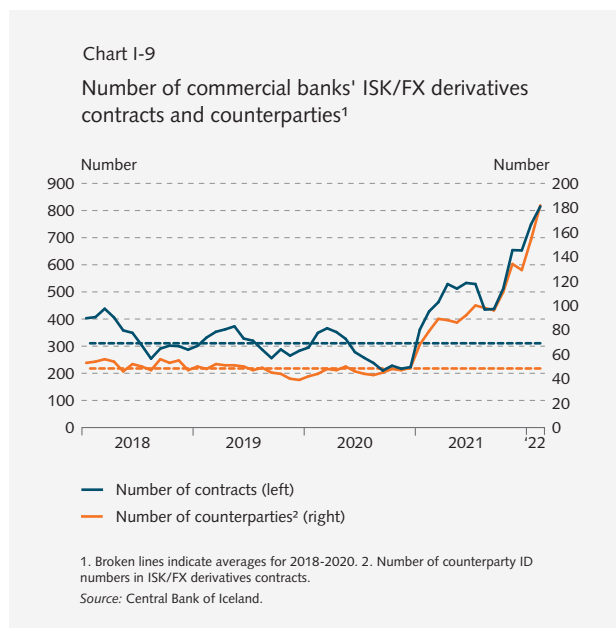
Forward transactions with the Icelandic króna on the rise

The Central Bank of Iceland regularly gathers data on the commercial banks' forward transactions with the Icelandic króna. In 2021, there was a discernible increase in bank customers' interest in hedging against the appreciation of the króna. This can be seen both in the banks'



forward position in foreign currencies and in the number of contracts and counterparties in such contracts. Chart I-8 shows how the scale of the contracts increased in 2021. An increase in the banks' forward foreign currency position generally calls for spot trades in which the banks buy krónur in order to settle transactions already made. According to preliminary figures, the banks' net forward position involving the króna in a contract against a foreign currency was positive by 139 b.kr. at the end of February 2022, whereas it was close to zero at the beginning of 2021.

The new Foreign Exchange Act was passed in mid-2021, and immediately thereafter, the Bank set new rules on derivatives trading involving the Icelandic króna. According to the new rules, anyone may engage in forward transactions with the króna, whereas previously, investors were required to show that the transactions were for the purpose of hedging against currency mismatches, either in the balance sheet or in trade-related payment flows. Increased authorizations for derivatives trading may explain in part the increased number of forward transactions in H2/2021 and in 2022 to date.



The appreciation of the króna by 2.5% in 2021 and exchange rate movements this year are due in part to these forward transactions. It can be said that expected currency flows have already begun to affect the exchange rate of the króna to some extent.

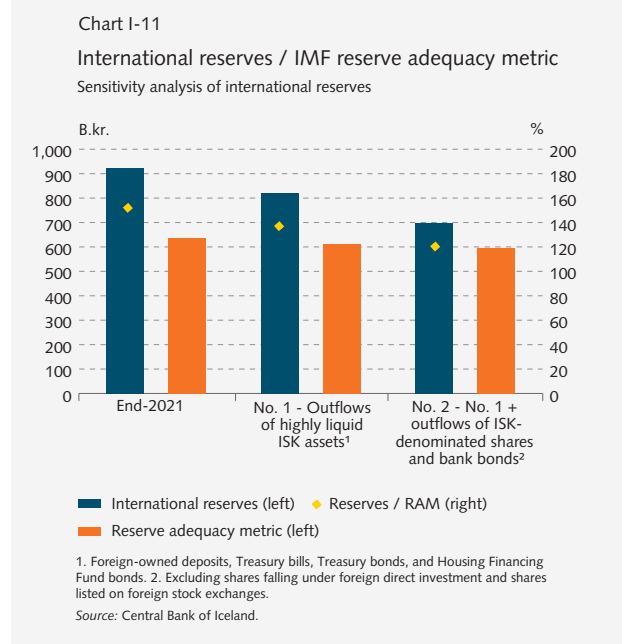
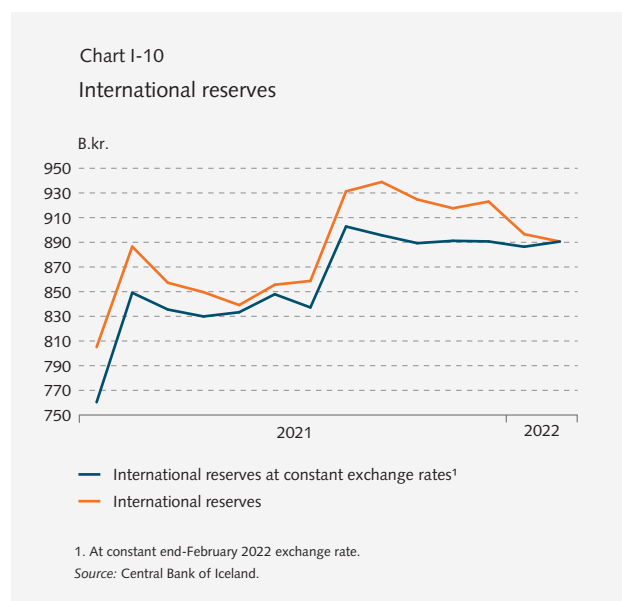
In the future, the Central Bank will publish the commercial banks' forward currency position involving the króna against foreign currencies in its quarterly publication *Economic Indicators*. Increased information

disclosure by the Central Bank should improve price formation in the market.

International reserves close to the IMF reserve adequacy upper threshold

Iceland's net international investment position (NIIP) continues to improve. It was positive by 40% of GDP at the end of 2021, after improving by nearly 7 percentage points year-on-year, owing to steeply rising foreign share prices; for instance, the MSCI World Index rose by 20% during the year.

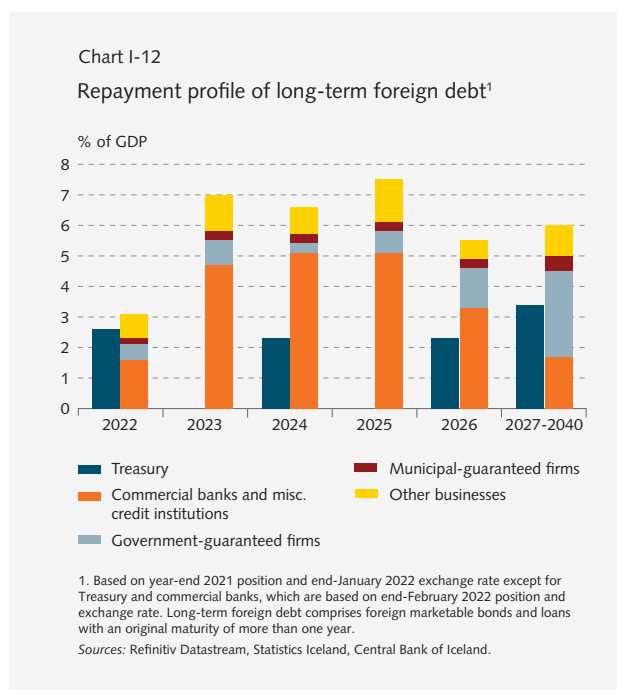
The reserves totalled 890 b.kr. at the end of February 2022, or 28% of GDP. They grew last year, after the IMF made an allocation of special drawing rights in the autumn. Since then, most changes in



the reserves have been in tandem with exchange rate movements and the Central Bank's interbank foreign exchange market activity.

At the end of 2021, the ratio of the reserves to the IMF's reserve adequacy metric (RAM) was 145%, close to the upper threshold. Even though the ratio has fallen slightly in the recent term, a sensitivity analysis shows that the reserves should easily be able to withstand significant outflows. For instance, if non-residents were to sell all of their highly liquid króna-denominated assets and their shares in companies listed on Nasdaq Iceland and expatriate the proceeds, and reserve assets were sold to cover the outflows, the ratio would still be well over 100% (Chart I-11).

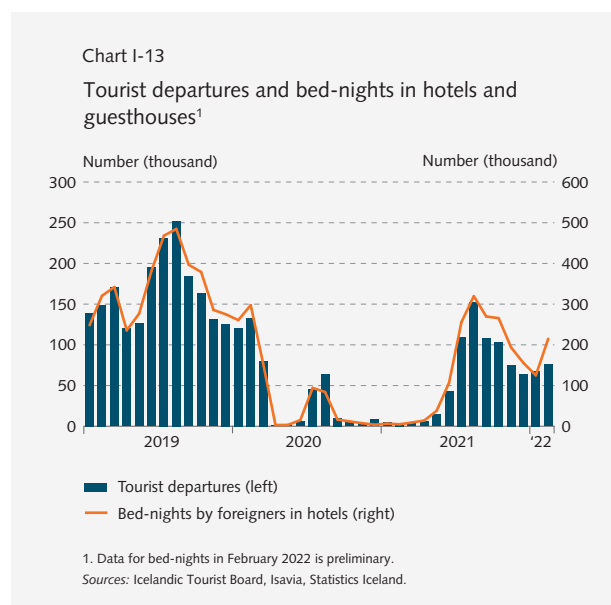
Developments in the ratio are in general highly dependent on developments in the exchange rate of the króna. If the Treasury were to decide not to refinance foreign debt maturing this year, which totals about 85 b.kr., the ratio would fall by just over 8 percentage points, all else being equal. On the other hand, foreign short-term debt could decline in the near future, as the commercial banks have already refinanced a large share of this year's foreign maturities. The banks managed to refinance existing debt on better terms than they originally received, and before credit spreads rose in February (for further discussion, see the section entitled *Liquidity and funding*).



Tourist arrivals expected to surge in 2022

After a relatively buoyant summer, the recovery of tourism slowed somewhat in late 2021, impeded by the spread of the Omicron variant of COVID-19. In 2021

as a whole, nearly 690,000 tourists visited Iceland, 90% of them in H2, whereas the total for all of 2020 was 480,000. According to information from the domestic airlines, bookings picked up in mid-January 2022, after public health measures were eased in Iceland and many other countries. The outlook for 2022 is for flight offerings to and from Iceland to increase considerably relative to the previous year. This year, Icelandair expects to increase its offerings to 80% of the 2019 level (from 35% in 2021).⁴ In addition, PLAY has added a number of destinations to its flight schedule and is planning flights to North America in April. There are signs that appetite for travel has grown as the end of the pandemic draws closer; for instance, the Central Bank's most recent macroeconomic forecast, published in early February, assumes that nearly 1.5 million tourists will visit Iceland this year. On the other hand, the war in Ukraine will probably put a damper on tourism, particularly if it drags on (for further discussion, see Box 1).



Foreign nationals' overnight stays in hotels increased by more than 70% in 2021, after contracting sharply in 2020. Even so, the 2021 total was only 40% of overnight stays in 2019, although the H2/2021 total came to 64% of overnight stays for the same period in 2019. On the other hand, overnight stays by Icelanders have increased markedly since before the pandemic. Hotel occupancy rates fell steeply this winter with the decline in tourist arrivals, to 29.5% nationwide in January 2022, as compared with 9.5% in the same month of 2021 and

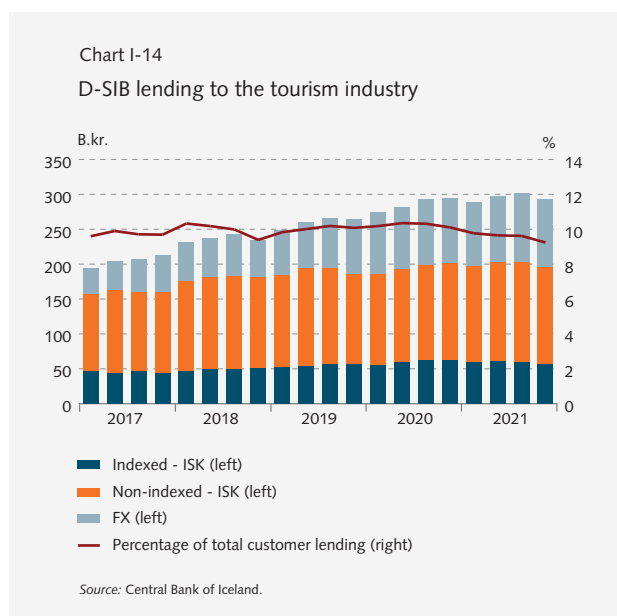
⁴ Flight offerings are measured here in terms of available seat kilometres (ASK).

49.1% in January 2020. It appears, however, that occupancy rates picked up in February, and bookings for both this spring and this summer have increased significantly.

It is important not to draw overly sweeping conclusions about the near-term outlook for tourism based on the current booking situation, however. Bookings can now be made on terms that, if anything, are more flexible than ever before, so they should be interpreted with due caution. The war in Ukraine and the associated disruption of air traffic, including airspace closures and rising airfares, could have a detrimental effect on appetite for travel and thereby delay the recovery of tourism.

Lending contracted slightly in 2021

The domestic systemically important banks' (D-SIB) lending to the tourism sector contracted marginally in 2021, or -0.3%, after growing by 11.3% in 2020. The appreciation of the króna cut into credit growth, as about a third of loans to tourism companies are in foreign currencies. Furthermore, loans to the tourism sector declined by nearly a percentage point as a share of the banks' total customer loan portfolio, to 9.2% by the year-end.



The debt problems facing many tourism companies are still unresolved. A KPMG analysis of the financial position of the sector, based on tourism companies' 2020 annual accounts and published at the beginning of this year, shows substantial accumulation of debt in the tourism industry.⁵ The position varies from one sub-sec-

5 Financial Analysis. Estimated position of the Icelandic tourism industry at year-end 2021. KPMG Consulting, 4 January 2022. Available at: <https://www.ferdamalastofa.is/is/um-ferdamalastofu/frettir/category/1/fjarhagsstada-ferdathjonustu-2020-og-2021-kynning-a-fjarhagsgreinin-og-birting-skyslu>

tor to another, however, with companies in accommodation, recreation, and package tours apparently needing debt restructuring the most. It can also be assumed that some pent-up need to invest has developed in the sector.

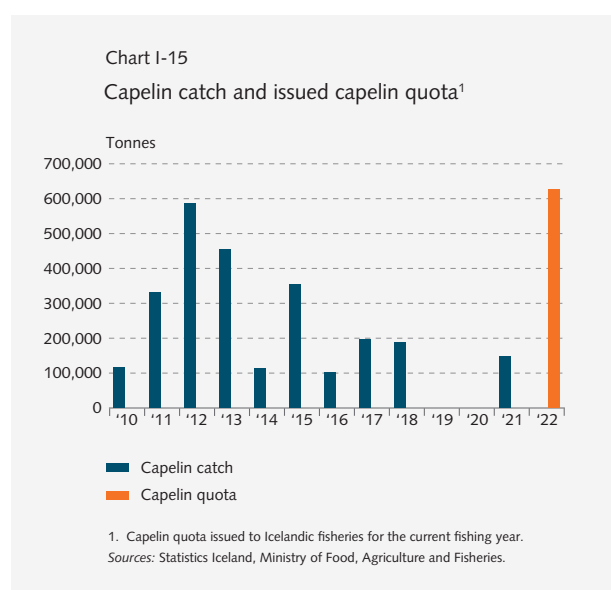
Continuing Government support measures have been introduced for the first months of 2022, and these will benefit a number of businesses in the sector, small and medium-sized companies in particular. It is important for the tourism sector to recover in 2022 after suffering such challenging operating conditions for the past two years. Credit institutions have supported businesses throughout the pandemic, but it is important that the financial restructuring of tourism companies, many of them heavily leveraged, should be successful, and that strong companies should be able to rebuild the sector now that pandemic-related restrictions have been lifted.

Aluminium prices high, but energy shortage limits production

The price of aluminium, like that of other commodities, has risen rapidly since the Russian invasion of Ukraine and is now at an all-time high. Prices had risen before the invasion as well, driven by investor concerns about limited supply and dwindling inventories. In spite of high prices, cutbacks in energy sales to the smelters have affected the outlook for the sector, and it appears that aluminium product exports will remain broadly unchanged year-on-year in 2022.

Marine product exports set to increase

Marine product export prices have risen in the recent term, and demand appears to have picked up rather quickly with the relaxation of public health measures. The outlook is for an increase in marine product export



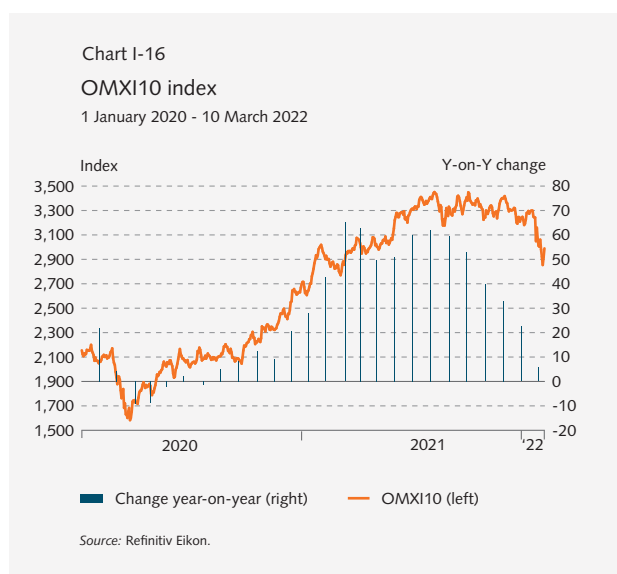
volumes this year, owing mainly to this season's capelin quota, Iceland's largest since 2003. Because of the war, however, there is some uncertainty about exports to Ukraine, which has been an important market for pelagic products from Iceland.

Risk associated with domestic asset markets

Widespread plunge in equity market prices

The Russian invasion of Ukraine has had a profound impact on the financial markets. Share prices in Russia have collapsed, yields on the country's government bonds have spiked, the rouble has plunged in value, and capital controls have been introduced. Global financial markets have not escaped the effects of these actions, as investors have increasingly sold equities and flocked to safe assets such as gold and government bonds. European share price indices have fallen by 8.1% since the invasion began, and US share prices are down by 1.3%. Uncertainty has prevailed in the markets, and the VIX implied volatility index has risen somewhat. The strongest response can be seen in commodity markets, however, and oil prices have skyrocketed.

Share prices of companies listed on the Nasdaq Iceland exchange have fallen, as they have in many markets abroad. Between 24 February, when the invasion began, and 10 March, the OMXI10 index fell by 8%. It has fallen by 12% year-to-date and by 10% since September 2021, when the last *Financial Stability* report was published. Alongside these declines, the deviation of share prices from their long-term trend has narrowed.⁶

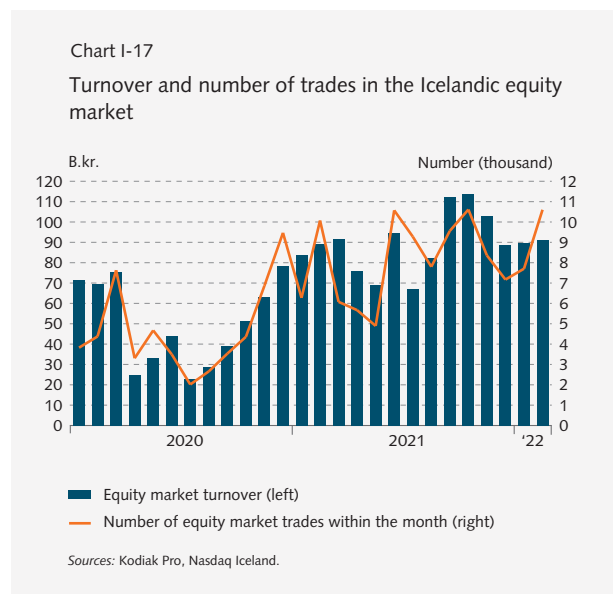


6 The equity market no longer shows clear signs of bubble formation in terms of the measures discussed in the Box in *Financial Stability* 2021/2 entitled *The equity securities market and financial stability*.

It is likely that leverage in the market has declined in tandem with the drop in prices, as investors generally respond to uncertainty by reducing risk and shifting to safer assets.

Equity market activity has been strong, with turnover increasing by nearly 78% year-on-year and the trade count rising by nearly 80% in 2021. In September and October 2021, turnover hit the highest monthly level since the financial crisis of 2008. In addition, turnover totalled 181 b.kr. in the first two months of 2022, an increase of 5% year-on-year.

Direct pledging of shares in the Icelandic market has continued to decline in the recent term, to 10.7% at the end of 2021. This is the lowest percentage since mid-2017. The pension funds hold about 33% 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 17%.⁷ Only direct pledges are considered; therefore, no account is given to general collateral in shares or indirect collateralisation via derivatives contracts. There are many signs that leverage in the market is somewhat higher, with pledging through forward contracts and short-term loans.



Domestic securities assigned greater weight in foreign indices

In December, Icelandic companies on the exchange were assigned increased weight in the MSCI Frontier Markets 100 index, which comprises the 100 largest companies in MSCI's Frontier Markets indices. Íslandsbanki and Sildarvinnslan were added to the index, bringing the

7 Direct pledging is the average percentage of pledged shares for all listed equities on both the Main List and the First North market, based on the relative market value of each company.

Chart I-18
Breakeven inflation rate
1 January 2020 - 10 March 2022



Source: Central bank of Iceland.

Chart I-19
Exchange rate of the króna and CBI transactions in the interbank FX market
4 January 2021 - 10 March 2022



1. Narrow trade basket (1%).
Source: Central Bank of Iceland.

total number of Icelandic companies to fourteen. The foreign index firm FTSE Russell announced in September that it was considering reclassifying the Icelandic market as a secondary emerging market this year. Since September 2019 Iceland has been classified as a frontier market. Such a reclassification could attract foreign capital to the Icelandic equity market, as far more funds invest according to secondary emerging market indices than frontier market indices.

Breakeven inflation rate rises

Nominal Treasury bond yields have risen in 2022 to date, but yields on longer nominal bonds dipped temporarily in the wake of the Central Bank's February interest rate decision and Russia's invasion of Ukraine. Icelandic investors fled temporarily to safer assets as a result, but the decline has reversed and yields are rising again. The

rise in nominal Treasury bond yields can be attributed to a rising breakeven inflation rate, as uncertainty about the economic consequences of the war has exacerbated uncertainty about the inflation outlook, particularly in the short run. Yields on nominal Treasury bonds rose from the beginning of the year until the Central Bank's last interest rate decision, but they have fallen since then, particularly in the wake of the invasion of Ukraine.

The five-year breakeven rate was 5.2% in mid-March, but in recent months it has been higher on short-term bonds than on long-term bonds. In recent months, monthly bond market turnover has been broadly unchanged year-on-year, but in the first two months of 2022, it totalled 245 b.kr., an decrease of 6% between years.

Króna slides following the Russian invasion of Ukraine

From the turn of the year until the onset of the Russian invasion of Ukraine, the exchange rate of the króna rose by over 4%, and the Central Bank intervened in the market five times on the buying side, in line with its intervention policy, purchasing foreign currency for a total of 11 b.kr.⁸ The króna began to weaken when war broke out in Ukraine. On 24 February, the first day of the invasion, the Bank intervened on the selling side for the first time this year. In all, the Bank has sold foreign currency 3 times in February and March combined, for a total of 10 b.kr. Exchange rate volatility increased in the wake of the invasion, whereas it had been limited in the months beforehand. Turnover in the interbank foreign exchange market began to decline in H2/2021 and was back to the pre-pandemic level by the end of the year. It has picked up again in the recent past, however, in tandem with increased market volatility.

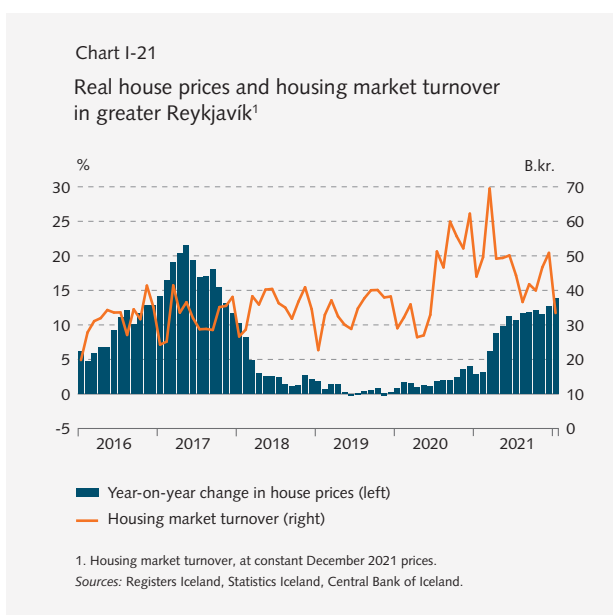
Supply-demand imbalances in the housing market are worsening ...

House prices have continued to rise rapidly in recent months, and the market is characterised by increased imbalances between supply and demand. The number of homes advertised for sale has plunged in the past two years, falling even faster since May 2021. As of February 2022, the number of homes for sale in greater Reykjavík had fallen by 69% since end-2019, before the pandemic struck. The average time-to-sale

⁸ For information on the Central Bank of Iceland's foreign exchange market intervention policy, see the Monetary Policy Statement from May 2017. <https://www.sedlabanki.is/utgefid-efni/frettir-og-tilkynningar/frettasafn/frett/2017/05/17/Yfirlýsing-peningastefnunefndar-17-mai-2017/>



has dropped to an all-time low, measuring less than 30 days in recent months. Demand far exceeds supply in the market, as can be seen in swift, steep price hikes. The twelve-month rise in the capital area house price index measured 13.8% in real terms in January. At that time, single-family home prices were up 15.9% year-on-year in real terms, while condominium prices had risen somewhat less, or by 13.1%. Condominium prices have been rising somewhat more since Q4/2021, however. House price inflation outside the capital area was slightly lower in the twelve months to January 2022, measuring 9.1% in real terms. Surging prices in greater Reykjavík appear to have stimulated demand in municipalities nearby. In these communities on the periphery of the capital area, prices have more or less risen in



line with those in greater Reykjavík – and even more, in a few areas.⁹ Demand for housing is likely to remain strong, in parallel with the robust GDP growth forecast for this year, which will probably lead to increased immigration. The economic outlook is uncertain, however, owing to the Russian invasion of Ukraine, which could affect this trend.

