

2024 | 2



FINANCIAL STABILITY

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

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

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

Symbols:

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

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



Many central banks abroad began cautiously easing their monetary stance after inflation moved closer to target levels and economic activity started to lose pace. The global economic outlook remains highly uncertain, however. In Iceland, inflation has been persistent. Economic activity has slowed in 2024 to date, as the monetary stance is quite tight. The real interest rate, particularly the short-term rate, has risen again recently. The effects of this on asset markets – especially the housing market – have thus far been limited.



Prospects for tourism, Iceland's leading export sector, have worsened. Growth in the sector has been muted this year, and there are signs that tourists' average stays have grown shorter, particularly in regional Iceland. The status of bookings over the next few months is poorer than at this time in 2023. Higher prices are doubtless a factor. Flight availability on flights to and from Iceland will contract year-on-year in coming months.



In the past few months, households and businesses have been responding to rising financing costs, such as by seeking out indexed loans to limit their debt service burden. Arrears on loans from the banks have risen only slightly and remain very limited. Most households with mortgages have a strong equity position, owing to the past several years' surge in house prices.



Home prices remain high by most measures, as steady GDP growth, low unemployment, rising real disposable income, and immigration have supported the market. Housing market activity grew in the spring, owing to the Government buy-up of Grindavik residents' homes and the knock-on effect of the purchase programme. Even so, the number of homes for sale on the market is virtually the same as at the beginning of the year. The number of newly built homes for sale has risen marginally over this period. Stronger activity has put pressure on home prices, and the share of properties selling at a premium on the asking price is up year-on-year. A growing share of purchases are financed with indexed loans. This supports market activity despite rising interest rates, generally shorter loan maturities, and restrictive borrower-based measures.



The large commercial banks are well positioned. Their capital ratios are high, returns on regular operations are sound, and private sector arrears are limited. The Central Bank's annual stress test indicates that they are highly resilient against external shocks. Nevertheless, borrowers' heavy debt service burdens plus reduced economic activity could cause arrears to increase in coming terms. As yet, arrears are limited mainly to specific firms facing operational difficulties. The strong equity position of many borrowers provides them the scope to refinance.



Cyberthreats are constantly growing, and it is therefore vital that financial market entities have in place strong security systems to combat cyberattacks. Well-conceived contingency plans and business continuity plans play a key role in shoring up resilience and limiting the impact of cyberattacks on the financial system. A coordination plan for the financial market is currently in preparation, with the aim of ensuring prompt, coordinated, and efficient responses to operational incidents. There are plans to launch a dedicated incident centre to simplify communications between parties, shorten lines of communication, and reduce risk in the system.

The analysis in *Financial Stability 2024/2* is based on data available as of 20 September 2024.

Financial Stability: Developments and prospects



Risks associated with the external position and currency flows

Foreign central banks begin monetary easing

Output growth among Iceland's main trading partners has been muted in the recent term, albeit to varying degrees in individual countries. Growth has been robust in the US but weak in most leading economies in Europe. Thus far in 2024, it has rebounded to an extent in the UK and the eurozone but appears to have tapered off in the US. Global inflation has also eased still further, in line with continued year-on-year declines in energy prices and a slower twelve-month rise in the price of goods and food. Inflation is forecast to keep falling, although the situation further ahead remains uncertain. Services price inflation has been persistent in many countries, and natural gas prices have risen recently in Europe, albeit offset by the drop

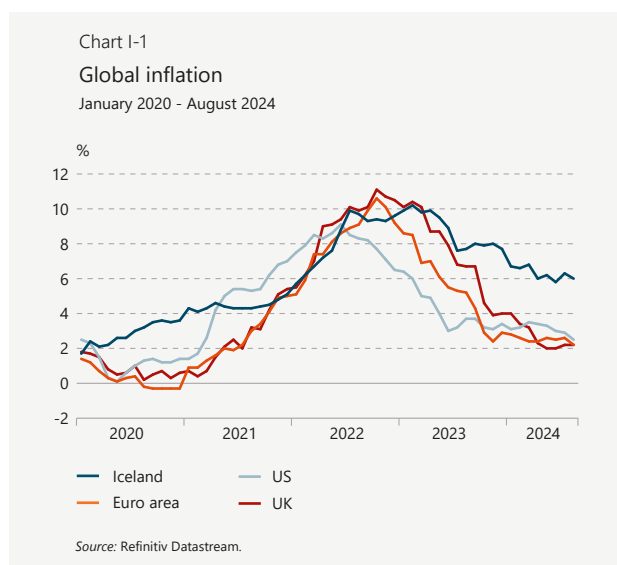
in global oil prices. The price of other commodities has also fallen again, after an increase earlier this year, but the cost of shipping has held broadly unchanged.

When inflation began to ease abroad and economic activity started losing steam, central banks in Iceland's main trading partner countries began lowering interest rates. The European Central Bank (ECB) has twice lowered its key interest rate by 0.25 percentage points, and the Bank of England lowered its key rate by 0.25 percentage points this summer. The US Federal Reserve recently lowered its key rate by 0.5 percentage points. Policy interest rates have also been lowered in other advanced economies as well, including Denmark and Sweden. Despite the uncertain inflation outlook, market agents expect further policy rate cuts, as can be seen, for instance, in declining yields on advanced countries' long-term government bonds.

Macroprudential policy instruments have remained largely unchanged in Europe since the publication of *Financial Stability 2024/1* in March. Greece has adopted new borrower-based measures, as there has been an increase in issuance of loans with heavy debt service burdens and indicators suggest that housing is overpriced. In addition, the countercyclical capital buffer (CCyB) was increased in Hungary, as it has been in many other European countries since the pandemic.

Worsening GDP growth outlook in Iceland

The GDP growth outlook has deteriorated slightly in Iceland. In Q1/2024, GDP contracted by 3.5% year-on-year, owing largely to reduced inventory accumulation caused by the failure of the capelin catch. GDP contracted by 0.3% year-on-year in Q2, when the negative impact of inventory changes reversed and private

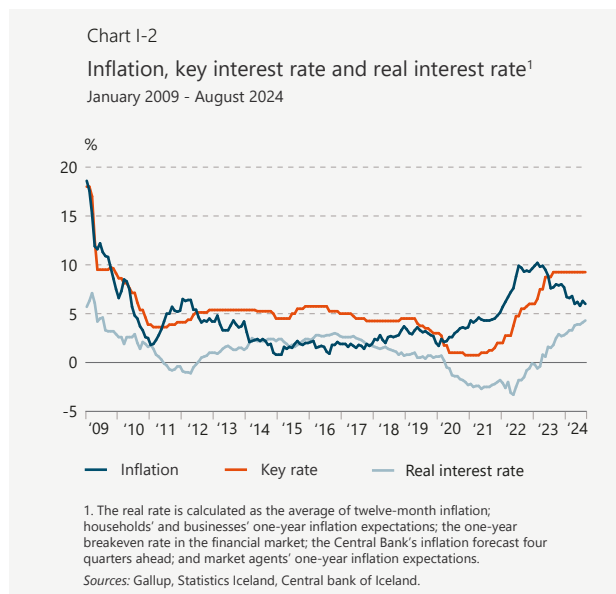


consumption contracted. It is therefore estimated that GDP contracted by 1.9% between years in H1/2024. According to the Central Bank's new macroeconomic forecast, output growth for 2024 as a whole is projected at 0.5%.¹ Growth in goods and services exports is expected to be modest this year, as growth in tourism has slowed markedly. Inflation picked up in July, after easing earlier in the year, but then declined again in August. It now measures 6% and has been more persistent and widespread than forecasts had indicated. Private consumption contracted in H1/2024, and indicators imply that labour market tightness is easing, even though the unemployment rate is broadly unchanged. Unemployment remains low in historical context. Terms of trade deteriorated somewhat in 2023 but are expected to hold virtually unchanged this year.