Turnover in the capital area housing market increased somewhat between Q3 and Q4/2021, after declining between Q2 and Q3. In Q4, turnover fell by about a fifth year-on-year, yet it was still slightly above the five-year average. Figures for January suggest that market turnover is contracting, although it is still strong relative to the pre-pandemic period.

A number of factors fuelled demand for housing after the pandemic reached Iceland, including increased savings as a result of limited consumption options, a shift towards home-based work, and the past few years' surge in real wages. Furthermore, the steep decline in mortgage lending rates in 2020, especially on non-indexed loans, greatly stimulated demand for housing. Lower interest rates enabled a large group of people outside the market to buy a home, as well as enabling many owners to move into larger housing. In Q2/2021, weighted interest rates on non-indexed variable-rate mortgages began to rise in the wake of the Central Bank's increases of its key rate.¹⁰ From then until the year-end, rates rose from 3.5% to 4.1%, according to data on interest rates on new mortgages. The outlook is for weighted rates on new non-indexed mortgages to be about 0.7-0.8 percentage points higher in Q1/2022 than they were in Q4/2021.¹¹

Table 1 shows developments in monthly debt service on a non-indexed variable-rate annuity mortgage with a 40-year maturity from year-end 2018 until February 2022. Between end-2018 and end-2020, debt service on a loan with an 85% LTV ratio declined by nearly 30%. At the end of 2020, the Central Bank's key rate was 0.75%, and non-indexed mortgage rates were very favourable in historical context. From then until end-February 2022, debt service has increased by 18%.

9 Data on price movements on the periphery of the capital area are taken from Registers Iceland's Verðsjá database. They are based on changes in the average price per square metre according to registered purchase agreements. The average price per square metre is not necessarily a fool-proof indicator of price trends; therefore, the data should be interpreted with caution.

10 Mortgage lending rates based on actual new lending, weighted by loan amount. Weighted mortgage lending rates indicate the average rate new borrowers pay, depending on loan form.

11 Based on the assumption that the Central Bank key rate will be unchanged through end-Q1 and that the spread between the key rate and non-indexed rates will remain unchanged at the Q4/2021 level.

The rise in debt service on non-indexed mortgages in the wake of monetary tightening should dampen demand for housing and counter price hikes in the coming term.

Tabel I-1 Debt service on 40 m.kr. non-indexed 40-year annuity mortgage

	Interest rate on base loan ¹	70% LTV ratio	85% LTV ratio ²
December 2018	6.20%	226,000 kr.	250,000 kr.
December 2019	5.13%	196,000 kr.	222,000 kr.
December 2020	3.38%	152,000 kr.	179,000 kr.
February 2022	4.71%	185,000 kr.	211,000 kr.

1. Simple average of interest rates on non-indexed mortgage loans according to interest rate tables from Arion Bank, Íslandsbanki, and Landsbankinn.

2. 5% supplemental loan with 15-year maturity, at 1% premium on the base loan interest rate.

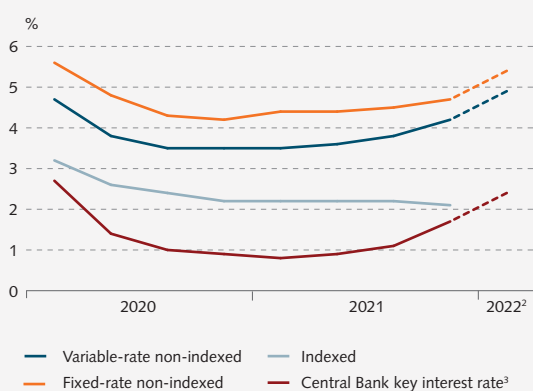
... requiring use of macroprudential tools

The macroprudential policy stance has been tightened as well. The maximum loan-to-value (LTV) ratio on general mortgage loans was lowered from 85% to 80% in mid-2021, in order to safeguard the resilience of borrowers and lenders and to counteract increased systemic risk. At the beginning of December 2021, rules on maximum debt service-to-income (DSTI) ratios for consumer mortgages took effect. The maximum DSTI ratio on general mortgages is 35%, and 40% for first-time buyers. Rising mortgage interest rates tighten the policy stance entailed in the maximum DSTI ratio, and in all likelihood, the macroprudential tools will become more restrictive in coming months. Further discussion of the interaction between DSTI ratios and interest rates can be found in the Box entitled *Real estate prices and macroprudential tools*.

The index of real house prices in the capital area has continued to rise at a rate above long-term trend in recent months. The index measured 16.1% above trend at the end of January 2022, the largest upward deviation since 2008. The deviation from trend has widened by 11.5 percentage points between years. In addition, house prices have risen well in excess of long-term determinants such as wages, rent prices, and construction costs. The twelve-month rise in the ratio between house prices and the general wage index measured 12.1% in January 2022, even though the wage index had risen by over 7% at the same time. The rental market was relatively calm in 2021, and the number of registered leases declined marginally year-on-year. The rent price index was flat year-on-year in January, concurrent with steeply rising house prices, and the ratio of house prices to rent has risen far in excess of its long-term average. The ratio rose by nearly 14% over this period and is up more than 23% since the beginning of 2020. Furthermore, the twelve-month rise in the ratio of house prices to the building cost index measured 12.6% in January.

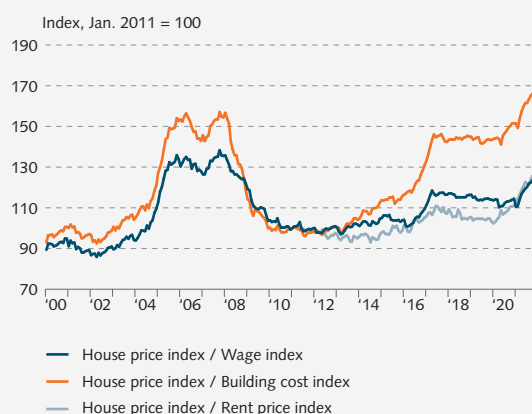
It is difficult to assess bubble formation in the housing market; i.e., whether prices have deviated so far from their determinants that a correction is highly likely. On the other hand, the stark mismatch between supply and demand, the historically short time-to-sale, price movements, the wide deviation between prices and their determinants, and other factors all suggest that risk in the housing market is growing apace at present. The likelihood of stagnating real prices or a correction in the market has grown stronger. Consumers should bear this in mind when buying property and should take it into consideration when deciding to take on mortgage debt.

Chart I-22
Weighted interest rates on new mortgage loans to consumers¹



1. All new mortgage loans issued by O-SII banks and Housing & Construction Authority. Including 9 largest pension funds from August 2020 onwards. 2. Forecast based on difference between the key interest rate and non-indexed mortgage rates in Q4/2021. 3. Average key interest rate for each quarter. Source: Central Bank of Iceland.

Chart I-23
Capital area house prices and their determinants

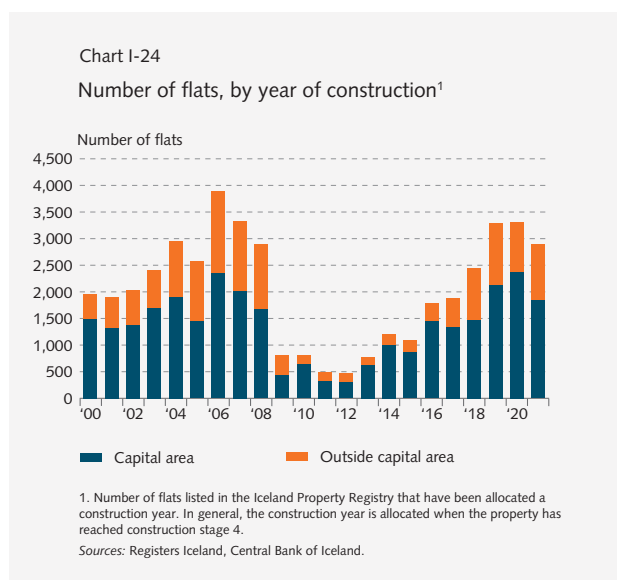


Sources: Registers Iceland, Statistics Iceland, Central Bank of Iceland.

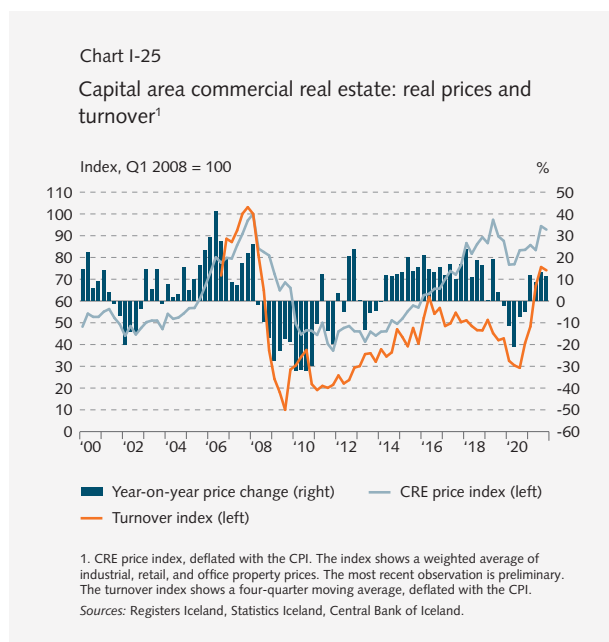
New construction activity remains strong

The construction market was lively last year in historical terms. Turnover was brisk and rising in 2021, and the number of jobs in the sector increased by 9% year-on-year, rising slightly above the year-end 2019 level. The construction industry faced substantial uncertainty when the pandemic reached Iceland and there was significant risk of reduced activity in the sector, as happened following the financial crisis of 2008, when construction activity remained subdued for at least five years. The construction industry has weathered the pandemic successfully, partly because of Government measures such as interest rate cuts, labour market initiatives, and the increase in the value-added tax reimbursement ratio, as well as the general moratoria on payment offered by financial institutions. The number of housing units with 2021 as the registered construction year was just under 2,900, a year-on-year decline of 13%.¹² Of that total, just over 1,800 were in the capital area, or 23% fewer than in 2020. The number of fully finished units also declined marginally in 2021. In spite of the year-on-year drop in these figures, the number of homes completed over the course of the year was one of the highest ever. Based on the number of properties registered with 2022 as the construction year and using a simple extrapolation, it can be assumed that just over 3,000 homes, a historically high number, will reach construction stage 4 this year.

Negative impact on the commercial property market



¹² In general, the construction year is allocated when the property has reached construction stage 4.



proves short-lived

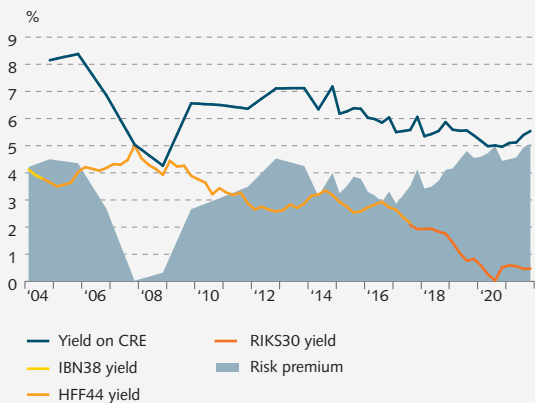
The commercial real estate (CRE) price index rose by 11.1% in 2021, after falling marginally in 2020.¹³ It has now returned to the pre-pandemic level and is around 15% above its estimated long-term trend. Turnover in registered CRE transactions in the capital area increased by 82% in real terms in 2021 and is at its highest since 2007. The CRE market appears relatively healthy, and the percentage of fully finished commercial property that is available for leasing has contracted since 2019.¹⁴ The negative impact of the pandemic therefore appears to have been short-lived, and major players in the market have proven to be quite resilient in spite of reduced saleability and a temporary drop in prices at the beginning of the pandemic. Changes in behaviour patterns, such as an increase in working from home, appear to have had a broader impact on demand for commercial property in many other parts of Europe.

The three large real estate firms – Eik, Reginn, and Reitir – saw a major turnaround in their operating performance in 2021. Returns on investment assets increased over the course of the year, measuring 5.5% in Q4, half a percentage point higher than in Q4/2020 and roughly on a par with the pre-pandemic level. Even though the negative impact of the pandemic can still be seen in the companies' operations, their occupancy rates have risen, and the relaxation of public health measures has been a boon to many of their tenants. The real estate firms wrote up the value of their investment assets by nearly

¹³ The most recent CRE price index value is preliminary and could change if purchase contracts are registered late.

¹⁴ Based on an analysis of the capital area commercial property market, carried out by Reykjavik Economics for the Central Bank in October 2021.

Chart I-26
Yield and risk premium on commercial real estate¹



1. Yield is defined as annualised net operating income divided by average investment assets over the accounting period. Risk premium is defined as yield in excess of the risk-free rate of return.
Sources: Leading real estate firms' annual and interim financial statements, Government Debt Management.

5.4% in 2021, more or less keeping pace with inflation. These valuation adjustments, which came to nearly 12% more than their combined profit for the year, had a strongly positive effect on their operating results. Since the pandemic began, the companies have refinanced a large share of their interest-bearing debt on more favourable terms. Between H2/2020 and year-end 2021, they obtained new financing in the amount of just over 120 b.kr. and retired older debt for a comparable amount.

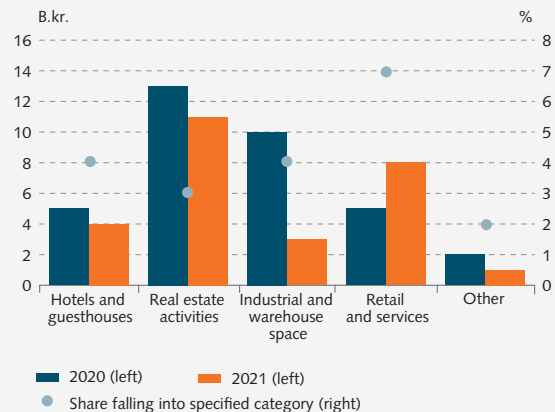
CRE-related credit risk has declined

At the end of 2021, the commercial banks' CRE-backed loan stock totalled 736 b.kr., just over half of their total loans to businesses.¹⁵ The amount of the loans contracted by 7.4% in real terms during the year, with the decline spread more or less evenly across sectors, except for the guest accommodation sector, where lending increased by over one-fourth. This increase is due largely to reclassification of loans on the banks' loan books, however, not to new lending. CRE-backed lending to companies in construction and real estate activities, a sector that strongly affects financial stability because of its close ties with the commercial property market, contracted by 15% in 2021.

Even though CRE-backed lending contracted in 2021, the value of the underlying collateral increased at the same time, according to estimates from the banks.

15 The figure is based on the total, excluding borrowers in sectors where loans backed by collateral other than real estate 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 is 870 b.kr.

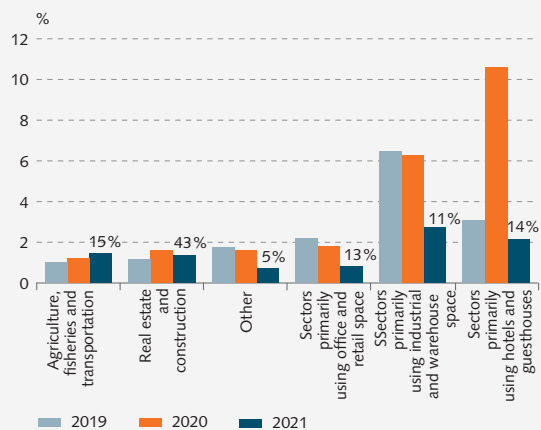
Chart I-27
Amount above 90% LTV ratio, by debtor sector¹



1. At constant December 2021 prices, based on the CPI. All CRE-backed loans issued by commercial banks. The outstanding balance of each loan is broken down into LTV ranges, and the amounts in each range are then summed. The dots show the amount of loans with an LTV ratio over 90%, expressed as a share of each category, as of end-2021.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-28
NPL ratios on CRE-backed loans issued by commercial banks¹



1. Year-end figures. Facility-level non-performing loan ratios; i.e., based on 90-day arrears. Debtors are broken down into housing segments according to the Central Bank's assessment of the type of property they are most likely to use, based on their ISAT2008 sectoral classification. The figures above the columns for 2021 represent the outstanding balance of loans in each category, expressed as a share of all CRE-backed loans.

Source: Central Bank of Iceland.

As a result, the commercial banks are better protected than before against changes in property values. By the end of 2021, poorly hedged risk, defined as the face value of loans with a loan-to-value (LTV) ratio of more than 90%, had shrunk by 22% year-on-year in real terms. This contraction extended to borrowers in all sectors apart from retail trade and services, where the face value of poorly hedged loans rose by 40% in real terms in 2021. Furthermore, the share of loan amounts with an LTV ratio above 90% is highest among borrowers that use retail and office space, at 6.7%. Poorly hedged risk associated with loans to operators of guest accommoda-

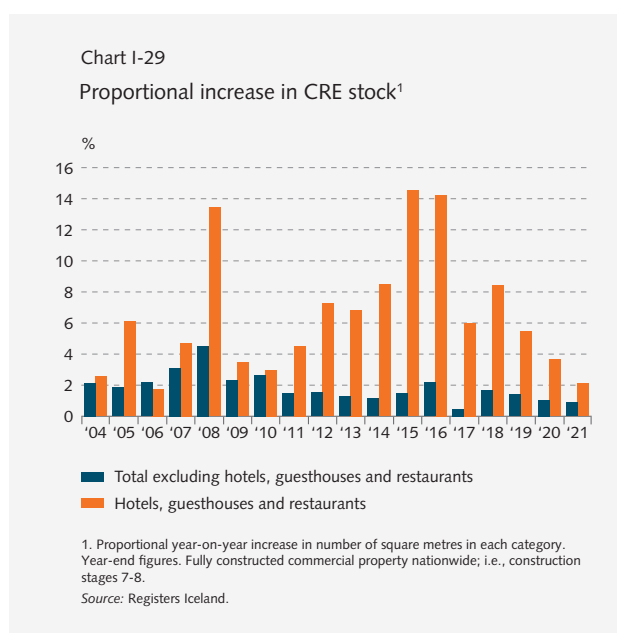
tion contracted slightly in 2021, in spite of strong growth in the credit stock.

The facility-level non-performing loan ratio on CRE-backed loans declined from 3.3% to 1.5% in 2021. It fell markedly on loans to operators of guest accommodation – from 10.6% to 2.1% – after having risen steeply in 2020.¹⁶ It also fell on loans to borrowers that chiefly use industrial and warehouse space, from 6.3% to 2.7%.

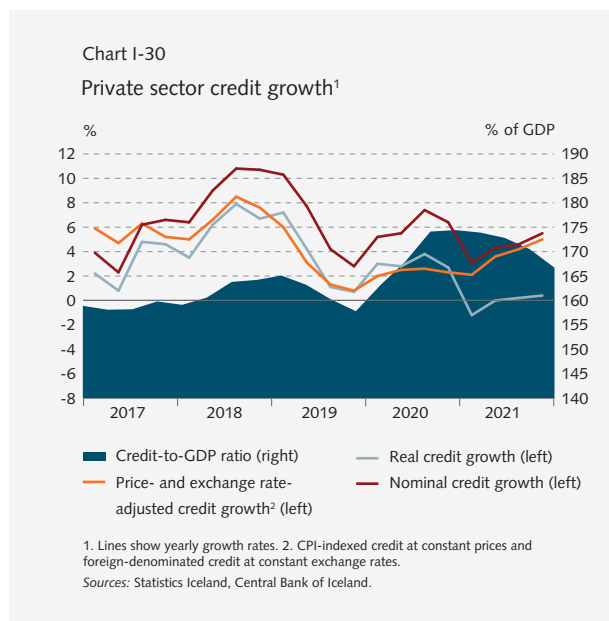
Decline in guest accommodation space under construction

The stock of fully finished commercial property grew by 0.9% in 2021 and has grown modestly in recent years. The surge in hotel and guesthouse space has largely materialised by now, and the amount of guest accommodation under construction has declined sharply. At the end of 2021, some 30,000 square metres of guest accommodation and restaurant space was under construction nationwide, or 4.5% of fully finished space of the same type, as opposed to 65,000 square metres a year earlier.

In general, the CRE market appears not to have been severely affected by the pandemic, as the surge in domestic private consumption in response to overseas travel restrictions supported demand for retail, warehouse, and industrial property. With their resilience, the large commercial property companies have also fostered market stability by supporting tenants experiencing temporary financial distress.



16 Part of the decline is due to foreclosures.



Risk associated with private sector debt

Private sector debt on the rise

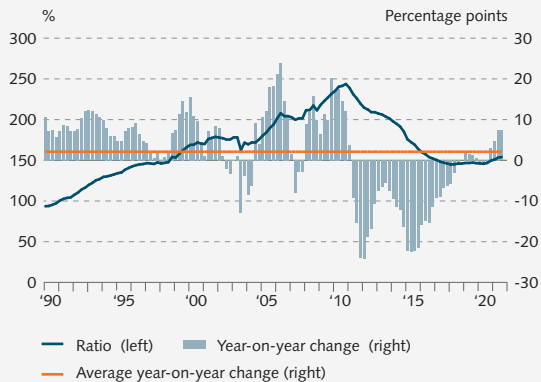
Private sector debt increased by 0.4% in real terms in 2021, as compared with 2.7% in 2020. Household and corporate debt continued to develop in dissimilar ways. Household debt grew strongly, while real corporate debt contracted. Private sector debt totalled 166.6% of GDP at the end of 2021, a year-on-year decline of nearly 8 percentage points, as GDP growth outpaced credit growth.

Growth in household debt loses pace

After a surge in early 2021, growth in household debt has eased in recent months. The year-on-year increase in household debt to domestic financial institutions measured 4.1% in real terms at the end of January 2022, down from the peak of 6.9% at the end of Q2/2021. As before, growth in household debt is driven by demand for mortgage loans, although other household debt has now risen slightly after a prolonged contraction. The ratio of household debt to GDP held relatively stable in 2021, measuring 83.7% at the year-end. The debt-to-disposable income ratio has risen somewhat since 2020, however, which could indicate growing risk associated with household debt. The ratio remains low in historical context.

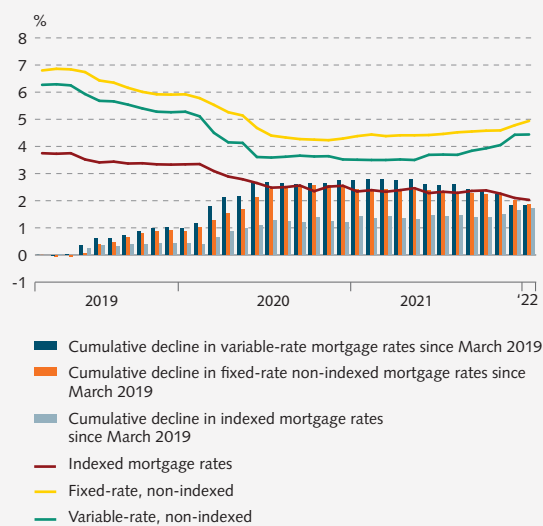
There are signs that growth in household debt will ease in the coming term. Interest rates on new non-indexed mortgage loans have risen in the wake of the increase in the Central Bank's key rate. By January 2022, the weighted average interest rate on new non-indexed mortgages from the D-SIBs had risen by 0.94 percentage points since the Central Bank began its monetary

Chart I-31
Household credit-to-disposable income ratio¹



1. Credit granted to households divided by disposable income in the last four quarters. Disposable income from the Central Bank's QMM database.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-32
Developments in D-SIB mortgage lending rates¹



1. Weighted average rates on new household mortgages granted by the D-SIBs, within each month.
Source: Central Bank of Iceland.

tightening phase in May 2021. The results of the Bank's lending survey also indicate that demand for household mortgages is on the decline.¹⁷ In addition, housing market turnover has tapered off after peaking following the onset of the pandemic.

At present, just under half of household debt is indexed to the CPI. The share of indexed debt has fallen rapidly, as the vast majority of new mortgage loans are non-indexed. Indexed household debt is still contracting in real terms, as it has been ever since the pandemic

reached Iceland. Retirement of indexed loans has eased slightly in recent months, however. It is possible that as nominal interest rates rise, the rising debt service burden on non-indexed loans will prompt households to turn back to indexed loans, which have lower debt service early in the loan period than comparable non-indexed loans do. Furthermore, interest rates on new indexed loans have been on the decline, unlike rates on new non-indexed loans; however, inflation has been rising, which should have a negative impact on demand for indexed loans, all else being equal.

In recent months, households have increasingly chosen fixed-rate non-indexed mortgages. As of this January, nearly 44% of outstanding non-indexed mortgages bore fixed interest, an increase of 12 percentage points year-on-year. However, some 46% of new non-indexed mortgages granted by credit institutions since mid-2021 bear variable interest. Non-indexed mortgages can expose borrowers to interest rate risk, as debt service on variable-rate non-indexed mortgages can increase quickly when interest rates rise, especially regarding equal installment loans. A growing share of borrowers have therefore chosen to protect themselves against this risk.

There are signs of increased risk-taking among first-time buyers. The average loan-to-value (LTV) ratio on new mortgage loans to first-time buyers rose in 2021, to nearly 80% by the year-end. The same can be said of average debt service-to-income (DSTI) ratios on new loans to first-time buyers, as these have risen steadily during the pandemic. Rising interest rates should cause

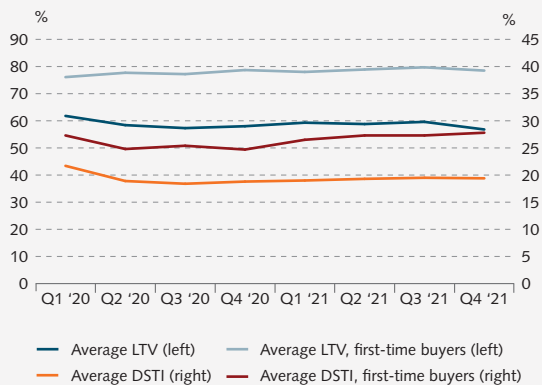
Chart I-33
Consumer mortgages, by type¹



1. Proportional breakdown of consumer mortgages, by type, from the D-SIBs and the Housing and Construction Authority. Including loans from the largest pension funds from August 2020 onwards.
Source: Central Bank of Iceland.