Market agents more pessimistic about interest rate cuts

According to the Bank's August market expectations survey, respondents expect the key rate to begin falling in Q4/2024. Therefore, they are more downbeat than at the beginning of the year, when they expected a policy rate cut in Q2. Furthermore, forward yield curves suggest that market agents expect a more gradual monetary easing phase than before, as inflation expectations in the bond market are well above the inflation target.

The Central Bank's real rate, which is calculated from various measures of inflation and one-year inflation expectations, has risen year-to-date and is at its highest since 2009. The rising real rate can be attributed to lower inflation and inflation expectations, as

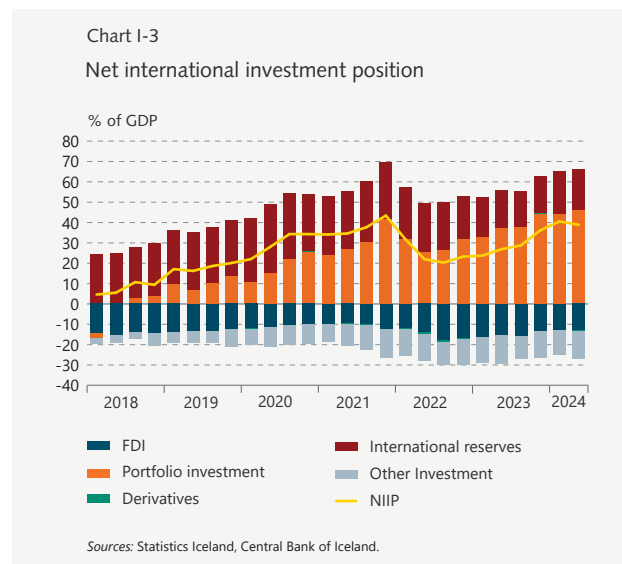


1. Published in *Monetary Bulletin* 2024/3.

the nominal policy rate has been unchanged for the past year. The monetary stance in terms of the real rate has therefore grown tighter thus far in 2024. Inflation expectations remain high, however, and the inflation episode of the past few years has probably deanchored them from the target.

Strong international investment position

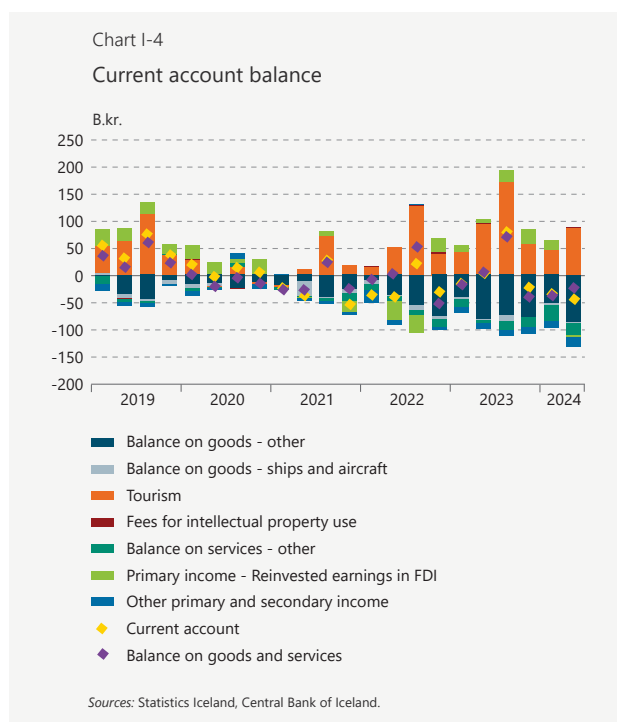
Iceland's net international investment position (NIIP) was positive by nearly 39% of GDP at the end of Q2/2024. Despite a decline in Q2, it strengthened by almost 3 percentage points of GDP in H1 as a whole. The improvement is due primarily to higher prices in foreign equity securities markets, with the MSCI World Index rising by 11% in H1, whereas the Icelandic OMXI15 index fell by 8%.



Current account deficit in H1

Iceland's current account showed a deficit of 78 b.kr., or 3.6% of GDP, in H1/2024. In comparison, the deficit for the same period in 2023 measured 0.4% of GDP. All key components of the current account deteriorated between years. The surplus on services trade narrowed because of strong services imports, including increased expenditures due to financial services and Icelandic nationals' overseas travel. The deficit on goods trade widened year-on-year, primarily because of a contraction in goods exports, which was driven largely by a reduction in the export value of aluminium, aluminium products, and marine products. The balance on income flipped from a surplus to a deficit between years, as the primary income surplus shrank markedly. This is due in part to an improved operating performance by foreign-owned domestic companies and to an increase in interest payments.

According to the Bank's most recent macro-economic forecast, published in August, the current account balance is projected to be negative by approximately 0.5% of GDP in coming years.²

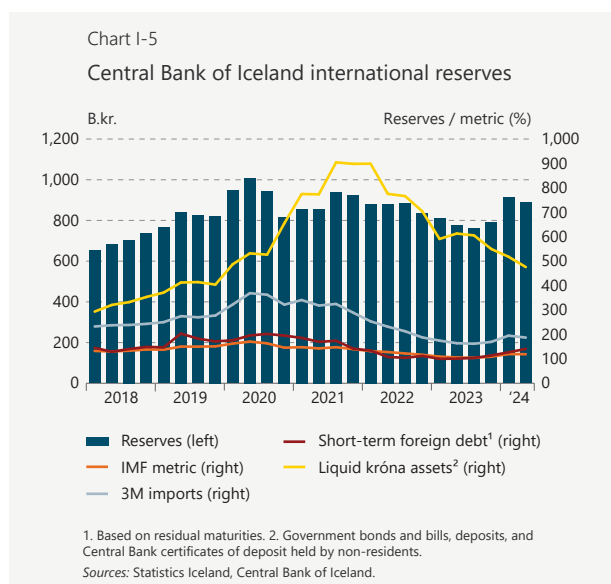


International reserves remain above key adequacy benchmarks

In August 2024, the Central Bank's international reserves amounted to 912 b.kr., or 21% of Iceland's GDP. They have grown year-to-date by 120 b.kr., or 2.5 percentage points of GDP, primarily because of eurobonds issued by the Treasury. The Treasury issued a green bond in the amount of 750 million euros, or 111 b.kr., in March, and issued a sovereign gender bond in the amount of 50 million euros, or 7.5 b.kr., in June. Furthermore, the Treasury paid the outstanding balance, 241 million euros, of a foreign bond that matured in June. The international reserves also grew due to the Central Bank's activity in the interbank foreign exchange market, Landsvirkjun's payment of a foreign currency dividend to the Treasury, and the depreciation of the króna. The reserves are above all key reserve adequacy metrics. At the end of Q2, the ratio of the reserves to the International Monetary Fund's (IMF) reserve adequacy metric (RAM) was 119% and had risen by 10 percentage points since the turn of the year.³

2. For further discussion, see *Monetary Bulletin 2024/3*.

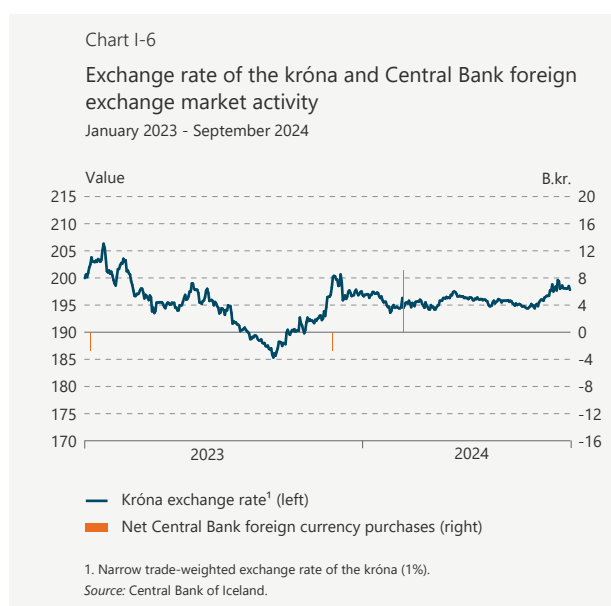
3. According to the IMF, the optimal size of international reserves is between 100% and 150% of the RAM.



Foreign exchange market stable

The foreign exchange market has been stable in 2024 to date, and the Central Bank has not intervened in the market since February. Exchange rate volatility has been well below its long-term average, and interbank market turnover has been limited. This may indicate that currency flows are well balanced, as the commercial banks go to the foreign exchange market when there are imbalances in currency inflows and outflows. The króna began to depreciate in late summer and had weakened by just over 2% at the trough in early September. About half of the depreciation has now reversed.

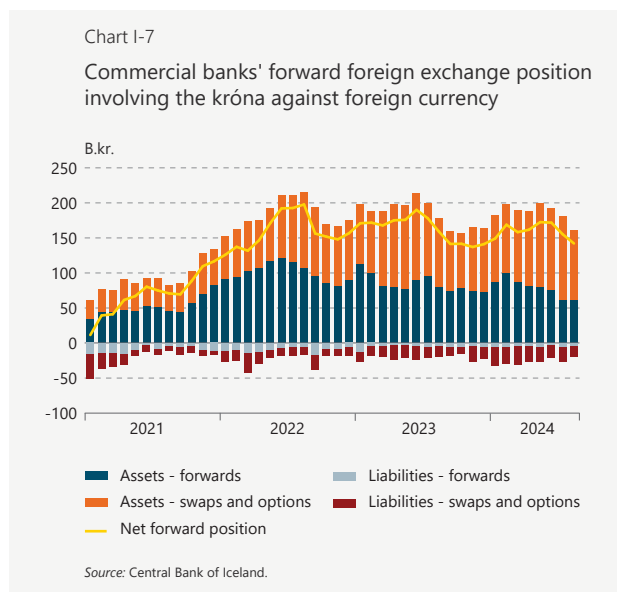
The commercial banks' net forward foreign currency position declined by 30 b.kr. in July and August, and the number of derivatives contracts involving the króna fell by one-fourth over the same period.



At the end of August, US company John Bean Technologies Corporation (JBT) announced an extension of its takeover bid for Marel, the results of which were originally to be released in September. Marel shareholders may choose to be paid in cash, a combination of cash and JBT shares, or JBT shares only. Cash payments to shareholders are subject to a maximum of 950 million euros, however. If the transaction is finalised, it could affect the foreign exchange market, as Marel is majority-owned by domestic shareholders.

b.kr. in the first eight months of the year.⁴ Net inflows for investment in Treasury bonds totalled 27 b.kr., including 19 b.kr. in February. Since the end of March, there have been modest outflows from Treasury bonds. Furthermore, non-residents have done little trading in listed equities this year, and net outflows from equities total 1 b.kr., although net inflows into equity securities totalled just over 3 b.kr. in August.

The foreign-owned stock of Treasury bonds is broadly unchanged, apart from the aforementioned purchase in February. There has been a slight increase in non-residents' holdings in short-term Treasury bonds, however.



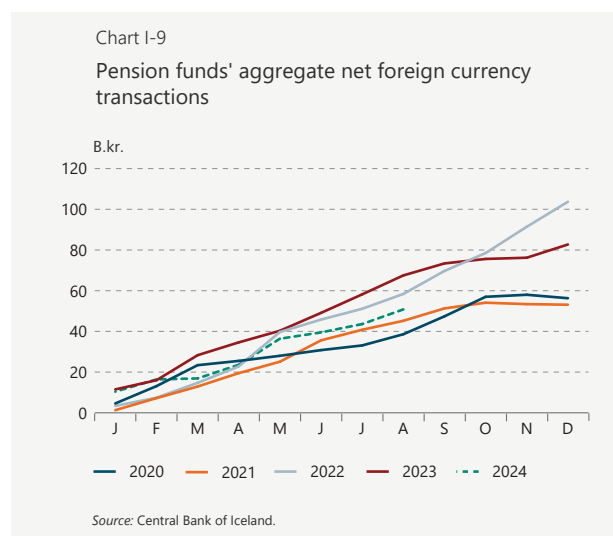
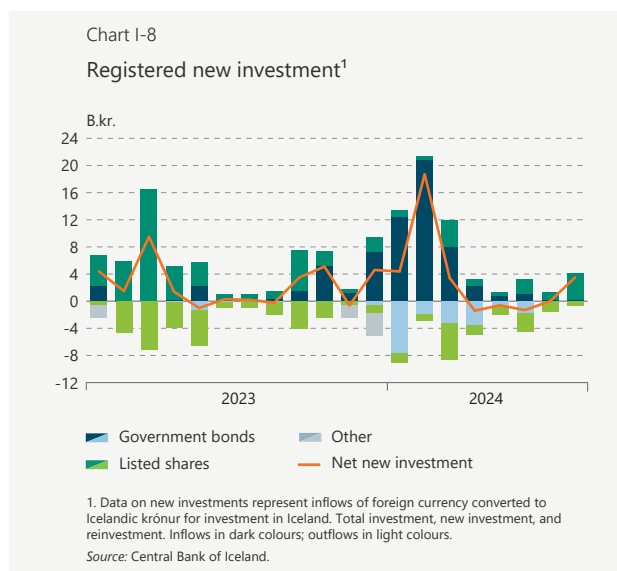
Pension funds scale down foreign currency purchases

The pension funds have reduced their foreign currency purchases in 2024. Over the first eight months of the year, their net purchases totalled 51 b.kr., or 17 b.kr. less than during the same period in 2023.