17 For further discussion of the Central Bank's new lending survey, see the Box entitled *The Central Bank lending survey* later in this report.

Chart I-34
LTV and DSTI ratios on consumer mortgages¹



1. Average loan-to-value (LTV) ratio and debt-service-to-income (DSTI) ratio on new consumer mortgages issued by the D-SIBs and the Housing and Construction Authority. Including mortgages from 8 largest pension funds from August 2020 onwards.

Source: Central Bank of Iceland.

DSTI ratios on existing loans to increase this year. Further discussion of the use of macroprudential tools in the mortgage lending market can be found in a Box later in this report.

In the past two years, the commercial banks have greatly increased their market share in the mortgage lending market. With rising interest rates, the terms offered by pension funds are becoming more competitive again, however, and in November 2021, the pension funds' net new household lending was positive for the first time since May 2020.¹⁸ The pension funds' share in outstanding mortgages is still on the decline, however.

Slight pickup in corporate debt growth

At the end of 2021, the real twelve-month change in corporate debt measured -3.8%. The appreciation of the króna during that period cut into credit growth, and the price- and exchange rate-adjusted year-on-year change in corporate debt measured 1.8% over the same period. Growth in corporate debt picked up slightly during the year. Net new corporate loans issued by deposit-taking institutions totalled 47.7 b.kr., as compared with 8 b.kr. in 2020. Corporate bond issuance increased as well. In addition, institutional investment funds' corporate lending increased markedly during the year. According to the Central Bank's lending survey, the commercial banks expect demand for corporate loans to increase in coming months.

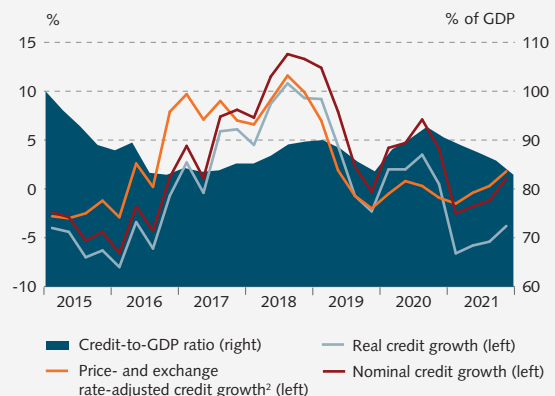
In the past few years, businesses have increas-

18 Net new loans are new loans less loan retirement and loan prepayments in excess of contractual requirements.

ingly obtained credit outside the conventional banking system. Corporate bond issuance grew in 2021, and the issuer group is more diverse than before. In recent years, real estate firms and energy companies have issued the majority of corporate bonds, but in 2021, other sectors such as fishing and services joined their ranks. As before, large companies are most likely to have the opportunity to obtain financing through bond issuance.

At the end of January 2022, the stock of institutional investment fund loans to businesses totalled 144.6 b.kr., after increasing by just over 48 b.kr. year-on-year. In part, the increase in institutional investment fund lending reflects new flows of credit to businesses, although in some cases it represents a shift from other lenders to institutional investment funds. This shift entails, on the one hand, refinancing of existing debt

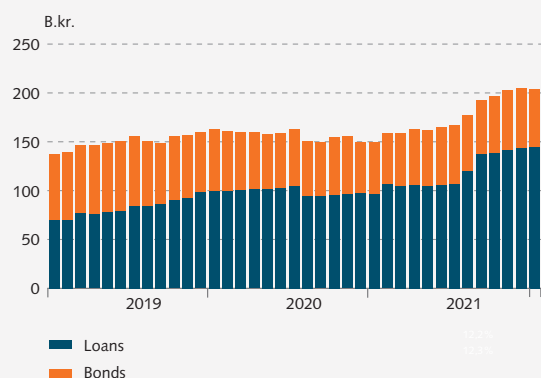
Chart I-35
Corporate credit growth¹



1. Lines show yearly growth rates. 2. CPI-indexed credit at constant prices and foreign-denominated credit at constant exchange rates.

Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-36
Corporate debt owned by UCITS, investment funds, and institutional investment funds¹



1. Corporate bonds and corporate loans owned by UCITS, investment funds, and institutional investment funds.

Source: Central Bank of Iceland.

with new loans from the funds, and on the other hand, a direct transfer in which the funds buy existing loans from other lenders. More than half of last year's increase in institutional investment fund lending is due to a few large loan agreements made in order to refinance existing debt, including bank loans.

Institutional investment funds finance their lending by selling unit shares and issuing bonds. The pension funds own nearly 60% of unit shares issued by these funds, but a comprehensive overview of the owner distribution of the funds' bond issues is not available. It is clear, however, that the pension funds are among the largest buyers of such bonds. Insurance companies, holding companies, and other UCITS and investment funds are also prominent in the institutional investment funds' financing.

Corporate debt owed to UCITS, investment funds, and institutional investment funds currently totals about 8.4% of total corporate debt owed to the domestic financial system, and the share is on the rise.

Increased non-bank financial intermediation is a sign of greater diversity in the credit markets, and it could foster increased risk diversification and reduced concentration. However, this trend could also be a manifestation of regulatory arbitrage where financial activities seek out financing venues subject to weaker supervision and less stringent rules than are imposed on the commercial banks.

Risk associated with households' and businesses' position

Households emerged from the pandemic in a strong position

Households are still strong, on the whole, and indicators generally point in a positive direction. Private consumption is on the rise and is expected to keep growing in 2022.¹⁹ Wages are still climbing, with the year-on-year rise in the general wage index measuring 7.3% in January. At the same time, the real wage index rose 1.5% year-on-year. Real wage growth has slowed in tandem with rising inflation. Unemployment is now only slightly higher than before the pandemic. Registered unemployment measured 5.2% at the end of January, after rising marginally month-on-month, but is expected to ease again in the next few years.

Data on default do not indicate growing liquidity problems among households. Household arrears are limited and have been on the decline. The facility-level non-

performing loan ratio on the D-SIBs loans to households stood at 0.9% at the end of 2021 and had fallen by 1 percentage point since the onset of the pandemic.²⁰ It is very low in historical and international context, as can be seen in the European average, which was 2.5% at the end of Q3/2021.²¹ The decline in the NPL ratio is due partly, but not entirely, to the expansion of the banks' mortgage loan portfolio during the period. Households' position is therefore much stronger now, at the end of the pandemic, than was widely feared at its onset.

Higher interest rates are expected to increase households' interest expense. However, all of the households that took on additional debt in connection with real estate purchases had to undergo a credit assessment and satisfy borrower-based rules, both those set by the

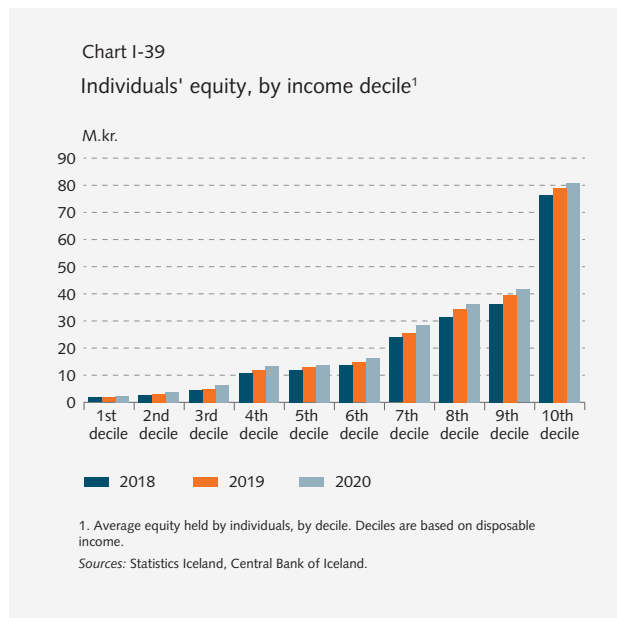


19 Monetary Bulletin 2022/1.

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 for 90 days or more.

21 See the EBA Risk Dashboard for Q3/2021.

Central Bank and those set by lenders themselves. As a result, households should generally have the scope to absorb rising interest expense. In addition, their net asset position has improved with rising house prices.

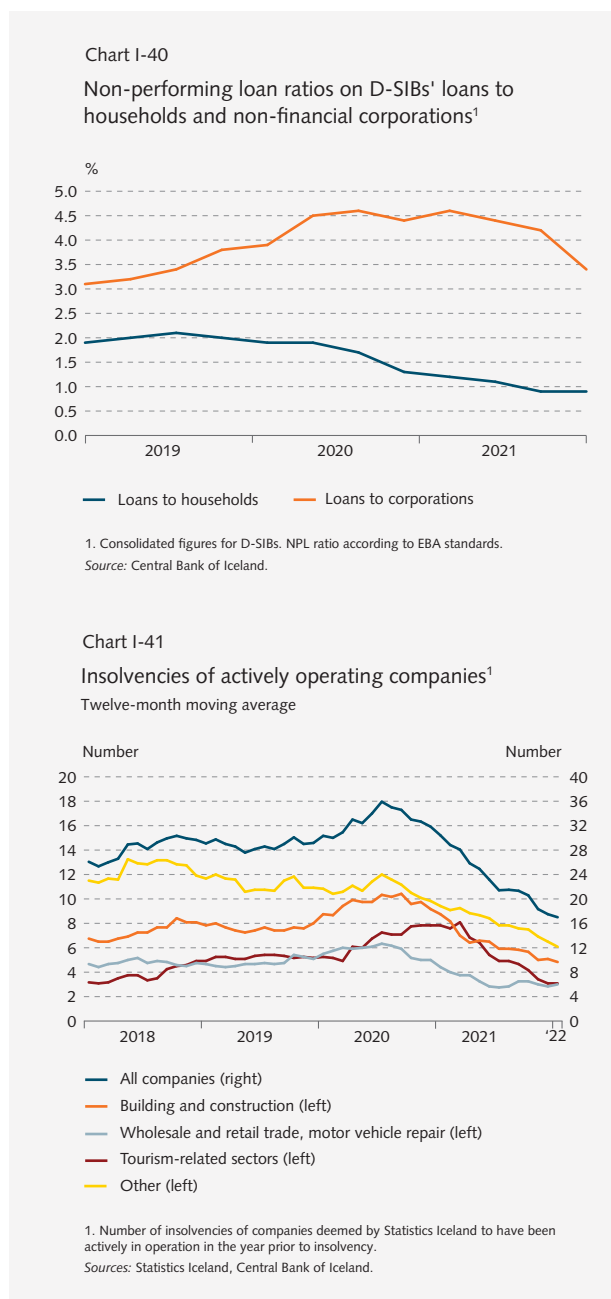


Corporate arrears on the decline

Corporate insolvencies increased slightly in number in 2021, according to data capturing insolvencies of all registered companies. Among companies that were actively in operation in the previous year, however, the data show that insolvencies have been declining steadily since mid-2020, by which time the pandemic-related support measures were in place. Until then, insolvencies among active companies had been rising. The number of unsuccessful distraint measures against legal entities declined somewhat between 2020 and 2021.

Corporate arrears fell in 2021, and the D-SIBs' non-performing corporate loan ratio was 3.4% at the year-end, after declining by 1 percentage point year-on-year. As before, arrears are greatest among tourism-related companies; for instance, the NPL ratio on loans to companies in accommodation and food service activities was 9.7% at the end of 2021.

To an extent, the positive trend in arrears and insolvencies is a sign of both successful Government support measures and companies' resilience at the beginning of the pandemic. It is clear, though, that many firms have had to tap into equity and other revenue sources in response to the detrimental impact of the pandemic on their operations. Tax data from Statistics Iceland show that the equity ratio of the corporate sector as a whole fell by nearly a percentage point in 2020, and



that returns contracted sharply. There are many signs that this trend continued in 2021. Tourism companies were affected most strongly, as is discussed earlier in this report.

The financial cycle

The financial cycle is still in an upward phase, and the pace has accelerated in recent months. The housing cycle has been re-estimated, as expected, because house prices have now been rising long enough that a medium-long upward phase can be detected once again, instead of a brief downward phase. The experience of this re-estimation shows the importance of examining

each component of the financial cycle before drawing conclusions about the cycle as a whole.

Of the three sub-cycles, the credit cycle is rising fastest, according to the most recent measurements. The private sector credit-to-GDP ratio rose unusually quickly at the beginning of the pandemic, owing to a contraction in GDP. The year-on-year increase in the ratio peaked at just under 17 percentage points at the end of 2020. That increase has now reversed in part, due to strong GDP growth in 2021 and limited credit growth over the course of that year, as corporate debt contracted marginally in real terms. The credit-to-GDP gap, which is the deviation of the credit-to-GDP ratio from trend, has been negative since 2011, as can be seen in Chart I-43. The gap narrowed during the pandemic but has now widened once again.

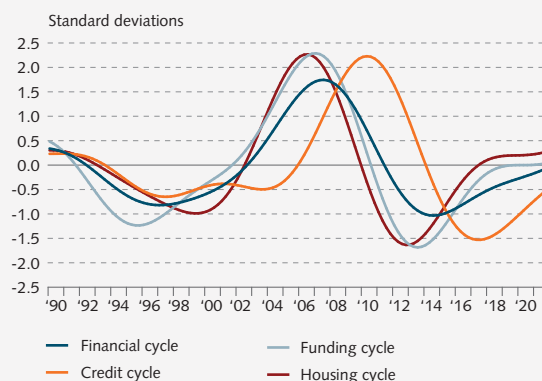
Credit growth has been distributed unevenly among households and businesses, as is discussed in the section on risk associated with private sector debt. Households' debt-to-disposable income ratio rose steeply in 2021. The financial cycle includes this ratio, but it does not include a comparable one for businesses, which affects the upward phase of the credit cycle at present.

As is mentioned above, the housing cycle has been re-estimated significantly, owing to the strong demand pressures in the market, as is discussed in the section on the residential housing market earlier in this chapter. If current price trends persist, the re-estimation of the housing cycle can be expected to continue and the upward phase to prove even stronger in the long run.

The funding cycle appeared virtually flat from 2019 onwards. The ratio of non-core funding to total banking system funding has hovered in the 40-50% range since 2012. The banking system has grown markedly in recent years, however, and unstable funding has therefore increased in real terms. In historical terms, the changes are minor, and the funding cycle reflects this. In the wake of the financial crisis, rules on minimum liquidity and stable funding requirements were tightened. The rules place significant restrictions on the possibility to increase unstable funding on the liabilities side of supervised entities' balance sheets unless corresponding changes are made on the assets side; i.e., an increase in high-quality liquid assets. Even if unstable funding were to increase sharply and show as an upswing in the funding component of the financial cycle, the implications for financial stability might not be the same as they were before the financial crisis.

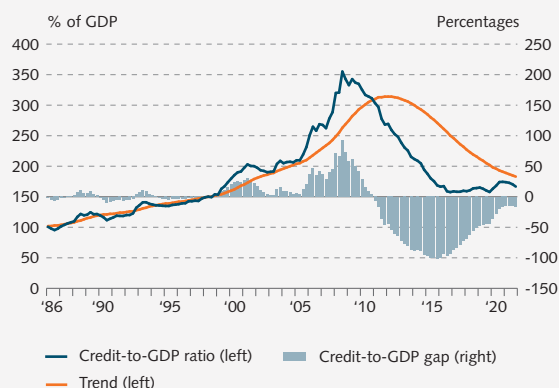
One possible interpretation of the financial cycle and its sub-cycles is that if the financial cycle is above zero and rising, it indicates the accumulation of cyclical systemic risk, which could jeopardise financial stability

Chart I-42
Financial cycle and subcycles¹



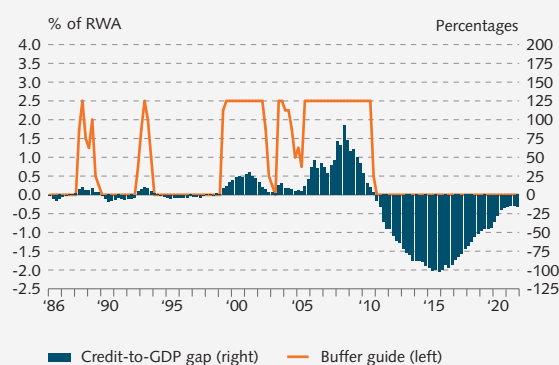
1. The financial cycle itself, the blue line, is the simple average of the subcycles. Each subcycle is the simple average of cyclical components from variables related to credit, housing and bank funding, respectively. Cyclical components are obtained with a Christiano-Fitzgerald band-pass filter with a frequency band of 8-30 years.
Sources: Registers Iceland, Statistics Iceland, Central Bank of Iceland.

Chart I-43
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-44
The buffer guide¹



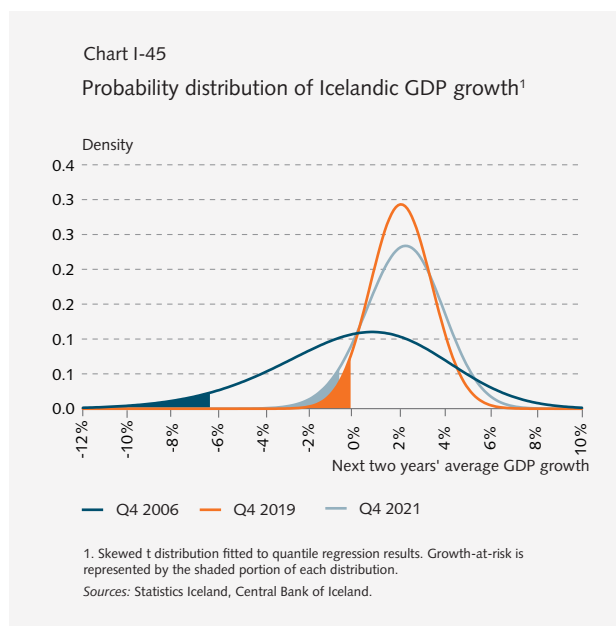
1. The ESRB's buffer guide follows a linear projection of the credit-to-GDP gap.
Sources: Statistics Iceland, Central Bank of Iceland.

if no action is taken. Another important factor in this interpretation is how far above zero the cycle rises and how long the situation has persisted. The higher it moves and the longer it remains high, the stronger the warning signal. The financial cycle has risen in recent years but is currently just below zero. This could be interpreted to mean that accumulated systemic risk is neither pronounced nor negligible, but close to its historical average. However, the upward phase is constantly gaining momentum, and it could signal increased systemic risk if credit growth accelerates further and house prices continue to surge. Recent development of the financial cycle seems to be consistent with underlying data, but it should be noted that other indicators that are not included in the financial cycle – such as indicators related to commercial real estate (CRE) or the quality of CRE loans – do not indicate increasing systemic risk at this time.

The effects of the financial cycle on economic developments

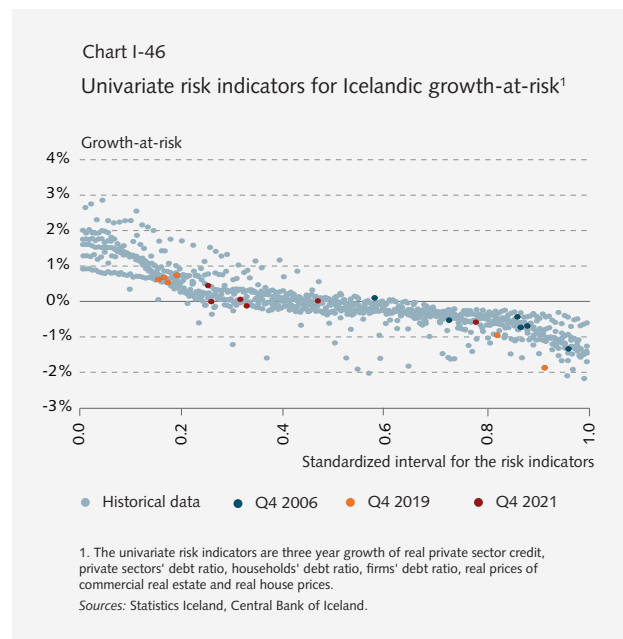
At times when asset prices and debt burdens are both high, there is the risk that a shock of some sort might trigger a negative spiral between the financial system and the economy, leading to a deep economic contraction. Because the financial cycle is intended to reflect changes in systemic risk, it can be assumed that a higher financial cycle position will be associated with increased tail risk in the economy. In other words, when the financial cycle position is high, the lower tail of the probability distribution for future GDP growth stretches downwards.

Chart I-45 shows the estimated probability distribution of average GDP growth two years ahead, as



it was estimated at the end of 2006, 2019, and 2021. The probability distribution is estimated using a quantile regression analysis modelled on papers published recently by the International Monetary Fund (IMF) and several central banks.^{22,23,24} There are two explanatory variables: the financial cycle position at the time in question, and GDP growth in the previous twelve months. The analysis suggests that developments in the lower quantile of the probability analysis follows the financial cycle position, but that the median and upper quantile follow GDP growth in the previous twelve months.

The light gray probability distribution in Chart I-45 shows the position as of year-end 2021, while the position at the onset of the pandemic is shown in orange. Although the median is now higher, tail risk has increased, as the 5% quantile has shifted from 0% GDP growth to a contraction of 0.7%. The threshold is called growth-at-risk, which is shown by the shaded area under each probability distribution in the chart. The distributions accord with historical interpretation, as the economy more or less stagnated at the end of 2019 but is now rising from a deep crisis, but with higher asset prices and debt levels. A comparison with the probability distribution as it was in 2006 supports the interpretation that although cyclical systemic risk has increased since year-end 2019, it is probably no more than average today.



- 22 Adrian, T. et al. (2019). *Vulnerable growth*. American Economic Review.
- 23 Arbatli-Saxegaard, E.C. et al. (2020). *Financial imbalances and medium-term growth-at-risk in Norway*. Norges Bank Staff Memo.
- 24 Krygier, D. & Vasi, T. (2021). *Macrofinancial conditions, financial stability and economic growth in Sweden – evaluating the Growth-at-Risk framework*. Sveriges Riksbank staff memo.

Because the financial cycle is based on a number of risk indicators that could give different signals at any given time, the impact of individual sub-indicators on growth-at-risk was examined. In all, six risk indicators proved to be significant explanatory variables for growth-at-risk.²⁵ In Chart I-46, each dot stands for one historical examination of risk indicators between 2001 and 2021, together with forecasted growth-at-risk. The risk indicators are standardised so that they carry a value between 0 and 1, with higher values interpreted as signs of increased risk. The vertical axis indicates how much growth-at-risk is forecast for each examination. The historical data tend to cluster around an s-shaped distribution, indicating that risk accumulates more slowly near the middle of the indicators but builds up faster near the highest and lowest values.

At the end of 2019, four dots were relatively far towards the left of the graph (all of them risk indicators for indebtedness), while indicators for real house prices and commercial property prices were far to the right of centre. The most recent examinations indicate that credit-related risk has increased somewhat, as the cluster of credit indicators has shifted towards the centre, but that risk associated with commercial real estate has declined significantly. That indicator is now in the centre of the chart. Risk associated with house prices gives the clearest signal at present, although it has declined slightly. Overall, the cluster of the risk indicators has shifted to the right, which indicates greater cyclical systemic risk than at year-end 2019, although the outliers are not as pronounced now.

²⁵ Three-year real growth in private sector credit, the private sector credit-to-GDP ratio, the household credit-to-GDP ratio, the corporate credit-to-GDP ratio, real commercial property prices, and real residential property prices.

The war in Ukraine and its impact on financial stability

Russia invaded Ukraine on 24 February 2022, in the broadest military action Europe has seen since World War II. A large number of countries have responded by imposing broad economic sanctions, cutting Russia off from global financial markets, closing their airspace to Russian aircraft, and freezing on Western assets held by the Russian central bank and other entities. The US has banned the importation of fossil fuels from Russia, and a host of global corporations have discontinued or suspended operations in Russia or plan to do so.

Uncertainty about the global economic outlook has surged in the wake of the invasion. This can be seen in steeply rising energy and commodity prices, as Russia is a major exporter of commodities such as oil, natural gas, wheat, aluminium, and precious metals. Belarus and Ukraine also export large amounts of commodities, particularly timber and wheat. Oil prices have soared, and the price of wheat has risen to unprecedented highs. Stock and bond prices have fallen, and investors have flocked to safe assets such as US Treasury bonds and gold.

Increased oil and commodity prices will weaken the post-pandemic global economic recovery and push inflation higher. But the effects of the war on the global economic outlook depend primarily on how long the conflict lasts, although even if military action is brought quickly to an end, it is not clear whether or when the sanctions will be lifted.

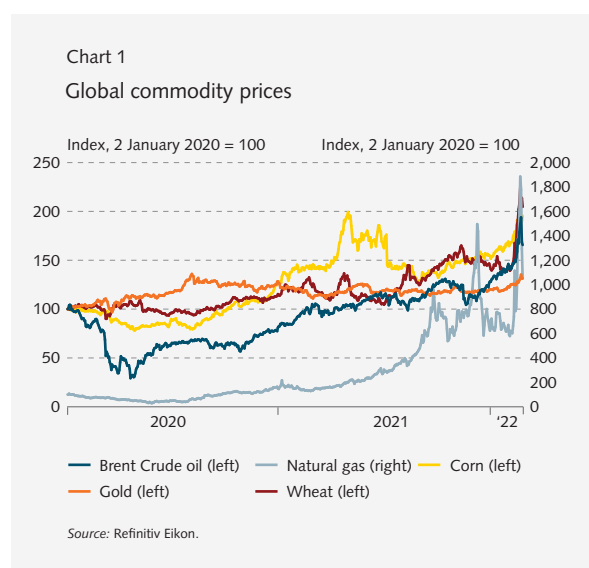
The domestic economy

The war in Ukraine will have a negative effect on the Icelandic economy, mainly through higher commodity prices and higher global inflation, which will erode terms of trade and push domestic inflation upwards. The economic recovery could therefore be impeded by the impact of price hikes on disposable income and consumption, although Icelandic households have significant accumulated savings and a strong equity position. Furthermore, weaker GDP growth among trading partners could have a dampening effect on Iceland's exports. Increased global uncertainty and the deterioration in terms of trade could also put greater pressure on the exchange rate of the króna. The magnitude of these effects is highly uncertain, however, and will be determined by global developments.