According to the Act on Mandatory Insurance of Pension Rights and on Activities of Pension Funds, the pension funds' foreign currency assets may not exceed 51.5% of total assets in 2024; however, that maximum is set to rise in increments until it reaches 65% in 2036. The ratio of foreign assets to total assets rose in H1/2024, to 40.5% at the end of June, owing to higher prices in foreign markets. The pension funds' internal benchmarks are below the maximum provided for by law. At the end of Q2, 18 out of 21 pension funds were at or near the internal benchmarks provided for in their investment strategies.

Reduction in foreign currency flows for new investment

Foreign currency flows for new investment have tapered off sharply after having surged in late 2023 and Q1/2024. Net new investment was positive by 26



4. In this context, new investment is investment made using new inflows of foreign currency that is converted to Icelandic krónur.

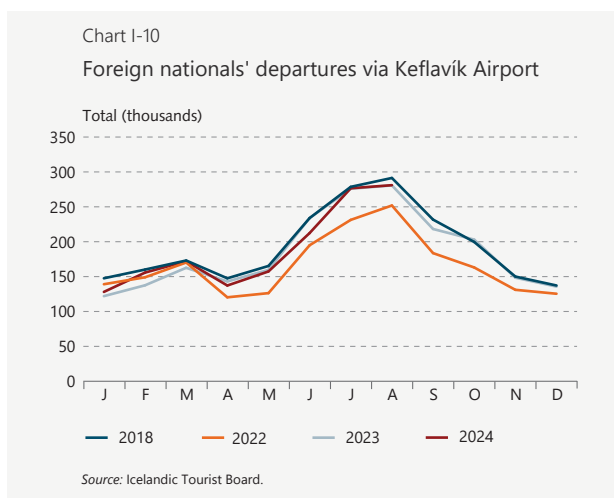
Increased flight offerings to and from Iceland ...

Flight availability to and from Iceland was up by 11% year-on-year in the first eight months of 2024, led by an increase in domestic airlines' capacity. In Q4/2024, however, the outlook is for a slight year-on-year contraction, owing partly to reduced flight offerings from Play, Wizz Air, and EasyJet. The share of transit passengers flying with domestic airlines has continued to increase at the expense of arriving passengers. The operational outlook for Iceland's airlines has deteriorated this year. At the end of May, Icelandair withdrew its financial guidance for 2024 and Play followed suit at the end of July. Strong competition for seats to and from Iceland and across the North Atlantic has had a negative impact on the airlines' operating performance.

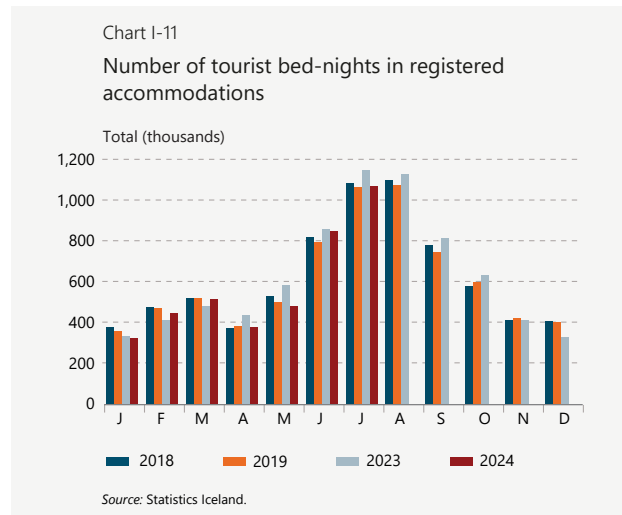
... but visitor numbers are broadly unchanged

Even though seat capacity has increased in 2024 to date, foreign nationals' departures via Keflavík Airport are virtually unchanged year-on-year, at just over 1.5 million in the first eight months of the year.

Turnover of foreign payment cards in Iceland contracted in real terms by 1.7% year-on-year in the first eight months of 2024. Foreign nationals' overnight stays at registered accommodations contracted even more strongly between years, or by 4.8% over the same seven-month period. For hotels, the contraction is even larger, at nearly 7%. Overnight stays at hotels declined by 11.5% in regional Iceland, and by 3.5% in greater Reykjavík. Over the same period, overnight stays in unregistered accommodations fell by an estimated 25%. The status of hotel bookings for the upcoming two quarters appears poorer than at the same time in 2023.⁵ This is particularly difficult for heavily leveraged



5. According to data from hospitality software firm Godo on the booking status of accommodation nationwide.



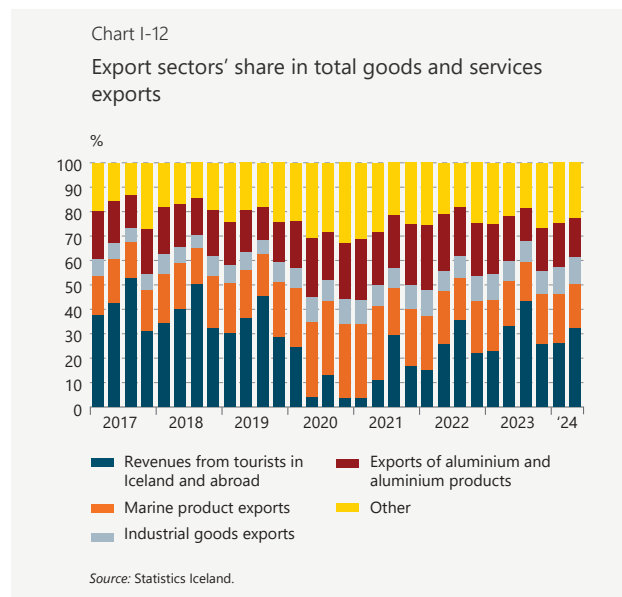
hotel operators in regional Iceland, as overnight stays there have dropped much more than in the capital area.

Growth in tourism has stagnated, the number of tourists has held unchanged between years, and overnight stays are down, indicating shorter visits in the country. The high real exchange rate cuts into the sector's competitive position, making Iceland a more expensive destination than before, and more expensive than many neighbouring countries. The short-term outlook for the sector has dimmed somewhat.