Goods exports

After Russia annexed Crimea in 2014, many countries, including Iceland, imposed economic sanctions on it. Russia

responded, among other things, by banning the importation of Iceland foodstuffs. In the wake of this, goods exports from Iceland to Russia declined somewhat. Icelandic marine products had previously been the mainstay of goods exports to Russia, but by the time of the invasion, exports to Russia consisted mainly of food production equipment, ships, and various industrial goods. In 2021, Iceland's goods exports to Russia were valued at just under 5 b.kr. The mainstay of Iceland's goods exports to Ukraine has been marine products, pelagic fish in particular. In 2021, these exports were valued at 6.7 b.kr. It is also thought that marine products are exported to Ukraine via Lithuania. Goods valued at 4.2 b.kr. were exported to Belarus in 2021, and as in the case of Ukraine, Icelandic marine products were chief among them. It may prove possible to sell products previously sold to these countries in other markets, although the price will probably be lower.



Reduced appetite for travel?

The direct and indirect effects on services trade could outweigh the effects on goods trade. If the war drags on, appetite for travel could well be negatively affected. It can be expected that widespread closure of airspace will have a detrimental impact on tourist arrivals in Iceland, particularly from Asia. Higher fuel and commodity prices further erode purchasing power among households in advanced economies, which could reduce the incentive to travel and lower the amount spent per tourist. The extent to which higher fuel prices will affect airfares is uncertain. It depends

in part on how long the higher prices persist and how effectively airlines have hedged price hikes. In all likelihood, long flights will be affected the most, including flights to Iceland. Relatively few tourists have come to Iceland from Russia, Belarus, and Ukraine in recent years. Russian nationals accounted for less than 1% of tourist arrivals in 2019.

Trade and capital flows

The volume of direct transactions – i.e., the sum of inflows and outflows – between Iceland, on the one hand, and Russia, Belarus, and Ukraine, on the other, accounted for only a small share of Iceland’s total transactions, or about 1% in 2021. This percentage has been on the rise in recent years, however. The transactions are of various types, although they mostly involve goods and services trade. The direct impact on Iceland’s external trade will probably be limited, as these countries account for only a small share of total trade. Individual companies could suffer significant negative effects, however.

Foreign investment by residents of Iceland takes place primarily through domestic pension funds. Because

the pension funds’ foreign investment is restricted by law to OECD countries, the funds have no direct investments in Ukraine, Russia, or Belarus. The pension funds’ assets in funds that specialise in investments in emerging countries are negligible as well. As a result, it looks as though the impact on the pension funds and other Icelandic investors will mainly be indirect, through falling global asset prices.

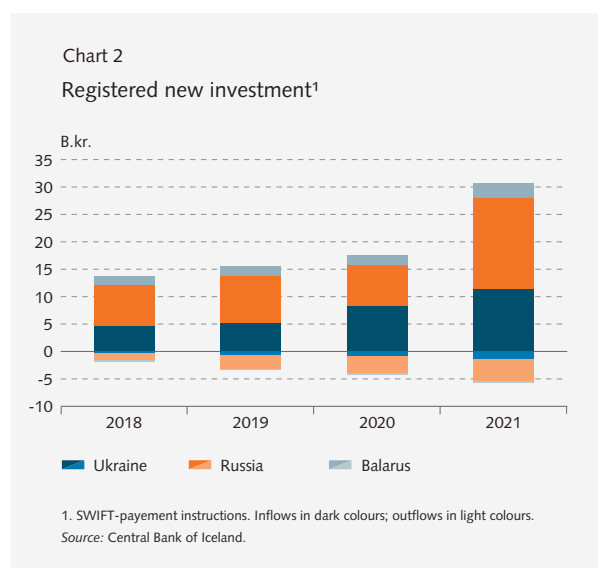
Impact on financial stability

The direct effects of the Ukraine war on the Icelandic financial system will probably be concentrated in increased cyberattacks and rising financing costs in foreign credit markets if the war doesn’t spread further.

The Icelandic banks’ direct exposures to Russia, Belarus, and Ukraine are insignificant, and they own no securities in these countries. Credit spreads on the banks’ foreign bond issues have risen somewhat, as they have on comparable issues by foreign banks. The banks’ foreign refinancing risk is limited as yet, however, as they hold enough liquid assets to retire this year’s maturities. If the current situation persists, higher financing costs could affect the foreign-denominated lending terms offered by the banks.

Cyberattacks surged in Ukraine during the days just before and after the invasion began, and there has also been a discernible increase in attempted cyberattacks in Iceland. Financial institutions must prepare for this and may need to tighten their contingency measures.

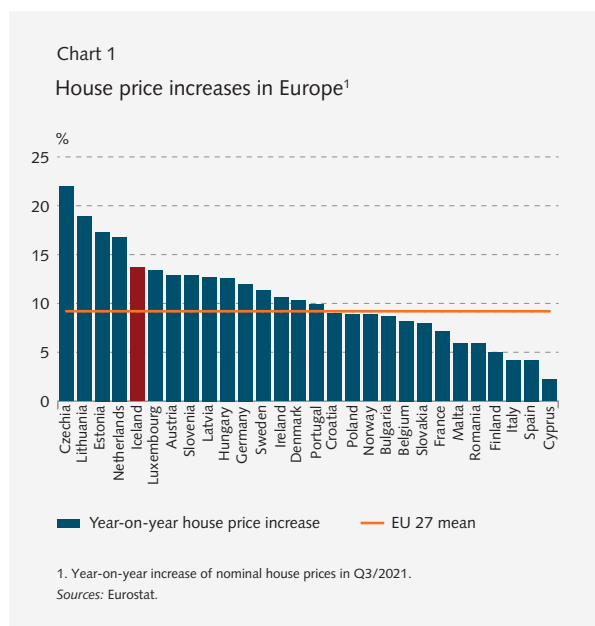
The indirect impact could turn out more severe if the economic effects of the war persist on a global scale. Demand for key exports from Iceland could weaken, with the associated repercussions, including reduced GDP growth, higher inflation, declining disposable income, and higher unemployment. This would adversely affect asset markets, increasing default and reducing the banks’ loan quality. The banks remain highly resilient, however, as is discussed in Chapter II.



Real estate prices and macroprudential tools

Real estate prices

Domestic real estate prices have risen swiftly in recent months, although this is not a uniquely Icelandic phenomenon. Around the world, government responses to the pandemic stimulated asset markets, and property prices have surged in a number of advanced economies. In many European countries, nominal price increases have exceeded 10%. In Q3/2021, the twelve-month rise in the European Union as a whole measured 9.2%, up from 5.3% a year earlier. Prices rose most in the Czech Republic, Lithuania, Estonia, and the Netherlands, but the 12% year-on-year increase in Germany is noteworthy as well.



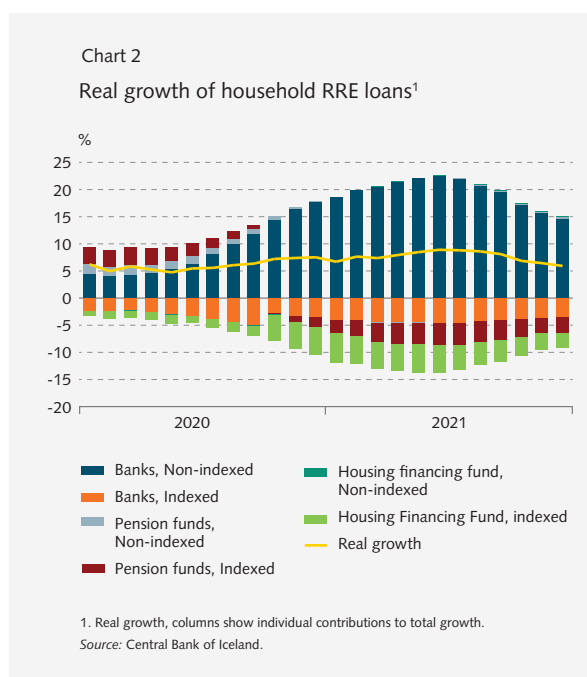
In Iceland, the stability that had characterised the real estate market for some time shifted in summer 2020. A surge in demand, stemming in part from lower interest rates, caused supply-demand mismatches to develop, and price pressures increased. Furthermore, the number of properties selling at above asking price began to grow quickly. Throughout 2020, however, the trend was within the boundaries that could be considered a normal market fluctuation, as lending terms had improved substantially and market turnover was limited during the period just after the pandemic reached Iceland. Price pressures eased for a while around year-end 2020, supply increased marginally, and the number of properties selling at a premium on the asking price remained flat. Then,

in February and March 2021, strong price pressures began to develop. Since that time, the average time-to-sale has fallen to a historical low, and as much as 35-40% of properties have sold at a premium on the asking price. Supply in the market has shrunk substantially, and by the end of February only about 1,000 homes were advertised for sale nationwide, as compared with an average of nearly 2,600 from the beginning of 2015 through the end of 2021.

House prices in greater Reykjavik are now very high in historical terms and have deviated sharply from their long-term determinants. As is discussed further in Chapter I, the probability of stagnation or a correction in the housing market has increased, which could have a negative effect on leveraged households.

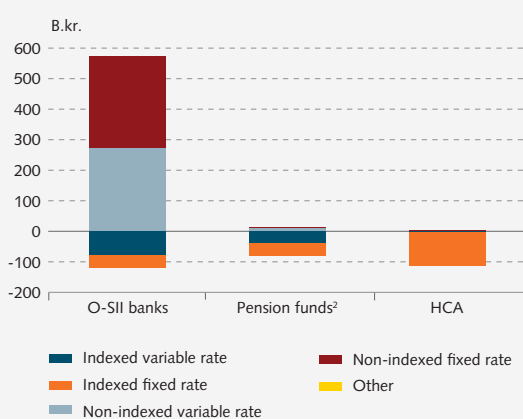
Households' real estate-backed debt

Households' indebtedness has increased in the wake of strong turnover and steep price hikes in the property market. In 2020 and 2021, households' real estate-backed debt grew by 24% in nominal terms, and just under 14% in real terms. The growth rate accelerated through mid-2021, peaking in June of that year. In recent months, household mortgage lending growth has eased, although it remains strong. Interest rates on new mortgages issued by the commercial banks have generally been below those offered by other



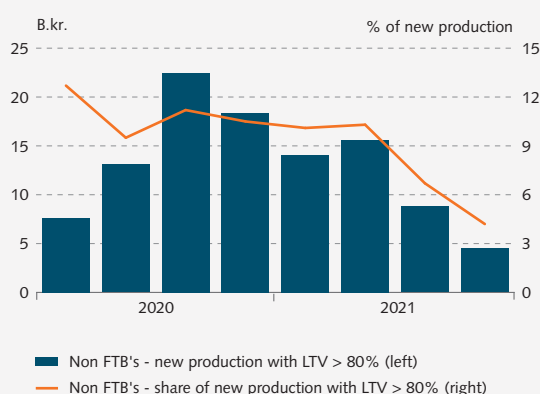
lenders, and since the onset of the pandemic, the banks have issued roughly 80% of the total amount of new mortgages. This has significantly increased the banks' market share. In the past two years, the commercial banks' mortgage loan portfolio has grown by 40% in real terms, whereas the pension funds and the Housing and Construction Authority (HCA) have seen their portfolios contract by nearly 20% and 46%, respectively, over the same period.¹

Chart 3
Shifts in household RRE loan stock¹
June 2020 - December 2021



1. Constant December 2021 prices, deflated with the CPI. 2. Number for pension funds are from October 2020 to December 2021 and cover the 9 largest funds. Source: Central Bank of Iceland.

Chart 4
New consumer mortgages with high LTV¹



1. All new mortgage loans of O-SII banks and HFF. Also 9 largest pension funds from August 2020. Source: Central Bank of Iceland.

A large share of the commercial banks' new mortgages have been non-indexed. Around half of households' mortgage debt is now non-indexed, up from 31% at the end of June 2020. The majority of the non-indexed loans issued in the recent term have borne variable interest, although fixed-interest loans have become more common in the past few months. Non-indexed variable-rate loans accounted for about 31% of the household mortgage portfolio at the end of 2021, up from 20% at the end of June 2020. The household mortgage stock has grown substantially in a short period of time and is now far more exposed to interest rate risk than before.

Application of macroprudential tools in the mortgage lending market

The Central Bank of Iceland Financial Stability Committee (FSN) decided in 2021 to apply two macroprudential tools in the mortgage lending market. At its June 2021 meeting, the Committee decided to lower the maximum loan-to-value (LTV) ratio from 85% to 80% on loans to all but first-time buyers. Then in the autumn, the Committee introduced new Rules on Maximum Debt Service-to-Income Ratios for Mortgage Loans to Consumers, which took effect on 1 December 2021. The Committee's main reasoning for using these policy instruments were to safeguard financial stability by shoring up lenders' and borrowers' resilience against housing market imbalances and to contain long-term systemic risk caused by surging house prices and increased household debt levels. In the long run, the application of these tools should reduce risky lending to households and mitigate market volatility.

The discussion below focuses on the direct impact of the reduction in LTV ratios, as well as the impact the cap on the DSTI ratio could potentially have on the mortgage lending market in the coming term. Other factors, such as the effect on household leverage, house prices, and market volatility, take a much longer time to come to the fore, and it would be premature to discuss them here.

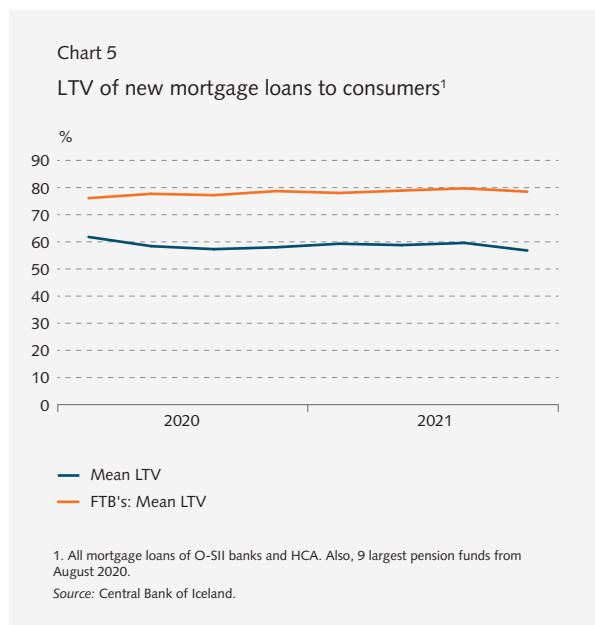
Loan-to-value ratios

The direct impact of the Central Bank's LTV rules emerges with a lag in the data on new consumer mortgages. There are two reasons for this. First of all, lenders are granted time to complete loan applications already filed and falling within the framework in effect at the time of the application. Second, delays can occur because loans are often not disbursed until weeks or even months after the application is filed. Still, Chart 4 shows clearly the impact of the new rules capping LTV ratios on new consumer mortgages. From the beginning

¹ The Housing Financing Fund merged with the Iceland Construction Authority under the name Housing and Construction Authority at the beginning of 2020, whereupon it stopped issuing general mortgages except in extraordinary cases such as, for instance, the participating loans that became available at the end of 2020.

of 2020 through mid-2021, some 10% of the total amount of new loans to non-first-time buyers had an LTV ratio of more than 80%. That share fell to just under 7% in Q3/2021 and just over 4% in Q4.²

The average LTV ratio on loans issued to first-time buyers has been close to 80% since Q4/2020. This is quite a high average; however, a modest decline can be discerned in Q4/2021. Since the beginning of 2020, the average LTV ratio for non-first-time buyers has been less than 60%, falling from 59.6% to 56.8% in Q4/2021. In general, it can be said that new borrowers are now more resilient against falling house prices than they were before the LTV rules were amended. On the other hand, first-time buyers are considerably less resilient than other borrowers, and the difference between the two groups is widening. First-time buyers generally need a higher LTV ratio to enter the market, and it can be normal for them to be more heavily leveraged, on average, than others, as they do not benefit from owning equity in their homes, which increases with house price inflation.



Debt service-to-income ratios

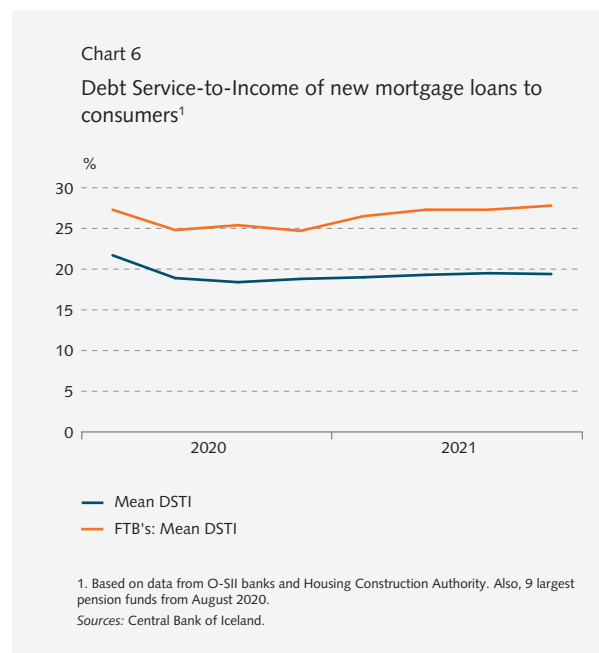
The average DSTI ratio – the ratio of mortgage debt service to the borrower’s monthly disposable income – was relatively stable for borrowers as a whole in 2021. The average for all borrowers rose by 0.6 percentage points year-on-year in Q4/2021, however. Over the same period, the DSTI ratio for first-time buyers rose by 3.2 percentage points, to 27.8% in Q4/2021. Furthermore, just over 10% of first-

2 It should be noted that it will never be 0%, as certain exemptions are in effect; therefore, in exceptional cases, it is permitted to issue consumer loans in excess of the regulatory maximum.

time buyers had a DSTI ratio of more than 40% in Q4, as opposed to just over 7% a year earlier. First-time buyers have been prominent in the market since the beginning of 2020, accounting for about a third of all buyers. At the same time, mortgage lending rates have been very favourable, and real house prices have risen rapidly, as is discussed above and in Chapter I. First-time buyers tend to be affected most by steeply rising prices and generally need to take more financial risk to enter the market than they have in the recent past.

Because only a short time has passed since the rules on maximum DSTI ratios took effect, it is not yet possible to evaluate the direct impact on new lending. On the other hand, it is possible to examine DSTI ratios on recent loans and compare them to the provisions in the rules. It is also possible to determine what effect the rules would have had if mortgage interest rates had been higher at the time the loans were granted. Such an analysis could shed light on the potential impact of the rules in the months to come.

First, the effects of the rules are examined, by quarter, starting with Q1/2021, assuming that DSTI ratios are



calculated using the criteria laid down in Article 4 of the DSTI rules.³ This shows that 2.4-3.4% of non-first-time buyers should have been affected by the restrictions entailed in the rules. At the same time, the same percentage for first-time buyers rose somewhat, from 3% in Q1/2021 to nearly 5%

3 Lenders are authorised to base their calculations on a maximum loan term of 30 years for indexed loans and 40 years for non-indexed loans. They are also authorised to use annuity mortgage amortisation schedules as the basis for their calculations.

in the second half of the year. It should be noted, though, that no adjustments are made here for the general exemption provided for in Article 5 of the rules, which would have mitigated the effects of the DSTI cap in cases when lenders might have used it.

In order to capture the effects of rising interest rates, it is possible to examine new loans on the terms offered at the time the loan was granted and at higher interest rates. As yet, indexed interest rates have not risen – in fact, they have tended to fall – so it is unnecessary to consider them in analysing the short-term impact. On the other hand, if consumers turn to indexed loans, it could mitigate the effects of the rules, as there is a large difference between indexed and non-indexed mortgage rates at present. The degree to which buyers will choose indexed loans to lower their debt

service to a level permissible under the Bank's DSTI rules is uncertain. The recent surge in inflation should discourage consumers from taking indexed loans.

If interest rates on non-indexed mortgages rise by 75 basis points, as they could in Q1/2022 (see Chapter I), the restraint entailed in the DSTI cap will increase, albeit largely within the scope provided by the general exemption in the rules. Assuming that interest rates rise by an additional 75 points in the coming term, for a total hike of 150 basis points, the restraint entailed in the rules will increase even further, and probably over and above what the general exemption covers. It is therefore likely that the restraint provided by the DSTI ratio will increase in the coming term as the monetary stance grows tighter.

Box 3

Central Bank lending survey

At the beginning of 2022, the Central Bank began conducting a new lending survey with the aim of systematically collecting data on households' and businesses' demand for and access to credit.

The lending survey is a qualitative survey in which lenders are asked about developments in customer demand for credit, developments in the supply of credit to customers, and factors that affect supply, including lending rules, competition, and interest rates. In the survey, respondents are asked to assess developments in the previous three months and their evaluation of prospects for the upcoming six months, where applicable.

The survey will be carried out on a quarterly basis from now on, and the sample will consist of the domestic commercial banks. The Bank plans to expand the survey at a later time by requesting information from pension funds. This

will give a broader overview of the credit market, particularly the mortgage lending market. Comparable lending surveys have been carried out in neighbouring countries for years, and the Central Bank's survey is modelled on those taken abroad.

Data collected through the lending survey will be added to the information the Bank has at its disposal for analysing developments in credit markets. This applies not least to how lenders perceive the outlook, as the data the Bank currently collects from lenders' balance sheets provide information on already issued loans with a time lag. The new data will be useful for research in the fields of monetary policy and financial stability, and for analysis underlying decisions relating to the Bank's legally mandated objectives; i.e., of promoting price stability and financial stability.

The countercyclical capital buffer and the need for policy flexibility

The countercyclical capital buffer (CCyB) is a variable capital buffer requirement imposed on financial institutions in order to safeguard their resilience against cyclical systemic risk and to counteract the procyclical impact of risk-weighted capital requirements in general.¹ The CCyB is reduced or set at zero when it is necessary to give financial institutions increased scope to absorb losses and maintain the supply of credit during stress periods. It is therefore a macroprudential tool designed to reduce the likelihood of a systemic financial crisis and to smooth out the credit supply across varying economic climates.²

From the time the authorisation to impose capital buffer requirements was incorporated into European Union law in 2014 until the pandemic struck in 2020, authorities in fourteen European countries imposed CCyB requirements.

Use of countercyclical capital buffers during the pandemic

When the COVID-19 pandemic broke out, eleven of the above-mentioned fourteen countries eased or suspended their CCyB requirements in order to support lending during the ensuing crisis.

The experience gained from easing the CCyB suggests that it was useful. The results of a new working paper by European Central Bank (ECB) staff indicate that European banks' excess capital – i.e., their ability to absorb losses and grant credit without violating requirements and being subjected to restrictions on distributions – was of vital importance during the pandemic.³ The closer the banks' capital ratios were to regulatory minima during the pandemic, the more likely they were to cut back on lending, particularly

corporate lending.⁴ Lowering the requirement gave the banks additional scope for lending, thereby increasing the supply of credit.⁵

However, it is widely believed that there is room for greater flexibility in lifting requirements during times of stress, given how reluctant banks are to tap their capital buffers.⁶ Before the shock, the above-mentioned fourteen countries' CCyBs varied widely. The most stringent requirement made by any country, 2.5% of risk-weighted assets, was imposed only by Norway and Sweden. The average requirement before the pandemic was just under 1½%, and in 2018 and 2019 it was below 1%. An additional fifteen EEA countries had introduced the buffer before the pandemic but never raised it above 0%. The need for this flexibility is also reflected in the fact that at the beginning of the pandemic, several countries – Estonia, Finland, the Netherlands, and Poland – lifted another buffer, the systemic risk buffer, as they had not introduced the CCyB. They did this even though the systemic risk buffer is intended as a largely invariable buffer based on the structure of the economy and other inelastic factors that probably did not change with the onset of the pandemic.

The concept of a “positive neutral value”

In view of the above, many policy makers are now seeking ways to provide macroprudential policy with greater scope to respond to unexpected external shocks. Topics under discussion include possible statutory amendments in order to increase the weight of cyclical capital buffers relative to structural buffers. Policy changes could be accommodated within the current regulatory framework, however. Among them is the possibility of imposing a CCyB requirement even though cyclical systemic risk is not discernible and is not

1 Risk-weighted capital requirements tend to ease automatically during a financial upswing and tighten during a downswing. This happens because risk weights, which affect the calculation of the capital ratio, can be sensitive to developments in asset prices and loan quality. In a long upward cycle featuring rising asset prices and limited arrears, risk weights decline. In a downward cycle, this trend reverses, putting pressure on financial institutions' capital position.

2 Further information on the countercyclical capital buffer can be found in Central Bank *Special Publication* no. 15, *Eiginfjárkröfur og fjármálastöðugleiki* [Capital requirements and financial stability] (in Icelandic), published in 2021.

3 By law, banks may tap their capital buffers without explicit government authorisation. Rules on the maximum distributable amount (MDA) define how much dividends, bonuses, and other distributions shall be reduced when this happens.