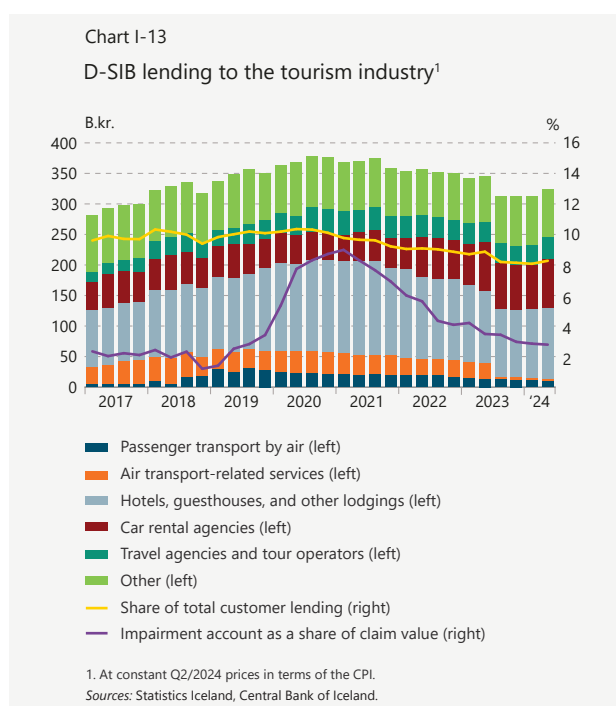
Despite weaker-than-expected growth, tourism remains Iceland's largest export sector, as can be seen in Chart I-12. Its share of total goods and services exports is broadly unchanged year-on-year.

Contraction in lending to tourism companies

The stock of loans granted by Iceland's systemically important banks (D-SIB) to tourism companies totalled



324 b.kr. at the end of Q2/2024. This represented a year-on-year decline of 6% in real terms, particularly in the categories of air transport-related services and passenger transport by air.⁶ Lending to travel agencies and tour operators has increased somewhat. Lending to tourism companies was virtually unchanged as a share of the banks' total customer lending at the end of Q2, at just over 8%. Recognised impairment of loans to the sector has continued to decline. Impairment accounted for 2.8% of claim value at the end of June 2024, down from 3.5% a year earlier. This indicates that the financial position of the sector as a whole has not weakened materially, despite limited growth this year.



Marine product prices down

The value of Iceland's marine product exports contracted year-on-year by nearly 2.5% at constant prices in H1/2024. At the same time, marine product export volumes shrank by 0.4%. In foreign currency terms, marine product prices fell by 1.8% year-on-year in H1, with lower prices for demersal products offsetting higher prices for pelagics. The price of marine products overall could decline further.

Uncertainty about near-term aluminium production in Iceland

At the end of August, global aluminium prices were 11% higher than at the same time in 2023. Prices have

fluctuated widely since Russia invaded Ukraine, but volatility has receded in the recent term. Prospects for aluminium prices appear favourable at present. Cutbacks in the supply of energy to large-scale users in Iceland affected aluminium manufacture in H1, lowering output by 6.5% year-on-year, and according to the Central Bank's most recent macroeconomic forecast, a decline is expected in 2024 as a whole.⁷ Aluminium production over the next few months is uncertain, not least because of possible reductions in the supply of energy from Landsvirkjun during the coming winter.



Risk associated with domestic asset markets

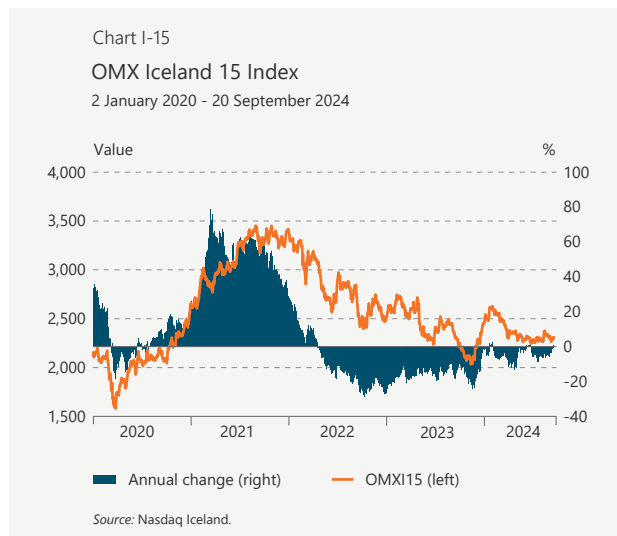
Stock market in the doldrums

The domestic stock market has been on the defensive in the recent term. At the beginning of the year, investors began to hope that inflation and interest rates had peaked, as could be seen in strong equity market turnover totalling about 120 b.kr. per month in January and February. At around that time, it was announced that pharmaceuticals company Alvotech was granted approval to market its arthritis drug in the US. During the run-up to the announcement, Alvotech's share price shot up 55% in about 55 b.kr. of trading during the first two months of the year. Investors' optimism proved short-lived, however, and total turnover has fallen by half, to an average of 60 b.kr. per month since then. Movements in the OMXI15 index are largely similar. The index jumped by around 7% in January but has fallen more or less steadily ever since. In 2024 to date,

6. This is mainly because Isavia issued a foreign bond and used the proceeds to refinance older debt, including loans from the D-SIBs.

7. Published in *Monetary Bulletin* 2024/3.

the index has fallen by 6%, after declining 1.6% in 2023 and plunging 26.5% in 2022.



The five-year average annual return on the index is 3%, as compared with 18% for the S&P 500 in the US and 15.1% for the Nordic OMXN40. There were keen expectations of interest rate cuts abroad in H1/2024, and indicators suggested that these expectations had been priced into foreign share prices, unlike the situation in Iceland.



Share prices have varied from one sector to another thus far in 2024. Companies in real estate and in the services and retail sales sector⁸ have almost all seen their share prices rise this year. Among com-

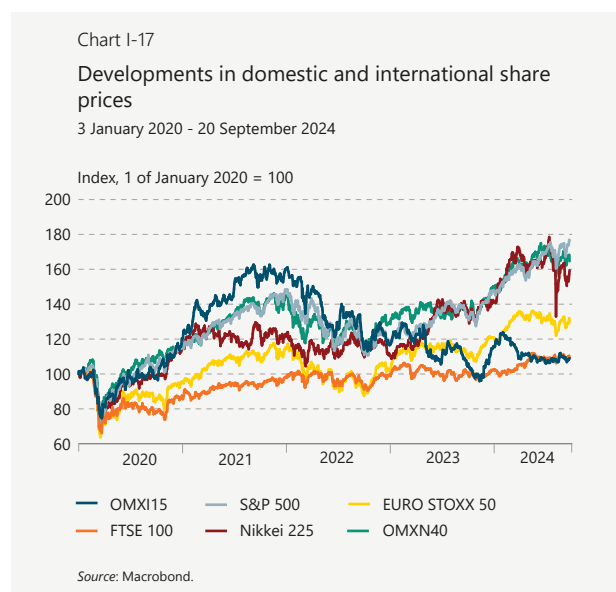
8. Companies in services and retail sales are Festi, Hagar, Skeljungur, and Ölgerðin. The real estate companies are Eik, Heimar, Kaldalón, and Reitir.

panies in services and retail, Ölgerðin has appreciated the most, or 14.6%, after a surge of 46% in 2023. Real estate firms have also captured the interest of investors in recent months. The price of Heimar shares is up 25.8% year-to-date, more than any other company on the Icelandic exchange.