4 With some simplification, it can be said that by cutting back on lending, banks reduce their assets and liabilities while leaving their capital unchanged, all else being equal. The ratio of capital to assets therefore rises. This boosts the capital adequacy ratio, which is the criterion for determining capital requirements. With such attempts to comply with the rules, banks can trigger a negative spiral between the financial system, on the one hand, and households and businesses, on the other, deepening economic crises by impeding investment, increasing the number of insolvencies, and raising unemployment.

5 See Couaillier *et al.* Caution: do not cross! Capital buffers and lending in Covid-19 times. *Working Paper* no. 2644, February 2022, European Central Bank.

6 See, for example, Guindos, L. *Macroprudential policy after the COVID-19 pandemic*. Speech given by the Deputy Governor of the European Central Bank at a financial stability conference held by the Banque de France and Sciences Po on 1 March 2021.

increasing to a significant degree. In other words, requiring a positive CCyB would be the rule rather than the exception, and a positive CCyB would generally be imposed in order to provide scope for easing if the need arises. As before, the buffer could be increased to a level above this positive neutral value when assessments of systemic risk warrant it.⁷

The Bank of England (BoE) adopted this type of policy as early as 2016, with 1% set as the neutral buffer level. Since then, the BoE has reviewed its policy and increased the neutral buffer level to 2%. The Bank of Lithuania followed suit a year later, setting its neutral buffer rate at 1%, and the Czech National Bank did so in March 2020. In March 2021, the Swedish financial supervisor adopted a neutral buffer rate of 2%, and finally, the Bank of Estonia set its neutral buffer rate at 1% in late 2021. This policy shift has variously led to higher overall buffer requirements or taken place concurrent with a reduction in other capital buffers. As a result, it has not always led to an increase in the overall capital requirement, but it has always been designed to provide greater policy flexibility to lower requirements in the future.

Positive neutral rates have their benefits ...

The policy of setting a positive neutral CCyB rate is desirable for at least three reasons. First of all, it falls well into line with the idea that there is a level of capital requirements that fosters the financial system's maximum long-term usefulness to the economy.⁸ In the short run, the total capital requirement must fluctuate around the optimal value, in line with developments in cyclical systemic risk and the need for resilience. It must then fluctuate symmetrically around this optimal value so as to equal that value, on average, over time. In order for this to happen, there must always be the flexibility to either increase requirements or decrease them.

Second, assessments of cyclical systemic risk are subject to uncertainty and are based on information that is received with a time lag. Measuring and analysing all changes in systemic risk level, whether major or minor, and responding gradually and proportionally with changes in the CCyB, can prove very difficult.⁹ The policy ensures that if

systemic risk is underestimated, if it accumulates suddenly, or if an unexpected systemic shock occurs, there will be scope to lower the buffer rate.

Third, such a policy provides a certain predictability for supervised entities, enabling them to see where the buffer is headed when the financial system and the economy are seeking equilibrium.

... but do not absolve the authorities of the responsibility to analyse and respond to systemic risk

Adopting a positive neutral CCyB value could result in less frequent changes to the buffer. So far, the argument in favour of such a policy has entailed a stylised presentation of the financial cycle or, if that concept is not used, of conditions with respect to systemic risk; i.e., conditions can be generally divided into several levels, each of which calls for a specific buffer value or range of values. In its statement on this policy, Sweden's financial supervisory authority notes, for instance, that conditions generally fall into four categories: periods during which systemic risk is accumulating, stress periods, periods when systemic risk is gradually easing, and "normal" periods when systemic risk is neither unusually high nor unusually low. Under such normal conditions, the Swedish supervisor plans to apply a buffer rate of 2%.¹⁰ Similar reasoning can be seen in policy statements from the central banks in the UK, Lithuania, and the Czech Republic.¹¹

As is noted above, this policy makes the application of the CCyB more predictable, but it is important not to expect too much of it. If financial cycles fluctuate widely and economic shocks occur frequently, it is clear that "normal" periods could prove very short-lived, or even imperceptible. Furthermore, it can be difficult to define concepts such as "normal" periods in terms of credit growth, asset prices, and other factors. In addition, it matters how risk-weighted capital requirements are determined, how risk weights develop at banks that use internal ratings-based approaches, and how leverage in the financial system develops. The BoE has already reviewed its neutral buffer value once and has announced that it will do so regularly in the future.¹²

7 Policies of this type have been given a number of names, including *positive neutral value* or *positive neutral level*. Other terms that have been used are *standard rate* and *base rate*.

8 More stringent requirements reduce the likelihood of financial institutions' insolvency, but also restrict the supply of credit more in a normal economic climate. Requirements may be considered optimal if they minimise the probability of a systemic crisis and the associated output loss over time, but with a view to the direct impact on the short-term supply of credit.

9 By law, the CCyB may only be changed by 0.25% or a multiple thereof. In international practice, it has been common to change the buffer by half a percentage point or more when a change is made, which to some extent reflects the fact that the risk assessment is not a precise science.

10 Finansinspektionen's approach to setting the countercyclical capital buffer. Memorandum dated 22 March 2021. Available at: <https://www.fi.se/en/published/press-releases/2021/fis-approach-to-setting-the-countercyclical-capital-buffer/>

11 For Lithuania, see: Countercyclical Capital Buffer. Background Material for Decision. December 2021. Available at: <https://www.lb.lt/en/publications/countercyclical-capital-buffer-2017-q4>. For the Czech Republic, see: https://www.cnb.cz/export/sites/cnb/en/financial-stability/.galleries/macprudential_policy/countercyclical_capital_buffer/ccyb_methodology.pdf

12 A discussion of the BoE's review of the neutral CCyB value can be found in the December 2020 issue of its *Financial Stability Report*.

In practice, there may be little difference between, on the one hand, maintaining a positive neutral buffer value and, on the other, adopting the policy followed by Iceland,

Norway, Sweden, and others during the years before the pandemic; i.e., of simply beginning to raise the CCyB early on when the upward financial cycle is estimated to have begun.

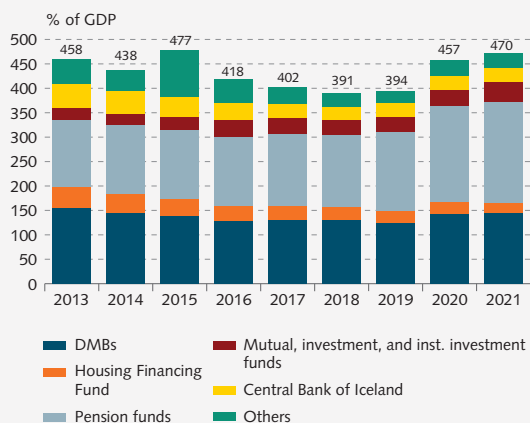
The financial system



The financial system

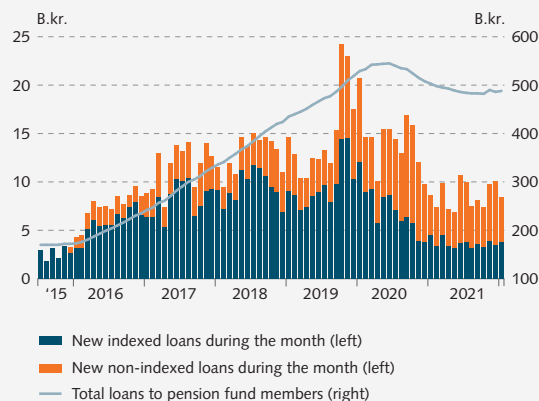
Financial system assets totalled 470% of GDP at the end of 2021. This represents an increase of 13 percentage points, which is sizeable, given that GDP growth was strong during the year. In 2020, the same ratio rose by 63 percentage points, as GDP contracted and asset prices rose steeply, both in Iceland and abroad. Deposit institutions' assets now account for just under a third of total financial system assets. The pension funds hold roughly 44% of total assets, and their share has grown steadily in recent years. The proportion held by other financial system entities has shrunk, however.

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



1. Parent companies. 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. (ES1) is also included with other financial institutions from its establishment in December 2009 until its dissolution in February 2019. The Housing Financing Fund (HFF) merged with the Iceland Construction Authority on 1 January 2020. HFF assets 2020 and 2021 are the assets of the IL Fund, which took over the processing of the HFF's assets and liabilities at the beginning of 2020. Annual data. Sources: Statistics Iceland, Central Bank of Iceland.

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.

The pension funds' assets amounted to 6,732 b.kr. at the end of 2021, or 207% of GDP. They grew by 1,005 b.kr. during the year, an increase of nearly 12% in real terms. Foreign assets accounted for just under 36% of total assets, an increase of 2 percentage points during the year. Domestic equities amounted to just under 20% of total assets, after growing by 2½ percentage points in 2021. Offsetting these increases, the share of Housing Bonds, Housing Authority Bonds, and Housing Financing Fund bonds fell by 1.7%, and the share of loans to pension fund members fell by 1.6%. At the year-end, the former category accounted for just under 10% of total assets, while the latter amounted to just over 7%. In 2021, the pension funds issued an average of just under 9 b.kr. per month in new loans to fund members, whereas retirement of pension fund loans averaged 11

b.kr. per month. Loan retirement eased over the course of the year. The funds' limited non-indexed mortgage loan offerings have caused them to lose market share in the mortgage lending market. Rising interest rates could bolster their competitive position once again, however.

The pension funds are the largest investors in the Icelandic financial market. Not only are they direct mortgage lenders, they also fund the banks' mortgage lending by purchasing their bonds. Moreover, they finance businesses directly, through bond purchases, and indirectly, through institutional investment funds. They are also the largest investors in the domestic equity market and are among the largest owners of two of Iceland's three systemically important banks. The pension funds' investment strategies assume that a large share of their asset portfolio will be invested abroad. Because of their size, the pension funds' strategies and conduct have an enormous impact on other market agents and the economy as a whole.

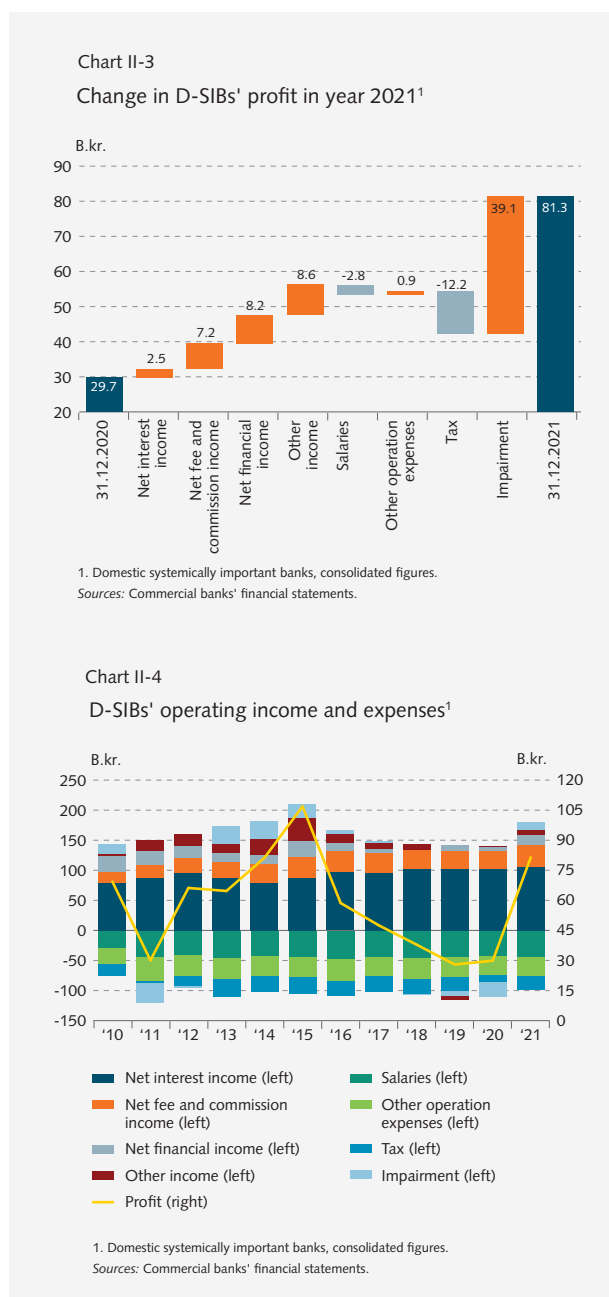
Profitability

The domestic systemically important banks' (D-SIB) operations were successful in 2021, with profits amounting to 81 b.kr. In 2020, their profits came to just under 30 b.kr., as they were affected by nearly 26 b.kr. in impairment, coupled with significant uncertainty about the pandemic. The banks' combined calculated return on equity totalled 12.4% in 2021, an increase of 7½ percentage points year-on-year, and their capital grew by 39 b.kr. Their profitability in 2021 was due mainly to positive loan valuation adjustments in the amount of just over 13 b.kr. – an about-face relative to 2020 – and a year-on-year increase in fees and commissions and net income from financial activities. Rising asset prices led to increased market activity and higher commissions and fees. All of the banks achieved their return on equity targets of 8-10%.¹ The return on equity from core operations, excluding one-off items, was 8.4%, which is probably the strongest since the banks were established in 2008.² In comparison, their returns on core operations came to 7.9% in 2020 and 7.4% in 2019.

In 2021, the interest rate spread on the D-SIBs' total assets was 2.43%, after narrowing by 0.13 percentage points during the year and by just under 0.5 percentage points in the past three years. Despite the

1 Íslandsbanki's return totalled 12.4% (target 8-10%), Landsbankinn's was 10.8% (target 10%), and Arion Bank's was 14.8% (target 10%). Arion Bank has increased its return on equity target to 13%.

2 In terms of returns on regular income, which are based on net interest income and net fees and commissions, less regular expenses apart from one-off cost items. The tax rate of 20% is based on the average balance of capital.



narrower interest rate spread, net interest income rose by 2.5 b.kr. year-on-year, to a record high of 105 b.kr. The increase in interest income despite a narrower spread is due to the expansion of the loan portfolio. The narrower interest rate spread stems mainly from lower interest rates, limited scope to cut funding rates to compensate, and changes in loan portfolio composition. The share of non-indexed mortgage loans has risen steeply, but mortgages bear the lowest interest rates in the loan portfolio. On the other hand, the required reserves on mortgages are low.

At the beginning of 2021, the Central Bank's key interest rate was 0.75%. The Bank began a monetary tightening phase in May, and by February 2022 the key rate was 2.75%. The D-SIBs' deposit and lending

rates increased in tandem with the rise in the key rate. Developments in mortgage lending rates provide insight into developments in the D-SIBs' lending rates overall. From 2020 through April 2021, the Central Bank's key rate fell by 2.25 percentage points. According to the D-SIBs' interest rate tables, the reduction in variable rates on non-indexed mortgages amounted to 78% of the decline in the key rate, and the reduction in fixed rates equalled 71% of the decline in the key rate. Since May 2021, the Bank's key rate has been increased by a total of 2 percentage points. According to the banks' interest rate tables, variable rates on non-indexed mortgages increased by 65% of the rise in the key rate, and fixed rates increased by 58% of the rise in the key rate. This comparison indicates that monetary policy transmission has been weaker during the tightening phase than it was during the easing phase. Central Bank data on variable non-indexed deposit and lending rates, which extend through January 2022, suggest that the banks' interest rate spreads have widened, as deposit rates have risen less than lending rates have. Credit spreads have therefore widened, albeit less for individuals than for companies.

The D-SIBs' interest rate spreads can be expected to widen as the Central Bank's key rate rises, just as they narrowed in the wake of reductions in the key rate. It is unlikely that spreads will reach their former size given the same interest rate and unchanged premia, however, owing to the aforementioned change in loan portfolio composition. It can be inferred from historical data that a 1 percentage point increase in the key rate will cause the interest rate spread to widen by 0.10 percentage points and will cause the return on equity to increase by 0.5 percentage points.³

Net fee and commission income rose 24% year-on-year in 2021, to 37 b.kr., owing mainly to increased asset management and corporate finance activity. Furthermore, with renewed growth in foreign tourist arrivals, fee and commission income can be expected to rise even further because of increased activity in payment intermediation. The D-SIBs' regular income – i.e., net interest income and fees and commissions – totalled just over 142 b.kr. in 2021, an increase of 10 b.kr. year-on-year. Regular income hit an all-time high in 2021, measuring 87% of the banks' total income.

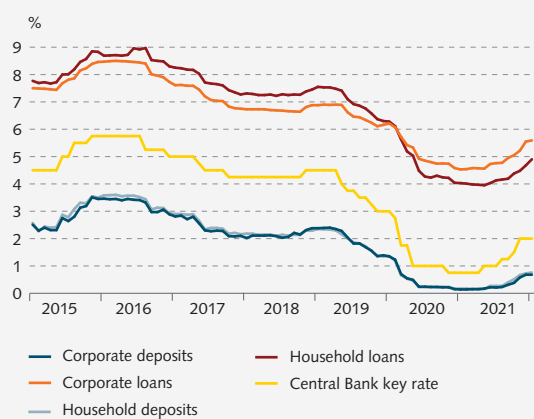
3 This is adjusted for increased tax payments. It is assumed that variable rates on króna-denominated loans and deposits will rise by the same proportion as they fell during the monetary easing phase; i.e., relative to a 1% change in the Bank's key rate. Fixed interest rates do not change. Interest on deposits with the Central Bank, cash, loans to credit institutions, debt owed to the Central Bank, and debt owed to credit institutions changes commensurate with the change in the key rate.

Income from financial activities totalled 14.4 b.kr., an increase of 133% year-on-year. Other operating income came to just over 7 b.kr., an increase of nearly 2 b.kr. year-on-year.

Costs continue to fall

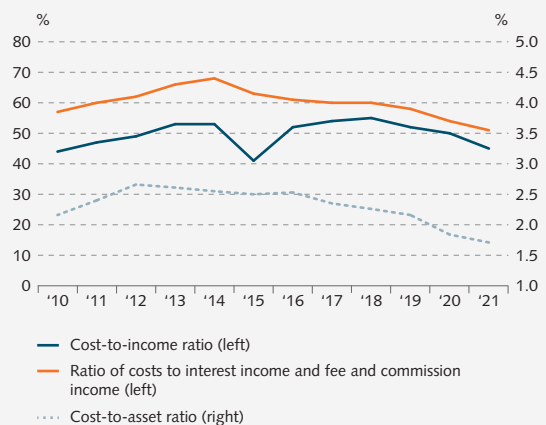
The D-SIBs' combined operating expenses totalled 73.6 b.kr. in 2021, an increase of 1.9 b.kr. between years. After adjusting for Arion Bank's 1.6 b.kr. charge for its new employee bonus system and Íslandsbanki's 0.7 b.kr. charge for one-off expenses due to the bank's initial public offering (IPO), operating expenses declined by 0.4 b.kr. year-on-year. If costs associated with

Chart II-5
Variable interest rates on non-indexed deposits and loans
January 2015 - January 2022



1. Total stock and weighted average interest rates. Domestic systemically important banks.
Source: Central Bank of Iceland.

Chart II-6
D-SIB: Cost-ratios¹



1. Domestic systemically important banks, consolidated figures. Valitor excluded in 2017 - 2020 and Borgun in 2020. Operating expenses, adjusted for major irregular items, excluding loan revaluation changes and discontinued operations.
Sources: Commercial banks' financial statements.

the Íslandsbanki IPO are excluded, real wages were unchanged in 2021 and other operating expenses fell by 9% in real terms. The number of full-time position equivalents declined by 131 during the year, and the D-SIBs employed 2,302 persons at the end of 2021. The banks expect their staffing levels to continue falling, albeit at a slower pace than in the recent past.

Their cost-to-income ratio was 44.5% in 2021, down from 49.7% in 2020 and 51% in 2019.⁴ The ratio has been trending downwards in recent years, owing to streamlining and cost-cutting measures as well as rising income. According to a cross-country comparison made by the European Banking Authority for Q3/2021, Iceland's banks had the lowest cost-to-income ratios in the EEA in the first nine months of 2021, at just over 43%, well below the EEA average of nearly 63%. The same data show that since year-end 2018, the trend in the ratio has been most favourable by far in Iceland, falling by 17.5 percentage points, as opposed to 1.7 percentage points in the EEA as a whole. Furthermore, in 16 of 29 countries in the region, cost-to-income ratios have risen over the period. The D-SIBs' costs and income have therefore developed very favourably in recent years, which is important because a profitable banking system is the first line of defence in addressing shocks, losses, and impairment.

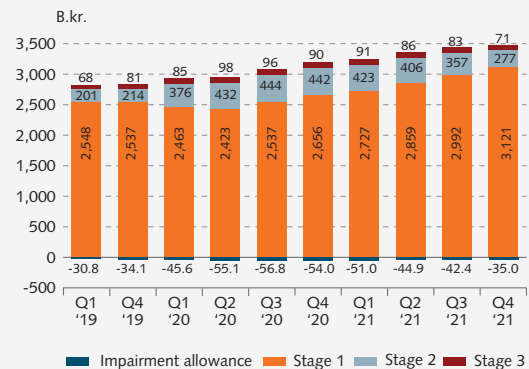
Mortgage lending on the rise and indexation imbalances negligible

The banks' customer loan portfolio totalled 3,410 b.kr. at the end of 2021, after increasing year-on-year by 307 b.kr., or 10%, about the same as in 2020. In real terms, however, the increase was smaller in 2021 than in 2020, as inflation was higher. The increase in D-SIB lending in 2021 is due entirely to mortgages, as loans to households grew by 309 b.kr., or 21%. Over the past two years, the increase is virtually unprecedented, at close to 50%. Because reserve requirements are considerably lower for mortgage loans than for corporate loans, the banks' risk-weighted assets as a share of total assets fell from 69% to 64% in 2021.

In the past two years, the stock of non-indexed D-SIB loans to private sector borrowers has grown by 739 b.kr., while the indexed loan stock has contracted by 211 b.kr. over the same period. This change has had a marked effect on the D-SIBs' indexation imbalance, which was positive by 22 b.kr. at the end of 2021, after shrinking by 128 b.kr. during the year. If this trend con-

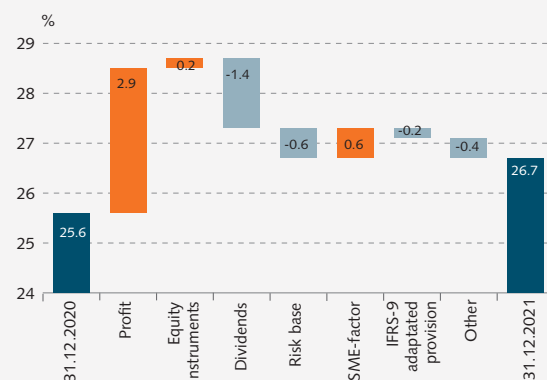
4 Excluding one-off expenses in the amount of 0.7 b.kr. in Q2, in connection with Íslandsbanki's IPO.

Chart II-7
Loans and impairment allowance¹



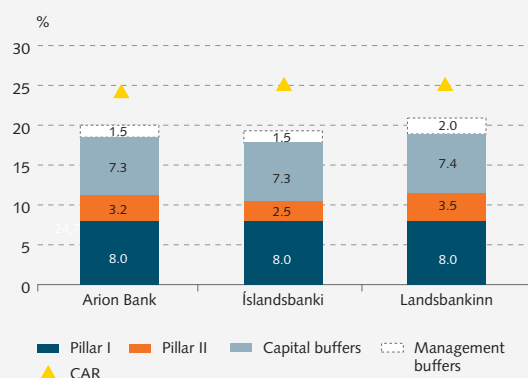
1. Domestic systemically important banks, consolidated figures. IFRS-9 classification of loans to individuals and corporates.
Sources: Commercial banks' financial statements.

Chart II-8
Change in D-SIBs' capital ratios in year 2021¹



1. Domestic systemically important banks, consolidated figures.
Sources: Commercial banks' financial statements.

Chart II-9
D-SIB capital requirements and capital adequacy ratios at the end of year 2021¹



1. Domestic systemically important banks, consolidated figures. In calculating the capital ratio, the portion of 2021 profit to be paid as a dividend in 2022 has been deducted from the capital base.
Sources: Commercial banks' financial statements and other published materials.

tinues, their indexation imbalance is likely to turn negative in the near future; however, a positive indexation imbalance is more favourable than a negative one. In assessing additional capital requirements for the supervisory review and evaluation process (SREP), the Central Bank has set required reserves at 3.53% for a positive indexation imbalance and 6.46% for a negative one. The banks must therefore address the risk associated with a negative imbalance by setting aside more capital. It is unlikely, though, that the banks will allow their indexation imbalance to be negative – at least, they will not leave it negative for long – as they can easily keep it positive; for instance, by buying indexed assets such as indexed Treasury bonds.

Positive loan valuation adjustments

Economic developments and prospects for Iceland and many other countries have been favourable in the recent term, supported by a strong economic recovery. This trend is largely thanks to broad-based mitigating action taken by the Government, the Central Bank, and financial institutions in order to support households and businesses, and thanks to greater immunity to COVID-19 in the wake of widespread vaccination. Because of the support measures, the D-SIBs' final write-offs have not been greater than in a normal environment, and default has been on the decline. However, the economic outlook has worsened in recent weeks following Russia's military action in Ukraine. There is also uncertainty about the development and impact on the Icelandic economy.

In most cases, loans to borrowers who have taken advantage of special debt measures (most often debt moratoria and freezes) are classified as forborne and performing (i.e., not in arrears). According to special loan portfolio reports submitted to the Central Bank by the D-SIBs, 12.6% of corporate loans (214 b.kr.) and 1.2% of loans to individuals (22 b.kr.) were frozen at the end of January 2022.⁵ At the beginning of 2021, however, 16.8% of corporate loans and 2.2% of loans to individuals were frozen.

The factor that weighed heaviest in turning the banks' operations around in 2021 was valuation adjustments. The banks reversed more than half of the impairment recognised in 2020, and positive loan valuation adjustments totalled 13.2 b.kr. in 2021, as compared with impairment in the amount of 25.9 b.kr. in 2020.

5 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 take different forms, as some customers may have frozen both instalments and interest, whereas others may have frozen only the instalments.

The reversal of impairment is attributable mainly to an improved economic outlook and reduced uncertainty about the position of those customers who needed payment assistance measures. Improvements in the banks' core operations provide increased scope for impairment and write-offs later, if necessary.

The impairment account shrank by 0.7 percentage points in 2021, to 1.0% of the claim value of the loan portfolio at the year-end. The same ratio was 0.2 percentage points lower than at the end of 2019, before the pandemic struck. The increased weight of mortgage loans in the D-SIBs' loan portfolio should reduce the impairment account as a share of the portfolio, as the probability of default is lower for residential mortgages than for other types of loans.

The improved position of the D-SIBs' loans can also be seen in last year's reduction in the amount of loans falling into IFRS-9 Stages 2 and 3. In terms of the amount of Stage 3 loans, the D-SIBs' non-performing loan ratio was 2.0% at the end of 2021, down from 2.8% in 2020 and 2.9% in 2019. In general, borrowers' position has grown stronger in the recent term, although a significant number still need pandemic-related payment assistance measures.

Strong capital position

The banks must satisfy capital requirements based on risk assessments and leverage. The objective of risk assessment-based requirements is to ensure that financial institutions holding high-risk assets are required to set aside more capital to address losses than financial institutions with lower-risk assets are.

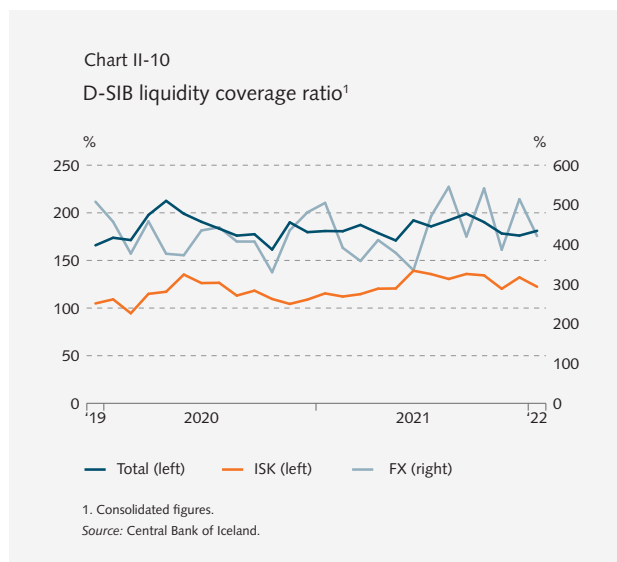
The D-SIBs' net worth was 681 b.kr. at the end of 2021, after increasing by 39 b.kr. year-on-year, in spite of dividend payments and share buybacks totalling nearly 40 b.kr. during the year. Their combined capital ratio was 26.7% at the end of 2021, after rising by 1.1 percentage points during the year.⁶ Profits, issuance of capital instruments, and discounts on risk weights for small and medium-sized enterprises (SME) led to an increase in the capital ratio in 2021, although it was offset by dividend payments and share buybacks, an increase in risk-weighted assets, and a reduction caused by changes in the IFRS-9 treatment of impairment.⁷

6 According to the D-SIBs' annual accounts for 2021, planned dividends in the amount of 38.7 b.kr. have been deducted from their capital base, but this has not been done here. The capital ratio adjusted for the proposed dividends is 25.4%.

7 In 2020, 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. Their year-2020 capital ratio increased by 0.3-0.4 percentage points as a result. The reversal of impairment in H1/2021 causes a reduction in impairment classified as CET1 capital.

The minimum capital ratio required of the D-SIBs by the Central Bank ranges between 17.8% and 18.9%, based on the status of the banks at the end of 2020. At the end of 2021, their capital ratios were 5-8 percentage points above the required level, after adjusting for dividend payments planned for 2022. The countercyclical capital buffer requirement, which was set at 0% in March 2020, will be raised to 2% of risk-weighted assets in September 2022. After adjusting for the increase in the countercyclical capital buffer and the management buffer, the capital ratios of all three banks are 2-4 percentage points above Central Bank requirements.⁸ As a result, the banks will easily be able to satisfy the additional capital requirement when the countercyclical capital buffer is raised again.

The banks' leverage ratio declined by 0.9 percentage points in 2021, to 13.8% at the year-end. Individual leverage ratios ranged between 12.6% and 14.9% and



fell by 0-2.5 percentage points during the first half of the year. The reason for last year's decline in the D-SIBs' overall leverage ratio was an 11.6% increase in total exposures, whereas CET1 capital increased by 5% at the same time.⁹ Even though the leverage ratio has fallen, it is well above the 3% minimum, and the Icelandic banks still have one of the highest ratios in the EEA, well above the EEA's end-September 2021 average of 5.8%.

8 The management buffer is an internal prudential buffer defined by the banks themselves.

9 The leverage ratio, computed in accordance with the Act on Financial Undertakings, no. 161/2002, is calculated as Tier 1 capital divided by exposures.

Liquidity and funding

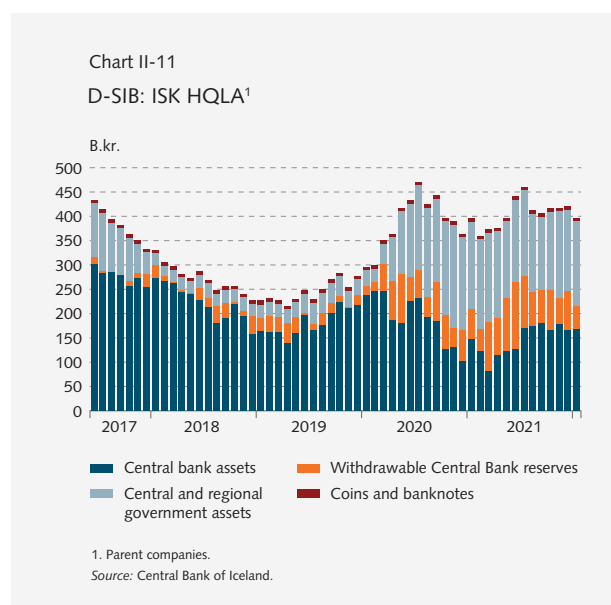
D-SIBs' liquidity position continues to strengthen

The three large banks' liquidity remains strong, and their liquidity ratios are well above the minimum provided for in Central Bank rules. They rose in 2021, in tandem with growth in customer deposits, among other things. The ratios fluctuated somewhat, owing to factors such as the Íslandsbanki initial public offering (IPO), which increased the Treasury balance, and the banks' foreign bond buybacks. They can be expected to keep fluctuating in connection with activity such as foreign bond issues.

At the end of 2021, the D-SIBs' combined liquidity ratio in all currencies was 176%, well above the 100% minimum required under Central Bank rules. At that time, the liquidity ratio in foreign currencies was 514%, whereas the ratio in Icelandic krónur was 132%. Among individual foreign currencies, the highest ratios were in euros (379%) and US dollars (382%). The banks therefore face limited liquidity risk, both for all currencies combined and for individual currencies.

At the end of 2021, their disposable liquid assets were 280 b.kr. above the minimum required for all currencies combined according to Central Bank rules. Liquidity in excess of requirements increased by 48 b.kr. in 2021. As before, the banks' internal criteria determine the scope they have for lending. Based on a 120% minimum liquidity ratio, for example, the banks' excess liquidity amounted to 206 b.kr. at the end of 2021. In terms of their liquidity position, they have considerable scope for lending, dividend payments, and share buybacks.

The banks' liquid assets consist mainly of government bonds, government bills, and deposits with the Central Bank. At the end of 2021, their liquid assets in all



currencies combined totalled 605 b.kr., after increasing by 100 b.kr. during the year, owing to deposit growth. The share of government bonds and bills has remained high, and nearly half of their króna-denominated liquid assets are in Treasury bonds. Their króna-denominated liquid assets have increased by 56 b.kr. in the past twelve months and totalled 420 b.kr. at the end of 2021. Their foreign-denominated liquid assets consist almost entirely of government bonds. The ratio of liquid assets to total assets has also changed somewhat in the past year. It rose to around 20% in 2020 but began to fall again in H1/2021. In recent months, it has risen once more, owing to deposit growth and limited corporate lending, which have forced the banks to hold significant liquidity.

The banks can tolerate significant liquidity shocks

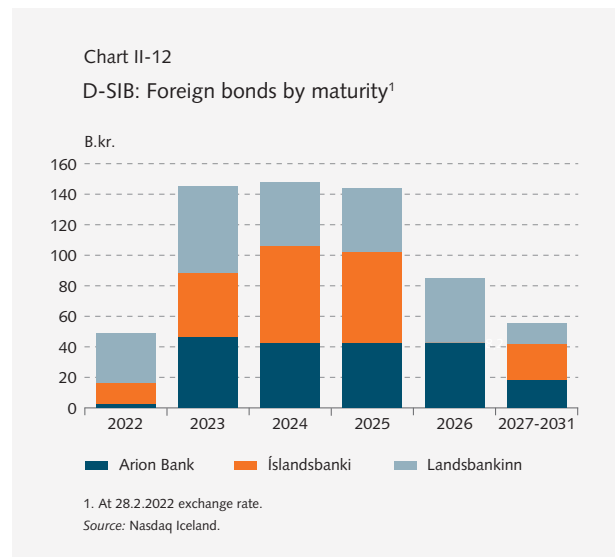
The banks have sufficient liquidity to intermediate credit to households and businesses. If demand for króna-denominated loans significantly outpaces demand for the banks' market issues, and if dividend payments are high, their liquidity position could ultimately put constraints on the amount they can lend. If the composition of the deposit portfolio changes – if customers invest their savings elsewhere, for instance – the banks' liquidity position will be adversely affected. It is therefore important to keep close track of developments in the banks' deposits. Since the onset of the pandemic, the banks' excess liquidity has increased by 96 b.kr. Adjusting for the 53 b.kr. in dividends and buybacks planned for this year, the increase amounts to 43 b.kr.

Stress tests of the banks' liquidity and funding are carried out on a regular basis. These show, for instance, that even if they paid all of their foreign-denominated liabilities at maturity this year and their largest depositors (large firms, financial institutions, and pension funds) withdrew their deposits, the banks would still have ample liquidity. Their liquidity ratio would fall below the threshold provided for in the Central Bank's liquidity rules, however.

Limited refinancing risk despite increased uncertainty

The banks' net stable funding ratio (NSFR) for all currencies combined has remained stable after the ratio was introduced last summer. It is well above the minimum provided for in Central Bank rules and was 121% at the end of 2021. At that time, the funding ratio in foreign currencies was 165%, whereas the ratio in Icelandic krónur was 112%.

As before, the majority of the banks' funding is in the form of deposits and marketable bonds. At the end of 2021, deposits comprised about half of their funding.



Deposits increased by 8%, or 162 b.kr., in 2021, driven mainly by individuals' deposits, which rose by 50 b.kr., and large companies' deposits, which grew by 90 b.kr. The commitment period on financial institutions' term deposits has been growing shorter, which has had an adverse effect on measured liquidity ratios.

The banks issued little in the domestic bond market in 2021, apart from covered bonds. Demand for other domestic market financing has been extremely weak, but the banks have issued small amounts of unsecured króna-denominated securities, primarily green bonds. In 2021, the stock of outstanding covered bonds in Icelandic krónur grew by 63 b.kr., although a part of the increase was due to issuance for the banks' own use. At the same time, the banks' net new lending to households totalled 326 b.kr.¹⁰ The large difference between covered bond issuance and net new lending has had a negative effect on the banks' liquidity. The banks must continue to reduce concentration risk in their króna-denominated funding.

In spring 2019, the Central Bank included certain covered bonds issued by the banks on its list of instruments eligible as collateral for Central Bank facilities. The banks' holdings in their own covered bonds and those issued by other banks increased thereafter. Turnover with the bonds increased as well, but if the size of the issue is above a specified threshold, the bonds can be classified as high-quality liquid assets according to liquidity rules. Turnover with covered bonds classified as high-quality liquid assets has been stronger than with other bonds. The pension funds are the primary owners of the banks' covered bonds. Furthermore, interbank market trading

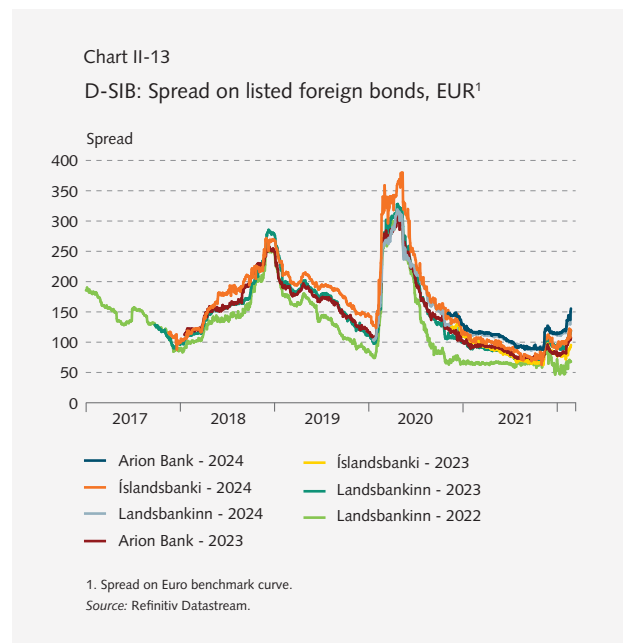
¹⁰ Net new loans are defined as new loans less loan retirement and loan prepayments in excess of contractual requirements.

has been limited, and the banks' króna-denominated funding is largely restricted to deposits, which explains their low funding costs in krónur.

The banks issued foreign-denominated bonds for a total of 223 b.kr. in 2021. A portion of the proceeds was used to buy back bonds maturing in 2022. In July, Arion Bank issued, among other things, a green eurobond in the amount of 45 b.kr. Landsbankinn issued a similar bond in November, at a time when credit spreads on foreign issues were rising due to the increased spread of COVID-19. In October, Arion Bank issued Iceland's first foreign-denominated covered bond, in the amount of 45 b.kr., and used the proceeds to buy back outstanding issues. In February 2022, Íslandsbanki issued a green eurobond in the amount of 45 b.kr. Table 8 in Appendix gives a summary of all of the banks' issues in the past twelve months.

Credit spreads on the banks' foreign issues were less volatile in 2021 than in 2020. On average, spreads declined on all outstanding bonds. They spiked temporarily in November, however, in tandem with media reports of increased COVID-19 case numbers in Europe and Iceland, but began to unwind again towards the end of the year. In February 2022, spreads started climbing swiftly, concurrent with escalating tensions in Ukraine, and soared after the Russians invaded the country. Credit spreads on comparable issues from foreign banks have risen as well.

Foreign bonds issued by the D-SIBs that are scheduled to mature later this year amount to 44 b.kr., or 4% of their foreign market funding as of end-2021. The banks' ample foreign liquidity gives them the flexibility to retire all of this year's foreign-denominated maturities without refinancing. As a result, their refinancing risk remains limited in spite of rising premia on their foreign issues. Year-2023 maturities total 144 b.kr., and the banks will need to look into refinancing them later this year.



EU Banking Package 2021

In the wake of the global financial crisis in 2008, extensive work began internationally on strengthening the financial system. It was important to reduce the risk associated with banking activities and enhance banks' resilience. In 2010, the Basel Committee on Banking Supervision (BCBS) introduced new rules on banks' capital and liquidity (the Basel III standard), and in 2013 the European Union (EU) incorporated most of these rules into European law with the Capital Requirements Directive (CRD-IV) and the Capital Requirements Regulation (CRR).¹ Since then, further amendments have been made in order to strengthen the EU regulatory framework for banking operations, particularly with the banking package incorporated into European law in 2019.²

At the end of October 2021, the European Commission introduced the most recent proposals for revisions to the EU banking framework, referred to as Banking Package 2021.³ With Banking Package 2021, the incorporation of Basel III into the EU banking framework will be complete. Because Iceland is a party to the EEA Agreement, it must incorporate the EU regulatory framework for the financial market into Icelandic law. It can be said that Banking Package 2021 comprises three parts: the final implementation of Basel III, sustainability, and stronger supervision.

1. Final implementation of Basel III

The objective of Banking Package 2021 is to boost financial stability by enhancing banks' resilience without significantly increasing capital requirements or having a detrimental impact on their profitability. Most of the implementation of the package will take place between 2025 and 2030. Below are the key changes entailed in the final implementation of Basel III with Banking Package 2021.

1 The Capital Requirements Directive (CRD-IV) is the short name for Directive 2013/36/EU on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, and Capital Requirements Regulation (CRR) is shorthand for Regulation (EU) no. 575/2013 on prudential requirements for credit institutions and investment firms.

2 More specifically, Directive (EU) 2019/878 (CRD-V) and Regulation (EU) no. 2019/876 (CRR2). A draft bill of legislation aimed at completing the incorporation of CRD-IV and CRR, with amendments provided for in CRD-V and CRR2, into Icelandic law later this year has been published on the Government's consultation portal. For further information, see: [https://samradsgatt.island.is/oll-mal/\\$Cases/Details/?id=3098](https://samradsgatt.island.is/oll-mal/$Cases/Details/?id=3098).

3 Banking Package 2021 has also been referred to by the names CRD-VI and CRR3. For further information, see: https://ec.europa.eu/commission/presscorner/detail/en/IP_21_5401.

1.1 Credit risk

Loan-to-value ratios: The changes in calculation of loan-to-value (LTV) ratios on mortgage loans that are proposed in CRR aim at mitigating the impact of business cycles volatility on the valuation of underlying collateral. It will be permissible to restate the value of underlying collateral to a level above the value at the time the loan was granted (unlike in Basel III), but not to a level above the average price over the past six years (for residential property) or three years (for commercial property).

Risk weights on residential mortgages: Risk weights on residential mortgages will take account of LTV ratios in a different manner than is currently done. The Basel III standard provides for two methods: on the one hand, using the same LTV-based risk weight for the entire loan, and on the other hand, splitting the loan up into tranches, by collateralisation, and assigning a different weight to each one. The proposed amendments to CRR assume that the loan will be split into more than one tranche and that, for mortgage loans, the portion that falls within an LTV ratio of 55% will carry a risk weight of 20%, while the remainder will be treated as an unsecured loan. In most cases, the remainder will carry a risk weight of 75%.⁴ At present, mortgages carry a risk weight of 35% for the portion with an LTV ratio below 80%. The remainder, if any, is assigned a risk weight of 100%.

Other: Most banks in the EU use the standardised approach to assessing and calculating capital requirements associated with credit risk.⁵ In some areas, the standardised approach has been considered insufficiently sensitive in assessing risk, which can sometimes lead to an imprecise or inappropriate assessment of credit risk (either too high or too low). The banking package makes changes to the standardised approach so that it will be more sensitive to risk; for instance, in determining obligations and items off the balance sheet, in classifying the obligations of small and medium-sized enterprises so as to align them with comparable classification using the internal ratings-based (IRB) approach and ensure harmonised application of risk weights to the same group of

4 See: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0664>.

5 This is based on the number, as most small and medium-sized banks in the EEA use the standardised approach. Large banks generally use the internal ratings-based (IRB) approach, which is actually used for the majority of assets, given the size of the banking system in the EEA.

exposures, and providing for the possibility of reducing risk weights for counterparties without a credit rating.

1.2 Output floor

The most noticeable and widely discussed change entailed in the implementation of Banking Package 2021, and one of the most important reforms to Basel III, is the so-called output floor for risk-weighted assets. Banks that use the IRB approach have been authorised by financial supervisors to rely on their own assessments of credit risk in calculating their capital requirements. It is well known that banks using the IRB approach have lower risk weights than those using the standardised approach.⁶ Lower risk weights mean that banks need to hold less capital in order to satisfy capital requirements, which generally translates to a higher return on equity. One of the main objectives of the reforms under Basel III is to achieve greater credibility in the calculation of risk-weighted assets, so that banks' capital ratios will be more comparable, depending on whether they used the standardised or the IRB approach. In order to prevent banks that use the IRB approach from underestimating the risk in their models, a floor will be set for their risk-weighted assets. When the implementation of this output floor is complete in 2030, the risk-weighted assets of banks that use the IRB approach may not fall below 72.5% of the risk base according to the standardised approach. The output floor will particularly affect banks whose asset portfolios consist largely of residential mortgages, and the effects will be greater in countries like Denmark and the Netherlands, where residential LTV ratios are generally high. Based on the European Banking Authority's (EBA) assessment of 99 banks that hold some 76% of total assets owned by European banks, the Tier 1 capital ratio of these 99 banks will decline by 6.9%. Assuming that their balance sheet composition remains unchanged, these banks will need to increase their Tier 1 capital by about 17 billion euros in order to maintain an unchanged capital ratio.⁷

1.3 Market risk

In 2019, the BCBS updated the capital requirements presented in the fundamental review of the trading book (FRTB). These requirements are included in Banking Package 2021, as they provide for a more sensitive assessment of market risk, thereby enabling supervisory bodies to maintain more effective supervision of modelling output and limit

the use of such output when the models do not function as intended. The aim of the amendments is also to reduce variability in the assessment of risk from one bank to another, but also to provide flexibility to those banks that have limited market risk.

A new standardised approach to the assessment of risk associated with over-the-counter (OTC) derivatives will be introduced in connection with credit valuation adjustments (CVA). The new approach should be more risk-sensitive and will require reserves to cover counterparty risk.

1.4 Operational risk

Changes will be made to banks' methods of calculating capital requirements relating to operational risk, and a new standardised approach will replace the current approaches, which are based in part on internal models. According to this new standardised approach, capital requirements will be based on operating income and historical losses due to operational risk; i.e., it is assumed that operational risk varies directly with operating income, and that estimated future losses due to operational risk will be in line with historical losses. The changes will simplify the calculation of operational risk and reduce the variability from one bank to another.

1.5 Impact

The discussion above mentions the assessment by the EBA, which estimates that the sample of 99 banks will see their Tier 1 capital ratio decline by 6.9% with the implementation of the output floor. The impact of the floor is applied to all of the banks in the sample, but it will actually affect only those banks that use the IRB approach. For these 99 banks, it is estimated that Banking Package 2021 will lower their Tier 1 capital ratio by 13.1%. The impact on the larger banks will be much greater than on the smaller ones. For example, Europe's largest and most important banks' ratios will fall by 15.9%, while the ratio of medium-sized banks (with a balance sheet of less than 30 billion euros) will fall by 1%, and small banks (with a balance sheet of less than 5 billion euros) will see their ratios rise by 14.9%. Because the Icelandic banks use the standardised approach to credit risk assessment and are either medium-sized (Arion Bank, Íslandsbanki, and Landsbankinn) or small (Kvika banki), it is unlikely that the implementation of the banking package will lower their capital ratios.

2. Sustainability

With Banking Package 2021, the EU wants to incorporate environmental, social, and governance (ESG) criteria more fully into risk management. In the EU's opinion, it is vital

6 <https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1928.en.pdf>.

7 https://www.eba.europa.eu/sites/default/documents/files/document_library/Publications/Reports/2020/961423/Basel%20III%20reforms%20-%202019Q4%20update%20and%20Covid%20impact.pdf

both to improve the methods banks use to analyse and manage ESG risk and to ensure that markets can keep abreast of how banks handle ESG-related matters. Under the new requirements, banks must disclose information on their ESG risk and must carry out regular climate stress tests. These requirements will affect all banks, but the requirements will be less stringent for smaller banks.

Stronger supervision

Banking Package 2021 provides supervisory bodies with additional tools to carry out their work. For example, it

will be possible to assess more effectively whether high-level bank executives have the skills and expertise needed to direct a bank. Supervisory bodies will also be granted increased powers to oversee fintech companies, including bank subsidiaries. Furthermore, Banking Package 2021 will harmonise the requirements to be made of third-country bank branches, whose activities have grown significantly in recent years, so that supervisors can monitor risks in their operations more effectively.

Box 6

Cyber- and operational security

Every year, cyberattacks cause individuals, firms, and institutions to suffer enormous financial loss and inconvenience. The large-scale cyberattacks that have been waged in the recent term have had a profound impact in Iceland and around the world. In summer 2020, for instance, hackers installed malicious code in software provider SolarWinds' Orion system, a very widely used IT performance monitoring system, although the breach was not discovered until much later.¹ Today cyberattacks are said to be among the most serious threats to the global community.² Throughout the West, cybersecurity is viewed as a national security issue, and it is acknowledged that cooperation in this area is essential to combat the threat, which unfortunately seems to have become entrenched.

Cyberattacks are generally carried out by hackers, either for financial gain or to cause disruption. They commonly have roots in organised crime, and there are signs or suspicions that certain countries participate directly in them for political or military purposes.³ During

the lead-up to Russia's invasion of Ukraine, cybersecurity officials reported that Ukraine was being subjected to constant cyber-bombardment, with the result that several government websites were down, including those of the parliament, government ministries, government security services, and banks.⁴ Around that time, various multinational institutions, including the European Central Bank, warned financial institutions that they could expect cyberattacks from the Russian government if the invasion occurred and if Western countries responded to it by imposing sanctions on Russia as they had threatened to do.⁵ Hybrid threats, which are both civil and military in nature, have been on the rise in recent years, partly as a result of rapid technological advances and increased communications options in a globally connected world.⁶ Furthermore, attacks by cybercriminals increasingly target

1 In Iceland, the attack mainly affected banks and telecom and energy companies. For further information on the SolarWinds attack, see the July 2021 report from the European Union Agency for Cybersecurity, entitled *ENISA threat landscape for supply chain attacks*: <https://www.enisa.europa.eu/publications/threat-landscape-for-supply-chain-attacks>. See also: <https://www.cisa.gov/news/2021/01/05/joint-statement-federal-bureau-investigation-fbi-cybersecurity-and-infrastructure>.

2 See the World Economic Forum *Global Risk Reports*: <https://www.weforum.org/>.

3 North Korea, China, and Russia are often mentioned in this context. Since 2014, when Russia annexed Crimea, Ukraine has borne the brunt of severe cyberattacks targeting important administrative institutions and infrastructure elements, including an attack on the financial system in 2017. A brief report on this can be found here: <https://www.theguardian.com/world/2022/jan/14/ukraine-massive-cyber-attack-government-websites-suspected-russian-hackers>.