At current interest rates, there is stiff competition for financing, and the stock market appears to be lagging behind. Over the five months from December 2023 through April 2024, turnover in stock offerings totalled 86 b.kr.,⁹ or nearly one-fifth of total equity market turnover during the period. In April, for instance, share capital offerings accounted for half of all turnover in the market. Innovation companies and start-ups, including companies in land-based aquaculture, have also attracted considerable capital in the past year. Another possible factor is the announcement that half of the Government's remaining holding in Íslandsbanki is to be sold later this year. On the other hand, policy rate cuts could stimulate interest in the stock market, and John Bean Technologies Corporation's (JBT) voluntary takeover bid for Marel, which has been extended until 11 November, could prompt Icelandic investors to put some of the proceeds back into the market if the deal materialises.

Foreign markets

Prices in most European markets have risen this year, and the blue-chip stocks in the EURO STOXX 50 index are up nearly 7.7%, while the Nordic OMXN40 has risen by almost 10%. At the end of July, the Bank of Japan increased its policy rate by 15 basis points, in

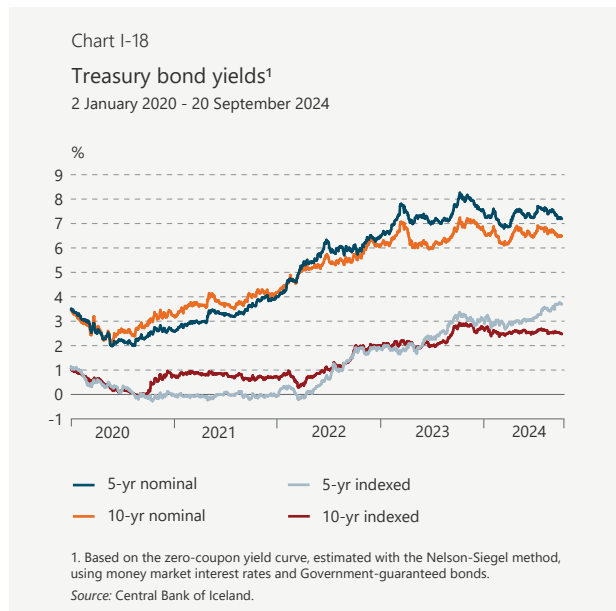


9. Share capital offerings from Ísfélagið, Alvotech, Amaroq, Play, Oculis, and Heimstaden.

a somewhat unexpected move that shook the country's equity market, causing the Nikkei 225 index to fall by 19.4% over the few days thereafter. The index dropped by 12.4% in a single day, concurrent with a surge in investor concerns about the worsening economic outlook for the US, where unemployment rose month-on-month to its highest level since 2021. Both markets have been bountiful for investors during the year, however: the S&P 500 in the US is up 19.6% and the Japanese market by 12.7%.

Short-term breakeven inflation rate declines

The yield curves for both indexed and nominal Government-guaranteed bonds are inverted, indicating that investors expect lower interest rates and inflation in the future. The downward slope of the indexed yield curve has grown steeper this year. At the beginning of 2024, there was a 45-point spread between five- and ten-year indexed interest rates, but by the end of August it had widened to 115 points. The five-year indexed yield has risen by 50 points this year, while the ten-year indexed yield has fallen by 20 points. The short end of the indexed yield curve has risen sharply this year, after a significant increase in the yield on the shortest indexed Treasury bond. Nominal Treasury

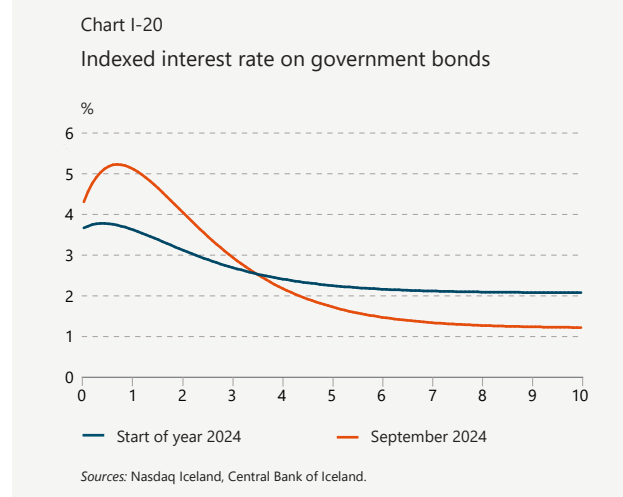
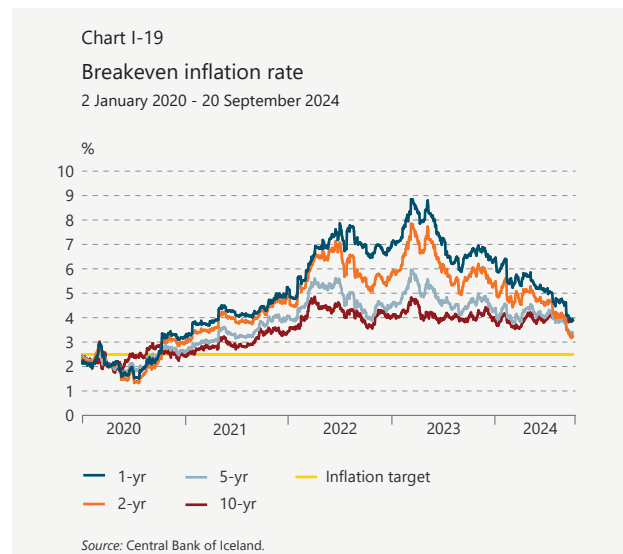


bond yields have held relatively unchanged this year, although they have fluctuated somewhat from month to month, as the Central Bank's key interest rate has been steady at 9.25% over the period.

Bond market turnover totalled 1,174 b.kr. over the first eight months of 2024, a decline of 2.8% year-on-year. Turnover in 2023 as a whole was the highest since 2015. Furthermore, Nasdaq OMX Iceland's index

for benchmark bonds, NOMXIBB, has risen 4.7% thus far in 2024, after increasing by 4% in 2023.