4 See the 23 February 2022 news article on mbl.is (in Icelandic): https://www.mbl.is/frettir/erlent/2022/02/23/ukraina_saetir_linnulausri_nettaras/. The CyberPeace Institute has published a timeline summarising cyberattacks that have targeted critical infrastructure and civilian objects in Ukraine. The timeline stretches back to 2014, when presidential elections were held in Ukraine and Crimea was annexed by Russia. See: <https://cyberpeaceinstitute.org/ukraine-timeline-of-cyberattacks/>.

5 See the 9 February 2022 report from Reuters: <https://www.reuters.com/markets/europe/european-us-regulators-tell-banks-prepare-russian-cyberattack-threat-2022-02-09/>. The invasion of Ukraine and its impact are discussed further in Box 1.

6 For further information on hybrid threats, see the summary from the Icelandic National Security Council conference on hybrid threats, held on 27 February 2020: [https://www.stjornarradid.is/library/03-Verkefni/Almannaoryggi/Thjodaroryggismal/Samtal_um_thjodaryggi_Fjol%C3%BEattaognir\(isl\).pdf](https://www.stjornarradid.is/library/03-Verkefni/Almannaoryggi/Thjodaroryggismal/Samtal_um_thjodaryggi_Fjol%C3%BEattaognir(isl).pdf).

countries' critical infrastructure, with the aim of causing severe social upheaval.⁷

The Bank for International Settlements (BIS) has said that now, during the COVID-19 pandemic, the financial sector has been targeted more often by hackers than other sectors have.⁸ Furthermore, the weight of cyber risk in risk assessments is steadily growing as economies and financial systems become increasingly digitised.⁹

In recent years, several severe cyberattacks have occurred in Iceland, causing significant loss, disruption, and inconvenience for the companies, institutions, and individuals affected. In 2021, the Central Bank financial supervisory authority was notified of fourteen cyberattacks causing interruptions of service at financial institutions, and in November 2021 a massive cyberattack was launched on Valitor and SaltPay's payment services. It is considered more or less a given that the threat due to cyberattacks on financial institutions in Iceland is growing.¹⁰

Central banks, whose role is to promote financial stability, have participated actively in the fight against cyberthreats, as it is acknowledged that repeated or large-scale cyberattacks could jeopardise financial stability, particularly if the operations of systemically important financial market infrastructure elements are threatened. The Central Bank of Iceland owns one such infrastructure element, the interbank payment system whose technical operations are handled by the Icelandic Banks' Data Centre (RB), and has taken a range of action recently in order to bolster the cyber- and operational security of financial market infrastructure.

Cooperation forum on operational security of financial market infrastructure (SURF)

A cooperation forum on operational security of financial market infrastructure, called SURF, is led by the Central

Bank.¹¹ SURF aims to create a common vision for measures to enhance the resilience of the cyber- and IT systems of critical financial infrastructure elements and coordinate measures in case of operational disruptions that could affect the financial system's security and efficacy; i.e., organise emergency cooperation and joint emergency plans. Particular emphasis is to be placed on shoring up cybersecurity defences and the financial system's resilience against cyberattacks. In this context, consideration shall be given to the Government's cybersecurity framework, with reference to possible overlapping, interactions, and views on harmonisation. It is also emphasised that matters discussed by SURF should focus only on topics directly relating to the forum's role, and not on topics relating to business or competition.

Participation in SURF is voluntary. The forum's inaugural meeting was held in August 2021, and its protocols were approved at that meeting.¹² Since then, the forum has met regularly and has commenced work on system drawings for the financial market infrastructure elements in Iceland that are considered systemically important.¹³ This entails creating drawings of all of the systems that support and are based on the activities of these systemically important financial market infrastructure elements, and identifying the relevant connections between them.

At present, SURF is discussing the possibility that RB will take on a clearer centralised role than it does currently in response to operational incidents that could jeopardise financial market infrastructure operations, whether they stem from cyberattacks, break-ins, or other causes. In the opinion of those knowledgeable about such matters, the operational disruptions that have taken place in the Icelandic financial market in recent years reflect the need for this. The main objective would be to simplify the channels of communications among market participants when operational incidents or malfunctions occur, as well as harmonising procedures and ensuring swifter responses and centralised oversight. Such tasks fit well with the shift in RB's

7 This includes, for instance, the healthcare, transportation, and energy sectors. See the European Union Agency for Cybersecurity's (ENISA) report entitled *ENISA Threat Landscape*, October 2021): <https://www.enisa.europa.eu/publications/enisa-threat-landscape-2021>.

8 See BIS (2021a), *Covid-19 and cyber risk in the financial sector*, BIS Bulletin no. 37, January 2021, available here: <https://www.bis.org/publ/bisbull37.pdf>.

9 According to the Financial Stability Board, cyber risk is the combination of the probability of cyber incidents and the impact of such incidents. See FSB Cyber Lexicon, November 2018, available here: <https://www.fsb.org/wp-content/uploads/P121118-1.pdf>.

10 See the report from the National Commissioner of the Icelandic Police (in Icelandic) entitled *Skipulögð brotastarfsemi 2021 (Organised criminal activity 2021)*: https://www.logreglan.is/wp-content/uploads/2021/12/SKIPULOGTH_BROTASTARFSEMI_Skyrsla.pdf.

11 In preparing for the establishment of SURF, the authorities examined similar fora operated by other Nordic central banks, particularly Denmark's Nationalbank's Financial Sector Forum for Operational Resilience. See: <https://www.nationalbanken.dk/en/financialstability/Operational/Pages/Financial-Sector-forum-for-Operational-Resilience.aspx>.

12 Members of SURF are Arion Bank, the Ministry of Finance and Economic Affairs, Islandsbanki, Landsbankinn, Nasdaq Iceland, Nasdaq CSD Iceland, the Computer Emergency Response Team (CERT-IS, cf. Act no. 78/2019), the Icelandic Banks' Data Centre (RB), and the Icelandic Financial Services Association (SFF).

13 The Financial Stability Committee has decided to designate the Central Bank's new interbank payment system and the Nasdaq CSD SE securities settlement system as systemically important infrastructure; cf. Article 13, Item (d) of Act no. 92/2019. See: <https://www.sedlabanki.is/utgefid-efni/frettir-og-tilkynningar/frettasafn/frett/2020/12/16/Yfirlýsing-fjarmalastodugleikaneftir-16.-desember-2020/>.

operations towards bolstering the security of financial market infrastructure operations in Iceland.

Central Bank joins Nordic Financial CERT

The Central Bank of Iceland recently became a member of Nordic Financial CERT (NF-CERT),¹⁴ a non-profit organisation established by three Nordic banks in 2017.¹⁵ Since then, a number of banks have become members, including all of Iceland's systemically important commercial banks and most of the central banks in the Nordic region. NF-CERT's purpose is to bolster cyber resilience among its members and assist them in fighting cybercrime. It achieves this purpose, among

14 For further information, see: <https://www.nfcert.org/>.

15 Nordea in Sweden, DnB in Norway, and Danske Bank in Denmark.

other things, by actively sharing information on attempts at cyber fraud and on ways to safeguard against them. NF-CERT also cooperates actively with various governments, police departments, and international institutions.

NF-CERT conducts active cybersecurity monitoring and assists its members in handling and responding to cybersecurity incidents, as well as re-establishing operations that have been disrupted by such incidents. The Central Bank expects significant benefits from its membership of NF-CERT, as it has been said that cooperation of this kind is important for Iceland's national infrastructure and, in a sense, its national security.¹⁶

16 See the *White Paper on a Future Vision for the Financial System*, issued by the Ministry of Finance and Economic Affairs, in 2018, p. 152.

Box 7

Crypto-assets

An estimated 1% of global financial assets are crypto-assets,¹ which are based on some 10,000 different virtual currencies.² The best-known and most widely used virtual currency in the world today is Bitcoin. Crypto-assets are often referred to as, *virtual currencies*, *cryptocurrencies*, or *simply crypto*. This Box uses these terms interchangeably.

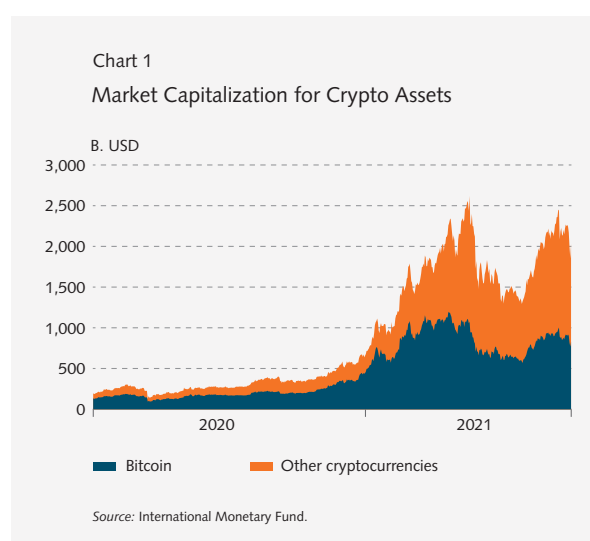
Properties of crypto-assets

Crypto-assets are not backed by any assets, goods, or obligations. Unlike conventional fiat currencies, they cannot be used to determine the price of anything but themselves. It is often said that "one unit of cryptocurrency is equal to one unit of cryptocurrency," but this does not make it a conventional currency. The value of cryptocurrency is determined solely by the price a buyer is willing to pay at any given time. As a result, its value is highly volatile, and it is often used for speculative purposes. Because of this, transactions involving crypto-assets are highly risky.

In some cases, crypto-assets are used as an instrument of payment in transactions with goods, but because of their volatility, it is difficult to establish the right price for the prod-

1 Crypto-assets are defined as a digital store of value that can be transferred and stored electronically. They are supported by distributed ledger technology (DLT) or comparable technology. Blockchain is a type of distributed ledger technology, and Bitcoin is issued in that form.

2 See, for instance, the February 2022 report from the Financial Stability Board. *Assessment of Risks to Financial Stability from Crypto-assets*.



uct concerned. In recent years, so-called stablecoins have been developed. A stablecoin is a type of virtual currency whose value is pegged to the price of other assets or fiat currencies so as to prevent the price volatility that otherwise characterises virtual currency.³ A special type of financial service called decentralised finance (DeFi) has developed as well, with the aim of facilitating trade, lending, and investment using crypto-assets and stablecoins.⁴

3 For further information on stablecoins, see *Financial Stability 2021/2*.

4 BIS (2021). *DeFi risks and the decentralisation illusion*.

The weaknesses of crypto-asset markets are not unlike those of conventional financial markets. Individuals who buy virtual currency can go deeply into debt, companies that assist with crypto-asset sales can suffer liquidity problems, and equipment used for trade and custody of crypto-assets can experience operational disruptions or cyberattacks. What distinguishes cryptocurrency from legal tender, fiat currency, and electronic money is that it is entirely unregulated. The European Economic Area (EEA) has no regulatory framework in place for virtual currency; therefore, those who own it do not benefit from the deposit insurance or consumer protection schemes that apply to financial services subject to regulation and supervision.⁵ The only thing existing in a cryptocurrency transaction is trust and confidence between the parties to the trade. In March 2021, the Central Bank of Iceland reminded consumers of the risks associated with transactions using virtual currency, making reference to, among other things, the joint warning issued by the European financial market supervisory bodies (EBA, EIOPA, and ESMA), which stressed the possibility that consumers could lose their money. In September 2020, the European Commission introduced regulations on crypto-assets and related transactions before the European Parliament. The consultation period on the instruments has closed, and they await final approval.⁶

Crypto-assets can affect financial stability.

In recent reports from the Financial Stability Board (FSB) and the International Monetary Fund (IMF), it is noted that if transactions with crypto-assets and innovations in the crypto market continue to increase as is currently forecast, it could have severe implications for financial stability.⁷ First of all, crypto-assets have started to become more closely linked to the conventional financial system, as investors have been forced by crypto-related debt to seek assistance from deposit institutions, and custodians of crypto-assets have increasingly sought to conduct derivatives transactions with deposit institutions. Strong connections between financial services subject to legally mandated supervision and those that are not could therefore jeopardise financial market stability.

5 For further information, see: <https://www.sedlabanki.is/utgefid-efni/frettir-og-tilkynningar/frettasafn/frett/2021/03/19/Neytendur-minntir-a-ahaettu-tengda-vidskiptum-med-syndarfe/>

6 For further information, see: <https://www.consilium.europa.eu/en/press/press-releases/2021/11/24/digital-finance-package-council-reaches-agreement-on-mica-and-dora/>

7 In this context, see the International Monetary Fund's October 2021 *Global Financial Stability Report* and the Financial Stability Board's February 2022 report. [I cannot find this online. <https://www.imf.org/en/Publications/GFSR/Issues/2021/10/12/global-financial-stability-report-october-2021>

Second, crypto-transactions are not routed through the payment systems of commercial banks that participate in legally mandated deposit insurance schemes, nor do they use central banks' interbank systems, which guarantee final settlement of all financial transactions between deposit institutions. Owners of crypto-assets are therefore utterly unprotected as regards custodianship of their holdings. Third, widespread use of stablecoins could disrupt retail payment intermediation flows. Crypto currencies have been used primarily in crypto currency markets, but there are indications that they are also used for retail transactions. Innovations in payment intermediation can be expected, and governments need to have an overview of these developments. The retail payment intermediation system is one of society's core infrastructure elements. In Iceland, for instance, an average of 200,000 transactions per day are routed through the Central Bank's centralised retail payment system. All households and businesses in the country rely on this system; therefore, it is vital to ensure operational security and business continuity so as to maintain confidence in the intermediation of funds. Stablecoins must therefore be subjected to the same security rules in order to prevent them from disrupting payment intermediation.

Survey on crypto-asset holdings

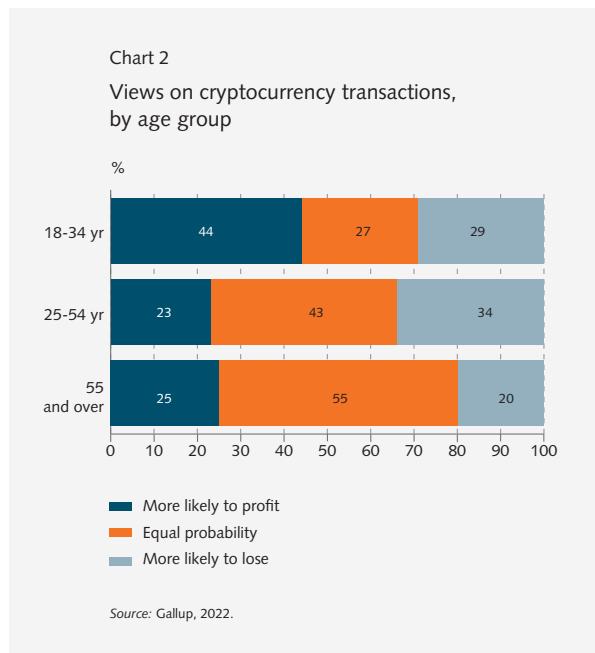
In February 2022, the Central Bank had a survey conducted among the general public on their knowledge of and views on crypto-assets.⁸ The objective was to determine, among other things, whether individuals are familiar with crypto-assets or virtual currencies and what characterises the people who invest in them.

The results show that 8.7% of respondents had invested in crypto-assets. Some 74% of this group carried out their transactions through foreign service providers, just under 9% used both Icelandic and foreign providers, and 17% used domestic service providers only. According to comparable surveys taken in 2021, 8% of respondents in the Netherlands, 3% in the UK, and 1.6% in Austria had invested in crypto-assets.⁹ These results indicate that Icelanders do not lag behind other countries in this respect – not at all. Of the 8.7% who said they had invested in crypto-assets, just over 75% still owned them at the time the survey was conducted. The vast majority, 88%, said they owned Bitcoin. It was surprising, however, to see how many had invested in other types of cryptocurrency. About 61% had invested in Ethereum, and 57% had invested in other types of crypto currency.

8 Gallup survey on crypto-assets, taken 2-14 February 2022.

9 European Securities and Markets Authority (ESMA), 2021; Financial Conduct Authority (FCA), 2021; Oesterreichische Nationalbank (OeNB), 2021.

About 13.4% of respondents considered it likely that they would buy Bitcoin or another type of cryptocurrency in the future. A similar share thought it was possible to profit on such transactions, and nearly half of them considered it equally likely that they would profit or lose. Of those who had bought crypto-assets, about 71% in the 18-34 age group considered it likely (more likely/equally likely) that they would profit.



Who invests in crypto?

Males in the 18-34 age group who define themselves as risk-seeking and interested in technological advances are most likely to invest in crypto-assets. Foreign surveys have shown the same pattern. Furthermore, a majority of respondents in this group considered themselves knowledgeable about securities, while only 17.5% trusted the financial system.

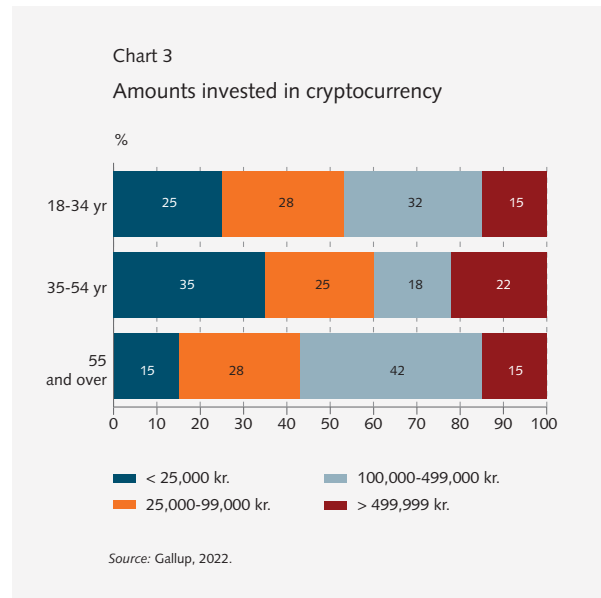
Table 1 Characteristics of cryptocurrency investors

	18-34 yr	25-54 yr	55 and over
<i>Males</i>			
Interest in buying cryptocurrency	34,4	18,7	2,6
Risk appetite	15	6,8	8,3
Interest in technological advances	56,7	48,1	23,7
Confidence in the financial system	17,5	10,9	15,1
Knowledge of securities	52	43	49,5
<i>Females</i>			
Interest in buying cryptocurrency	20,1	9,6	2,2
Risk appetite	9	2,5	0,3
Interest in technological advances	54	31,8	20,5
Confidence in the financial system	11,6	12,6	14,3
Knowledge of securities	24,7	26,8	35,9

Source: Gallup, 2022

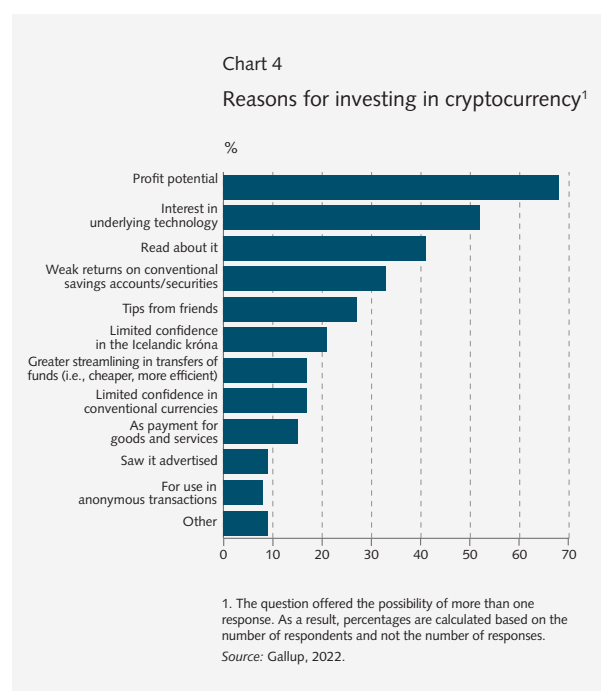
Amounts invested in crypto-assets

In general, investors do not spend large amounts of money on crypto-assets. The survey shows, however, that 50% of individuals under age 35 who have invested in crypto-assets have spent more than 10% of their disposable income on them. This indicates significant risk appetite and gives cause for concern.



Transfers and goods purchases using cryptocurrency

It is also noteworthy that one of every four individuals who had invested in cryptocurrency had used it to buy goods. About 32% had not used crypto-assets for this purpose but



assumed they would do so in the future. A smaller share, around 11%, had used crypto-assets to transfer funds to another individual.

What prompts people to invest in cryptocurrency?

Most people, or 70% of those respondents who had invested in crypto-assets, decide to do so in the hope of profiting. About 50% mentioned interest in the underlying technology. One of every three respondents said were prompted by

limited returns on savings accounts and securities, and one in five mentioned limited confidence in the Icelandic króna.

To summarise, there are signs that younger people, males in particular, invest in cryptocurrency and generally believe it has a future. It is uncertain how aware they are of the risks associated with such investments. It is therefore evident that the proliferation and increased use of cryptocurrency poses a range of challenges for central banks and other supervisory bodies.

Box 8

Reorganisation of financial market infrastructure

Late in 2021, the shareholders of the Icelandic Banks' Data Centre (RB) reached an agreement to change the focus of the company's operations, with the objective of strengthening security and promoting greater efficacy and efficiency in the operation of financial market infrastructure in Iceland. The changes entail explicitly defining RB activities to include joint operation of payment intermediation infrastructure and related systems. RB will also withdraw from other unrelated activities by the end of 2026. One of the company's objectives is to use its profits for the development and advancement of financial market infrastructure instead of paying dividends to shareholders.

In order to achieve greater synergy immediately in the operation of joint financial market infrastructure, RB purchased the ARK system and the SWIFT services of Central Bank-owned company Greiðsluveitan ehf., as well as acquiring the operations of JCC ehf., the systemically important banks' banknote vault. In the future, RB will be solely owned by deposit institutions and Greiðsluveitan, which administers a 7.33% holding in the company. The intention is for Greiðsluveitan's holding in RB to be temporary, while further reorganisation of Icelandic financial market infrastructure is underway.

Concurrent with these changes to RB, the Central Bank has established a Payment Council, a Rulebook Council, and a forum called the Forum for the Future. Greiðsluveitan will operate these bodies on behalf of the Central Bank. The Payment Council is a forum for Government authorities, market participants, and other stakeholders to engage in discussion, consultation, and exchange of information on matters relating to payment intermediation and financial

market infrastructure. Its aims are to elicit the view of those parties that use financial market infrastructure and have interests at stake in it, and to support development and innovation in payment intermediation. The Rulebook Council is intended to define the rights and responsibilities of participants in systemically important infrastructure, ensure standardisation and transparency in infrastructure operations, and oversee consultative fora for rulebooks on other core infrastructure elements. The Forum for the Future is intended to shape the vision and priorities for optimum development of financial market infrastructure in Iceland. The Forum will conduct a baseline assessment of ideas and proposals for new cooperative projects in the area of financial market infrastructure, including an assessment of whether they entail favourable development of domestic infrastructure and whether they satisfy the requirements of competition law. Members of these three bodies will be representatives of financial institutions and other stakeholders.

The aforementioned changes foster more effective policy formation and improved follow-up on development and operation of domestic financial market infrastructure, as well as more economical infrastructure development. Experience gained in recent years from the implementation of large projects in the financial system has revealed the need for such changes. Implementing change has proven overly time-consuming and costly, and Iceland has been considered to be falling behind neighbouring countries in the development of certain infrastructure elements. It is assumed that with these changes the Icelandic financial system will grow stronger and domestic financial institutions will grow more competitive, both in Iceland and internationally, for the

benefit of the RB's customers and consumers as a whole. The changes are in line with the priorities outlined in the *White Paper on a Future Vision for the Financial System*, issued by the Ministry of Finance and Economic Affairs in 2018.

Developments in other Nordic countries and in the European Central Bank have been considered as well, as central banks are participating actively in developing retail payment infrastructure elements for their own markets.

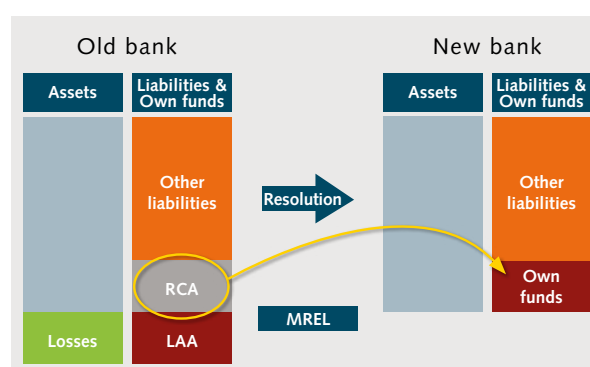
The Central Bank's MREL policy and its impact

On 8 December 2021, the Central Bank of Iceland published on its website its policy on how the Bank's resolution authority will calculate and set the minimum requirement for own funds and eligible liabilities, also referred to as the MREL policy. The policy provides guidance for the Icelandic financial market on how the resolution authority determines MREL in accordance with Chapter IV of the Act on Resolution of Credit Institutions and Investment Firms, no. 70/2020, Article 17 in particular. This Box aims to explain what the policy entails and what impact it will have.

The Bank's MREL policy

MREL requirements represent the own funds and eligible liabilities a financial undertaking must hold so as to ensure that it can absorb unforeseen losses and recapitalise its activities without Government support if it should be deemed failing or likely to fail.¹ As a result, MREL requirements are intended to strengthen the financial market framework which assumes that it will be possible to wind up or restructure financial undertakings without support from central banks or governmental authorities; i.e., without passing the cost on to taxpayers. MREL is designed to limit moral hazard among large financial undertakings, strengthen financial stability, and prevent the development of a situation, either in Iceland or abroad, where financial undertakings are deemed too big to fail. In other words, MREL and the legal framework are intended to ensure that a financial undertaking can always fail without destabilising the financial market or creating uncertainty, either for the public or for financial market entities other than the failing institution.