The short-term breakeven inflation rate has fallen somewhat this year, the one-year breakeven rate by 180 points and the two-year rate by 140 points. The short-term breakeven rate is at its lowest since summer 2021, some three years ago, perhaps reflecting increased investor confidence in the efficacy of mon-



etary policy. The drop in inflation and short-term inflation expectations has caused a significant increase in real interest rates during the year, as the Central Bank's key rate has been unchanged for more than a year.

Housing market turnover surges with Grindavík home buy-up

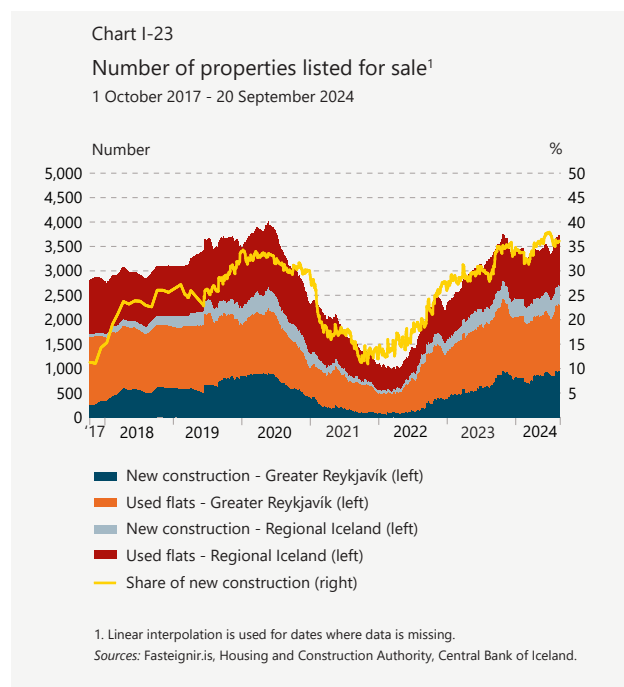
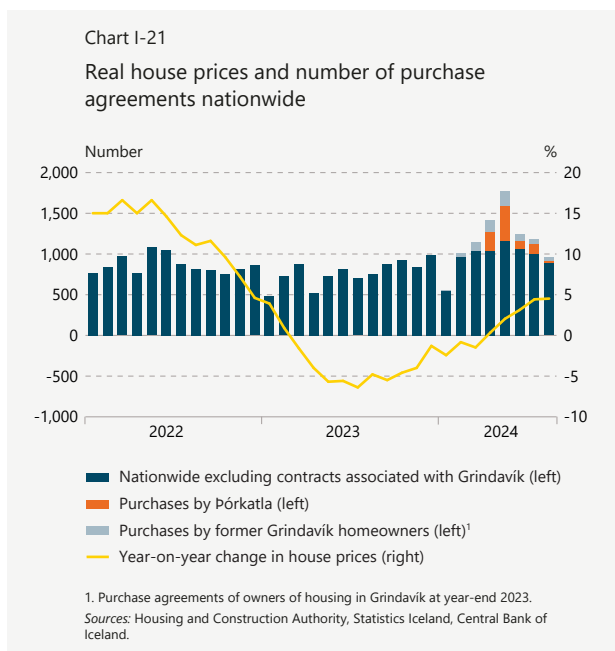
Real estate firm Þórkatla's buy-up of homes in the town of Grindavík and residents' relocation to near-lying communities have affected the housing market in recent months. Turnover soared in Q2 as a result, particularly

in the southwest of Iceland. The number of purchase agreements for homes in greater Reykjavík more than doubled year-on-year in Q2/2024, and on the Suðurnes peninsula it jumped more than sixfold. Comparing the number of purchase agreements finalised nationwide in Q2/2024 and Q2/2022, when the market was very tight, shows an increase of nearly 53%. This surge in turnover reflects increased demand, which has pushed prices higher. The nationwide house price index rose by 2% in real terms in Q2, after having fallen 0.3% in Q1. Even though the increased turnover is due in large part to purchases by former Grindavík residents, the number of first-time buyers rose 6% between H2/2023 and H1/2024, and by 50% between H1/2023 and H1/2024.

Turnover decreased considerably in July and August, falling by a fourth relative to the Q2/2024 average. House prices continued to increase at the same time. Even though the direct effects of the house purchases of former homeowners in Grindavík are tapering off, the indirect effects will probably continue in coming months. Issuance of new equity loans from the Housing and Construction Authority (HMS) has declined significantly in recent months, as applications have been closed since May. It would be more favourable if the loans were issued more evenly throughout the year instead of being granted on an irregular basis, as has been the case recently. Because house prices are high by most measures, it would be preferable if the equity loan programme were directed at a limited, predetermined group of buyers who urgently need housing assistance, in order to minimise the demand-side impact.



Increased demand for housing can also be seen in the larger share of properties selling at a premium on the asking price. In Q2/2024, about 17% of homes nationwide sold at above the asking price, up from 12% in Q1 and 11% in Q2/2023. Developments in selling price relative to asking price on the Suðurnes peninsula and in greater Reykjavík are noteworthy as well, as Grindavík residents can be expected to have sought out housing in those areas. On the Suðurnes peninsula, about 15% of homes sold at a premium in Q1, and 29% in Q2, as compared with 5% in H1/2023. Thus far in Q3, around 15% of homes on the Suðurnes peninsula have sold at above the asking price. The situation in greater Reykjavík is similar, with 17% of homes selling



at a premium in 2024 to date, as compared with 12% in 2023. A similar trend is not evident in other regions of the country.

Even though demand is strong, the number of homes advertised for sale has held relatively stable during the year. As of mid-September, newly built properties accounted for some 37% of homes advertised for sale on the market nationwide. In recent months, the ratio of new properties to total supply has been at its highest since Q4/2017, when the measurements were introduced. The supply of newly constructed homes is on a par with the peak from year-end 2019 through mid-year 2020.