MREL are based on the total loss absorption capacity (TLAC) standard issued by the Financial Stability Board (FSB), which supplements the Basel standards for capital require-



ments. TLAC apply only to global systemically important banks (G-SIB), however, unlike the Basel standards, which apply to banks that are active internationally, whether they are classified as G-SIBs or not.

MREL is therefore intended to ensure that instead of bailing a failed financial undertaking out using Government funds, it will be possible to bail in and recapitalise it using creditors' funds. MREL also has another objective: to ensure that the institution always has adequate loss absorption capacity. Because of this, MREL always comprise two elements: the loss absorption amount (LAA) and the recapitalisation amount (RCA). In Iceland, the loss absorption amount will be equal to the minimum own funds requirements; i.e., the sum of Pillar I and Pillar II-R. The recapitalisation amount must also be at least equal to minimum own funds requirements requirements. In order to maintain market confidence, it is possible to add on a premium called the market confidence charge (MCC) based on the resolution authority's assessment. To begin with, however, the amount will be equal to minimum own funds requirements, as is stated in the Bank's MREL policy. As a result, financial undertakings in Iceland will not be subjected to a market confidence charge at present. In addition to these requirements, banks must always hold own funds to satisfy capital buffer requirements.

¹ More specifically, MREL entail that a financial undertaking's capital structure must ensure that it can be recapitalised via debt write-downs or conversion of debt to equity, if the institution should fail.

The Bank's MREL policy is modelled on policies abroad, although the requirements it contains are adapted to domestic financial undertakings. In formulating its MREL policy, the Bank consulted documents issued by the European Single Resolution Board; the Swedish National Debt Office (Riksgälden), which is Sweden's resolution authority; and the resolution authority of the Bank of England. The Central Bank aims to take decisions on domestic financial undertakings' MREL requirements in H1/2022, concurrent with the approval of the companies' resolution plans. Financial undertakings that do not satisfy MREL requirements in full will be granted a suitable transition period to adapt to the requirements. Amendments proposed to Act no. 70/2020 in order to align it with the EU's second Bank Recovery and Resolution Directive (BRRD II) will affect the Central Bank's MREL policy. When BRRD II is incorporated into Icelandic law, the Bank's MREL policy will be updated accordingly.

Impact of the MREL policy

1. Uncertainty about financial undertakings' capital requirements will be partially eliminated.

The implementation of the first Bank Recovery and Resolution Directive (BRRD I) of 2014 has given rise to uncertainty about its impact on the activities and capital structure of financial undertakings in Iceland. Both the issuance of the MREL policy and other tasks the Central Bank resolution authority has undertaken during the first year after the implementation of BRRD I aim to eliminate uncertainty about financial undertakings' capital requirements. The publication of the policy ensures that the calculation of financial undertakings' MREL requirements is predictable, thereby eliminating at least some of this uncertainty.

2. Some financial undertakings must satisfy additional capital requirements, and not all of them will be placed in resolution.

It follows from the Bank's MREL policy that financial undertakings will not all be treated in the same manner if they are failing or likely to fail. The policy assumes that financial undertakings will fall into three categories, with some being placed directly into resolution, while others will probably be placed in winding-up proceedings and will be recapitalised via bail-in. The third category could also be placed in resolution, but a mixed approach would be applied rather than a pure bail-in approach. Based on the resolution plan for the institution, including the selected resolution strategy, the resolution authority takes a decision on each institution's MREL. Institutions that do not satisfy the conditions for resolution will only be required to satisfy

general own funds requirements for financial undertakings. In general, the Bank's MREL policy can be said to have the effect of imposing less stringent requirements on smaller institutions and more stringent requirements on systemically important ones.

3. A share of some financial undertakings' liabilities will hereinafter be a part of specific, new capital requirements.

As is mentioned above, MREL requirements entail that certain liabilities, referred to as eligible liabilities, will be included in financial undertakings' capital requirements in the future. Eligible liabilities are those that meet the following three criteria: 1) they include only financial instruments that do not comprise the capital base as provided for in the Act on Financial Undertakings; 2) 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 Act no. 70/2020; and 3) they are considered qualified. This third criterion entails, among other things, 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 deposits or eligible deposits exceeding the insured deposit amount and held by individuals, microfirms, or small and medium-sized enterprises. Once MREL requirements are determined in H1/2022, certain financial undertakings will always be required to ensure that a given portion of their liabilities satisfy specified requirements. Furthermore, their capital structure must be such that they always have a given proportion of such liabilities, so that the bail-in tool can be applied. Iceland's systemically important banks will be the first institutions to be assigned binding MREL requirements. Calculations show that they are well able to satisfy the requirements, which are based on the Bank's MREL policy.

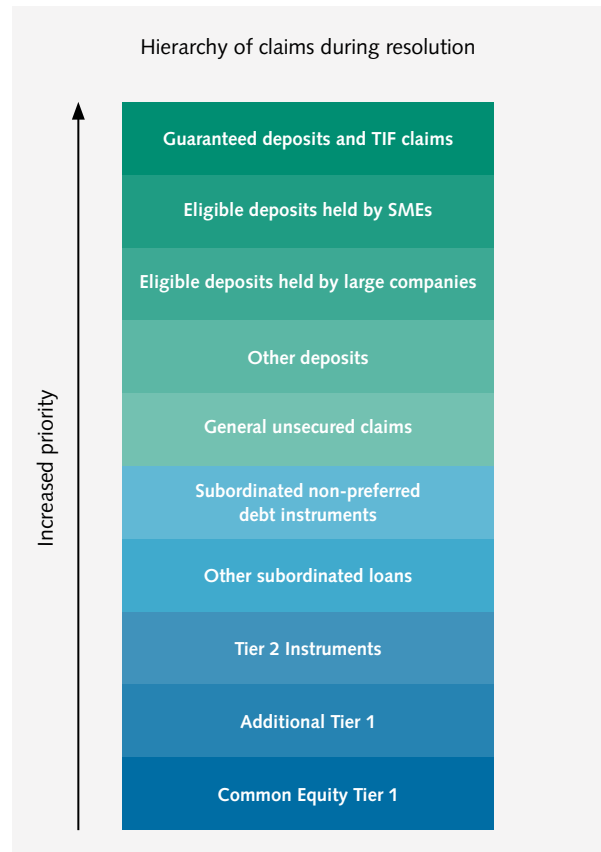
4. The full impact of MREL is still awaited in Iceland.

Elimination of the remaining uncertainty relating to MREL awaits the implementation of BRRD II in Iceland. This uncertainty is discussed in the MREL policy. To simplify, it can be said to be concentrated in two areas: The first centres on whether the resolution authority's stance on the market confidence charge will be aligned with practice abroad, or whether the MCC will continue to be excluded from MREL requirements in Iceland. The second involves presenting final requirements for subordination as part of Iceland's MREL requirements. Subordination entails that the financial instruments a financi-

al undertaking must hold in order to ensure that the bail-in tool can be applied will always rank below liabilities exempt from bail-in in the hierarchy of claims.

It is too soon to say with confidence how these uncertainties will be eliminated. However, as regards the latter of the two, it can be said that subordination requirements will generally take account of financial undertakings' classification according to the implementation of BRRD II and the changes made to the creditor hierarchy during resolution and winding-up with the passage of Act no. 38/2021 amending the Act on Resolution of Credit Institutions and Investment Firms, no. 70/2020.

With the approval of the first resolution plans for Iceland's systemically important banks in 2022 and the assignment of MREL requirements for each of the banks, the impact of severe operational difficulties at large credit institutions will be mitigated, thereby substantially strengthening the financial stability framework in Iceland. MREL requirements represent a major step towards fulfilling the key objective of Act no. 70/2020, which is to ensure that households and businesses have continued access to necessary financial services without requiring Government funding to rebuild failing institutions' balance sheets.



Appendix

Tables

Table 1 Financial system assets¹

Assets, b.kr	31.12.2017	31.12.2018	31.12.2019	31.12.2020	31.12.2021	Change from 31.12.2020, %
Central Bank of Iceland	765	755	840	844	964	14
Deposit-taking corporations excluding the Central Bank	3,405	3,681	3,775	4,212	4,703	12
- Commercial banks	3,381	3,656	3,748	4,183	4,672	12
- Savings banks and other deposit-taking corporations	24	26	26	28	31	8
Money market funds	158	147	144	145	128	-12
Non-MMF investment funds ²	686	668	766	846	1,125	33
Other financial intermediaries ^{3, 4}	456	397	290	257	223	-13
Treasury	969	941	936	1,071	1,044	-3
- Housing Financing Fund	761	731	718	703	663	-6
Financial auxiliaries	20	25	25	53	54	1
Insurance corporations	220	232	259	290	307	6
Pension funds	3,944	4,245	4,975	5,727	6,732	18
Total assets	10,623	11,091	12,010	13,445	15,280	27

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	31.12.2017	31.12.2018	31.12.2019	31.12.2020	31.12.2021	Change from 31.12.2020, %
Cash and deposits with Central Bank	378,700	293,870	329,923	213,003	281,653	32
Deposits in domestic deposit-taking corporations	6,075	658	633	1,736	2,942	70
Deposits in foreign deposit-taking corporations	77,887	107,039	63,887	85,059	80,379	-6
Domestic credit	2,407,764	2,708,062	2,784,748	3,070,639	3,409,715	11
Foreign credit	133,857	153,272	137,546	168,636	150,712	-11
Domestic marketable bonds and bills	116,001	95,842	104,980	306,068	277,500	-9
Foreign marketable bonds and bills	85,778	137,139	145,433	146,996	183,071	25
Domestic equities and unit shares	114,561	101,026	121,132	123,347	186,260	51
Foreign equities and unit shares	14,276	3,077	2,622	2,262	4,660	106
Other domestic assets	57,445	68,435	67,047	74,048	116,481	57
Other foreign assets	12,478	13,068	16,693	19,845	9,229	-53
Total	3,404,821	3,681,488	3,774,645	4,211,637	4,702,601	12

Source: Central Bank of Iceland.

Table 3 Other credit institutions' assets¹

<i>Assets, b.kr.</i>	<i>31.12.2017</i>	<i>31.12.2018</i>	<i>31.12.2019</i>	<i>31.12.2020</i>	<i>31.12.2021</i>	<i>Change from 31.12.2020, %</i>
Cash and deposits with Central Bank	34,285	29,493	21,067	0	0	0
Deposits in domestic deposit-taking corporations	32,261	20,511	8,639	17,067	8,928	-48
Deposits in foreign deposit-taking corporations	37,924	36,088	28,597	24,927	19,170	-23
Domestic credit	106,382	137,595	154,903	178,675	162,168	-9
Foreign credit	64,940	57,731	17,413	17,847	15,147	-15
Domestic marketable bonds and bills	107	258	1,430	5,387	10,115	88
Foreign marketable bonds and bills	998	266	0	0	7	0
Domestic equities and unit shares	108,096	92,915	29,765	524	466	-11
Foreign equities and unit shares	46,305	3,602	6,681	1,451	73	-95
Other domestic assets	17,975	12,068	18,126	8,871	4,119	-54
Other foreign assets	6,268	6,544	3,445	2,650	2,954	11
Total	455,541	397,071	290,065	257,401	223,148	-13

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 assets

<i>Assets, b.kr.</i>	<i>31.12.2017</i>	<i>31.12.2018</i>	<i>31.12.2019</i>	<i>31.12.2020</i>	<i>31.12.2021</i>	<i>Change from 31.12.2020, %</i>
Deposits in domestic deposit-taking corporations	150,812	142,872	151,522	164,821	169,883	0
Deposits in foreign deposit-taking corporations	20,451	13,776	24,174	34,230	22,717	-34
Domestic credit	332,554	428,474	522,485	511,516	491,117	-4
Foreign credit	268	309	378	495	423	-15
Domestic marketable bonds and bills	1,808,280	1,909,858	1,970,450	2,105,645	2,308,433	10
Foreign marketable bonds and bills	524	3,980	8,516	8,568	7,671	-10
Domestic equities and unit shares	656,680	647,835	805,115	987,843	1,329,330	0
Foreign equities and unit shares	925,454	1,071,412	1,465,596	1,887,539	2,378,618	26
Domestic insurance and pension assets	19,227	21,003	22,118	20,989	19,193	-9
Foreign insurance and pension assets	63	69	48	50	30	-40
Other domestic assets	30,025	5,083	4,149	5,690	4,635	-19
Other foreign assets	1	0	0	46	117	154
Total	3,944,339	4,244,671	4,974,551	5,727,434	6,732,168	18

Source: Central Bank of Iceland.

Table 5 Insurance company assets

<i>Assets, b.kr.</i>	<i>31.12.2017</i>	<i>31.12.2018</i>	<i>31.12.2019</i>	<i>31.12.2020</i>	<i>31.12.2021</i>	<i>Change from 31.12.2020, %</i>
Cash and deposits with Central Bank	7,011	1,563	40	3	3	0
Deposits in domestic deposit-taking corporations	4,861	6,589	10,571	6,944	6,986	1
Deposits in foreign deposit-taking corporations	149	75	48	28	0	-100
Domestic credit	3,449	3,523	2,490	1,819	1,454	-20
Foreign credit	0	0	0	0	0	0
Domestic marketable bonds and bills	94,177	98,628	109,161	133,121	147,848	11
Foreign marketable bonds and bills	4,467	16,801	20,378	20,351	19,330	0
Domestic equities and unit shares	65,696	61,159	65,790	74,850	72,283	-3
Foreign equities and unit shares	8,182	8,821	10,200	12,168	14,590	20
Domestic insurance and pension assets	20,662	22,228	24,772	25,786	26,590	3
Foreign insurance and pension assets	5,815	6,310	6,997	6,311	6,614	5
Other domestic assets	4,350	5,197	8,005	8,691	11,356	31
Other foreign assets	1,546	1,542	750	319	200	-37
Total	220,365	232,436	259,202	290,392	307,253	6

Source: Central Bank of Iceland.

Table 6 D-SIB: Income and expenses¹

<i>Income and expenses, b.kr.</i>	31.12.2017	31.12.2018	31.12.2019	31.12.2020	31.12.2021	<i>Change from 31.12.2020, %</i>
Arion Bank hf.						
Operating income	49.532	46.171	47.998	50.764	58.225	15
Net interest income	28.921	29.319	30.317	31.158	32.063	3
Net fee and commission income	10.211	10.350	9.950	11.642	14.673	26
Other operating income	10.400	6.502	7.731	7.964	11.489	44
Operating expenses	25.562	26.278	26.863	24.441	25.875	6
Change in loan values	-312	3.525	382	5.044	-3.169	-163
Taxes	9.138	7.432	6.698	4.532	8.298	83
Net after-tax gain from discontinued operations	-725	-1.159	-12.955	-4.278	1.394	-133
Profit	14.419	7.777	1.100	12.469	28.615	129
Íslandsbanki hf.						
Operating income	44.189	44.987	45.165	43.153	50.172	16
Net interest income	29.999	31.937	32.822	33.371	34.043	2
Net fee and commission income	13.750	12.227	10.899	10.525	12.849	22
Other operating income	440	823	1.444	-743	3.280	-541
Operating expenses	27.638	28.823	25.424	23.425	23.884	2
Change in loan values	-1.556	-1.584	3.480	8.816	-3.018	-134
Taxes	7.456	8.015	7.437	4.060	6.802	68
Net after-tax gain from discontinued operations	2.575	912	-370	-97	1.221	-1.359
Profit	13.226	10.645	8.454	6.755	23.725	251
Landsbankinn hf.						
Operating income	51.727	52.558	56.344	50.273	55.293	10
Net interest income	36.271	40.814	39.670	38.074	38.953	2
Net fee and commission income	8.431	8.157	8.219	7.638	9.483	24
Other operating income	7.025	3.587	8.455	4.561	6.857	50
Operating expenses	27.103	27.797	28.196	25.646	23.864	-7
Change in loan values	-1.785	-1.352	4.827	12.020	-7.037	-159
Taxes	6.643	6.853	5.086	2.086	9.547	358
Net after-tax gain from discontinued operations	0	0	0	0	0	0
Profit	19.766	19.260	18.235	10.521	28.919	175
D-SIB						
Operating income	145.448	143.716	149.507	144.190	163.690	14
Net interest income	95.191	102.070	102.809	102.603	105.059	2
Net fee and commission income	32.392	30.734	29.068	29.805	37.005	24
Other operating income	17.865	10.912	17.630	11.782	21.626	84
Operating expenses	80.303	82.898	80.483	73.512	73.623	0
Change in loan values	-3.653	589	8.689	25.880	-13.224	-151
Taxes	23.237	22.300	19.221	10.678	24.647	131
Net after-tax gain from discontinued operations	1.850	-247	-13.325	-4.375	2.615	-160
Profit	47.411	37.682	27.789	29.745	81.259	17

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

%	31.12.2017	31.12.2018	31.12.2019	31.12.2020	31.12.2021
Return on equity	7.4	6.1	4.5	4.8	12.4
Return on assets	1.4	1.1	0.7	0.7	1.9
Expenses as a share of net interest and commission income	59.0	60.0	57.8	54.1	51.8
Expenses as a share of total assets	2.3	2.3	2.1	1.8	1.7
Net interest and commission income as a share of total income	89.4	92.4	88.2	91.8	86.8
Net interest income as a share of total assets	2.8	2.9	2.7	2.6	2.4
Capital ratio	25.1	23.2	24.2	24.9	25.4
Foreign exchange as a share of the capital base	0.5	0.3	2.1	0.3	-0.7
Liquidity coverage ratio (LCR), total	165.9	166	165.9	179.7	177.8
Liquidity coverage ratio (LCR), FX	412.8	509.6	508	481.3	403.1
Net stable funding ratio (NSFR), total	122.2	117.9	117	118.7	121.0
Net stable funding ratio (NSFR), FX	161.5	159.8	141.2	147	164.9

Source: Central Bank of Iceland.

Table 8 Commercial banks' foreign bond issues, last 12 months (16 March 2021 - 16 March 2022)

Issuer	Date	Currency	Amount (b.kr.)	Maturity (years)	Premium on interbank rate ¹ %
Arion Bank	jul.21	EUR	44.0	4.0	0.8
	oct.21	EUR ²	44.0	5.0	0.27
Total			88.0		
Íslandsbanki	Mar.21	NOK	2.2	3.0	
	Mar.21	NOK	11.1	4.0	
	Mar.21	SEK	3.7	3.0	
	Mar.21	SEK	6.6	4.0	
	jul.21	NOK	6.7	3.0	
	jul.21	SEK	2.9	3.0	
	Sep.21	SEK ³	11.2		4.75
	Sep.21	EUR	44.0		0.75% fixed
			88.4		
Landsbankinn	nov.21	EUR	44.0	5.0	0.75% fixed
	Jan.22	SEK	12.2	3.0	0.80
	Jan.22	SEK	12.2	2.0	0.65
	Jan.22	NOK	7.4	3.0	0.79
Total			75.8		

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

2. Covered bond.

3. AT1.

Source: Nasdaq Iceland.

Table 9 Capital buffers

Capital buffer	announcement ¹	FME decision/ Value %	Effective date
Systemic risk buffer, D-SIB	1.3.2016	3	1.4.2016
Systemic risk buffer, other DMBs	15.5.2018	3	1.1.2020
Other Systemically Important Institutions buffer	1.3.2016	2	1.4.2016
Countercyclical capital buffer	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</i>	<i>2021</i>
Net IIP	% of GDP	Q	2.0	9.3	19.5	33.6	40.2
External debt ¹	% of GDP	Q	88.6	82.1	77.5	84.7	85.0
Net external debt ²	% of GDP	Q	32.3	22.4	21.4	23.2	29.2
Short-term debt based on remaining maturity ³	% of GDP	Q	14.3	17.3	13.9	11.3	15.3
Treasury FX debt as a share of total debt	%	M	12.8	14.9	21.1	20.1	23.9
Commercial banks' foreign-denominated bonds	% of GDP	Q	19.5	20.9	19.2	22.2	21.9
Current account balance ⁴	% of GDP	Q	4.2	3.5	5.8	0.8	-2.8
International reserves	% of GDP	M	26.0	25.9	27.0	27.9	28.6
International reserves financed in krónur	% of GDP	M	20.9	20.8	20.1	18.5	15.1
International reserves/IMF RAM	%	Q	144.8	139.5	153.4	151.9	144.9
Terms of trade ⁵	Value	Q	96.4	91.2	94.2	91.9	98.5
Nominal exchange rate ⁶	Value	M	162.9	173.8	179.7	200.5	195.6
Real exchange rate ⁷	Value	M	99.2	90.3	91.3	84.8	86.6
Treasury's highest credit rating	Rating	-	A2/A	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.

Definitions

Account information service

A direct-line service that provides consolidated information on one or more payment accounts as a user of payment services either from another payment service provider or from more than one payment service provider; cf. Article 3 of Act no. 114/2021.

Acquirer

A provider of payment services that offers acquiring; cf. Act no. 114/2021.

Acquiring

One type of payment service described in the Payment Services Act, no. 114/2021; cf. Article 3, Item 22(e) of Act no. 114/2021.

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.

BCBS

Basel Committee on Banking Supervision.

Bill

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

BIS

Bank for International Settlements.

Blockchain technology

Technology that has emerged in recent years and is based on the idea that encrypted information is stored in a secure, traceable manner in a distributed system instead of a centralised database. Blockchain technology has been used, among other things, to develop cryptocurrencies such as Bitcoin. The blockchain does not include information on owners, such as their names or identification numbers, and despite its traceability properties, there are certain restrictions on access.

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.

Calculated return on equity

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

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.

Capital ratio

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

Cash

Physical currency; i.e., banknotes and coin issued by a central bank.

Central bank money

A claim against a central bank, either in the form of cash (banknotes and coin) or as a deposit held in an account with a central bank.

Central securities depository

A licensed and supervised entity as described in Act no. 7/2020. Central securities depositories own and operate securities registration and settlement systems.

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.

Commercial bank money

A claim against a commercial bank/savings bank in the form of a deposit held in an account with the institution concerned.

CPMI

Committee on Payments and Market Infrastructures, located at the Bank for International Settlements (BIS).

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.

Cryptocurrencies

Electronic or digital currencies have not been defined in a harmonised manner, but the term virtual currency(-ies) has been used in Icelandic law.

CSDR

Regulation (EU) no. 909/2014 of the European Parliament and of the Council of 23 July 2014 on improving securities settlement in the European Union and on central securities depositories.

Current account balance

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

Deposit institutions

Commercial banks and savings banks licenced to accept deposits.

Digital cash

A digital claim against a central bank (i.e., central bank digital currency, CBDC), which, if issued, can function as a standard currency.

Digital wallet provider

An individual or legal entity that offers custodial services relating to the storage of virtual currency owners' payment information, using software, systems, or other types of media to manage, store, or transfer virtual currency; cf. Article 3 of Act no. 140/2018.

Disposable income

Income net of taxes.

Distributed ledger technology (DLT)

Technology that administers digital accounting or distributed ledgers.

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.

Electronic króna/krónur

Digital cash that could potentially be issued by the Central Bank of Iceland, would be in digital form, and would be stored in a specific medium (such as cards or apps) or in an account with the Central Bank.

Electronic money (e-money)

Monetary value in the form of a claim against the issuer, which is stored in an electronic medium, issued in exchange for funds for the purpose of remitting payment, and approved as such by parties other than the issuer; cf. Act no. 17/2013.

Encumbrance ratio

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

European supervisory bodies

European Banking Authority (EBA), European Insurance and Occupational Pensions Authority (EIOPA), European Securities and Markets Authority (ESMA), and European Systemic Risk Board (ESRB); cf. EU Regulations no. 1093/2010, 1094/2010 and 1095/2010, incorporated into Icelandic law with Act no. 24/2017; cf. Articles 2 and 3 of the Act.

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 market infrastructure

A multilateral system among participating institutions, including the operator of the system, used for the purposes of clearing, settling, or recording payments, securities, derivatives, and/or other financial transactions; cf. the PFMI Core Principles.

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.

Financial technology (fintech)

Any type of innovation in financial services that is based on technology and can give rise to new business models, software, processes, or products in the area of payment services, and could affect the financial market, financial services, and the way in which financial services are provided.

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.

FSB

Financial Stability Board.

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.

Interbank payment intermediation

Payments routed between participants (financial institutions) in interbank systems that are generally operated by central banks. PFMI

Interest burden

Interest payments as a percentage of disposable income.

Interest premium

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

Internal payment system/In-house payment intermediation

Payments between customers of a single payment service provider (financial institution).

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.

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.

Legal tender

Banknotes and coin issued by the Central Bank and accepted for all payments at full nominal value; cf. Acts no. 92/2019 and 22/1968.

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.

Payment initiation

Activation of payment instructions at the request of a user of payment services, as regards a payment account held with another payment services provider; cf. Article 3 of Act no. 114/2021.

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.

Stablecoin

A type of virtual currency whose value is pegged to the price of other assets or fiat currencies so as to prevent the price volatility that otherwise characterises virtual currency or cryptocurrency. Examples of types of stablecoin are Ether (pegged to the US dollar) and Diem (previously Libra), which Facebook is planning to launch.

Systemically important infrastructure

Infrastructure that, according to a decision by the Financial Stability Committee, is of such a nature that its operation could affect financial stability.

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).

The Principles for Financial Market Infrastructures, issued by CPMI/BIS and IOSCO.

PSD and PSD2

The EU Payment Services Directives.

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.

Virtual currency

Any type of digital money that is neither electronic money in the sense of the Act on Issuance and Treatment of Electronic Money nor a fiat currency; cf. Article 3 of Act no. 140/2018. Virtual currency is an electronic representation of monetary value, issued by a party that is neither a central bank nor a supervised entity in the sense of the law, whose unit value is determined by the issuing party. The best-known virtual currency system is Bitcoin.

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.