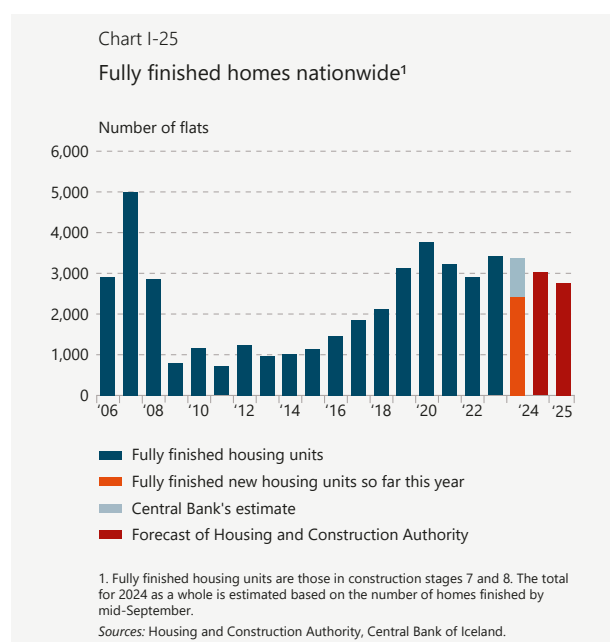
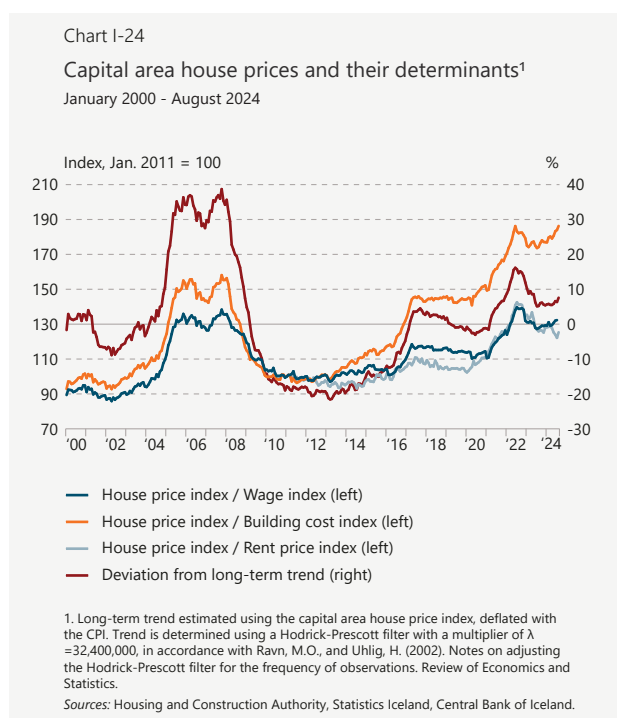
House prices still high

House prices have risen somewhat in excess of construction costs in recent months, or by 7% year-on-year at the end of August. These figures should be interpreted with caution, however, as the building cost index does not take account of the price of land or the cost of financing. Home prices rose year-on-year by 4% over and above the general wage index as of end-July, and the ratio of the house price index to the general wage index was a full 19% above its average in the twenty-first century to date. The ratio of house prices to rent prices remained largely unchanged between years at the end of August, however, as the rent price index had risen by roughly 6% in real terms over the first eight months of the year. The deviation in house prices from their long-term trend was 7.6% in August,

which represents an increase of 2.4 percentage points between years. The risk of a further correction of house prices is therefore largely unchanged, as prices remain high by most measures.

Residential construction strong despite high interest rates

In spite of high interest rates, most metrics still indicate that new construction has largely held its ground. As of mid-September, the number of fully finished homes nationwide had increased year-to-date by about 2,400. If new construction continues at the same pace for the rest of the year, it can be assumed that roughly 3,400 new homes will be finished this year, about the same as in 2023. According to the forecast issued by the HMS after its March 2024 tally of homes under construction, about 3,000 new homes will be finished this year and nearly 2,800 in 2025. Preliminary results of HMS's tally of homes under construction in September suggests only minor changes to the forecast for fully finished homes nationwide this and next year compared to the March forecast. The September tally does indicate that there is a contraction in the total number of homes under construction. Furthermore, there is a contraction in number of homes under construction that are in the same building phase between tallies, which suggests that construction companies increasingly emphasize completing current projects.¹⁰



10. The HMS' new tally and updated forecast will be published at the end of September.

Activity in the construction market as a whole continued to grow in H1/2024.¹¹ Construction industry turnover increased in real terms by 4% between years in H1/2024. It eased slightly in May and June (also in real terms) after having grown during the first four months of the year. Construction industry turnover accounted for 8.6% of total turnover in the economy during the first six months of 2024, the largest H1 share on record.¹² Furthermore, the volume of imported construction materials increased year-on-year by roughly 37% over the first seven months of 2024.¹³ The number of construction industry employees has also kept growing. In the first seven months of 2024, the average number of workers in the sector increased by 5% between years, reaching a record high in June. According to Statistics Iceland, the share of job vacancies in construction measured nearly 10% in Q2, as compared with 3% for the labour market as a whole. Since 2019, the share of job vacancies in construction has only twice been higher.

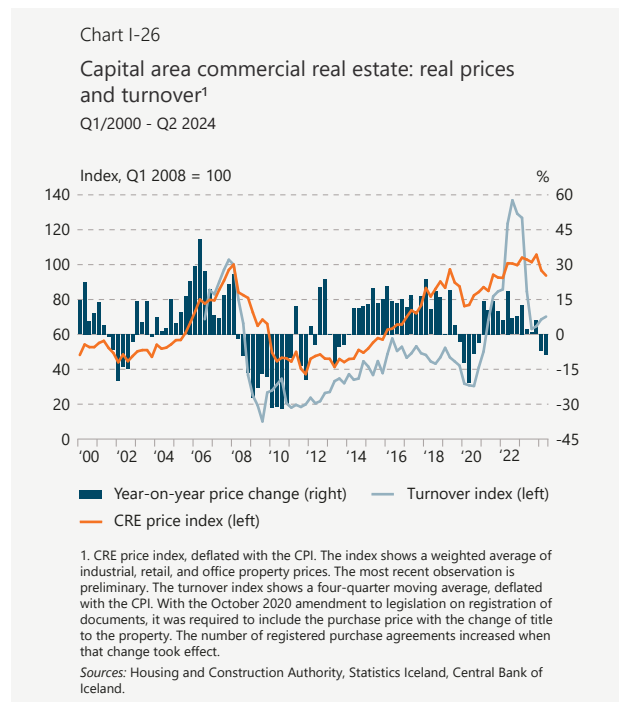
Increased lending to construction companies

The D-SIBs' lending to construction companies totalled 297 b.kr. at the end of July, after growing by almost 12% year-on-year in real terms. The increase is due in part to a slowdown in early repayment of development loans, as the number of new homes for sale was up year-on-year by 300 in July. Interest rate terms on loans to the sector have been broadly unchanged in the past twelve months, after deteriorating from mid-2021 through mid-2023. The non-performing loan (NPL) ratio on loans to construction companies has risen slightly. It measured 2.5% at the end of July, up from 1.5% a year earlier, which is marginally below the NPL ratio for companies overall.

CRE price index declines in H1

After climbing more than one-fourth from the beginning of 2021 through the end of 2023, the commercial real estate (CRE) price index, which measures the real price of commercial property in the greater Reykjavik area, fell over 11% in H1/2024.¹⁴ The index was at its long-term trend value at the end of Q2, after having been 15% above estimated long-term trend at the end

11. Includes construction of residential and commercial property, civil engineering works, and other building activity.
 12. The sum of turnover in the categories *construction of buildings* and *specialised construction activities* divided by total turnover excluding agriculture and forestry. The data extend back to 2008.
 13. The combined volume of imported timber, plywood, fibre board, reinforcing steel, and corrugated iron.
 14. The decline in the index in H1/2024 is due mainly to a drop in the average price per square metre of retail and office property. Data are highly uncertain, though, due to sparsity and divergence of measurements.



of 2023. In real terms, turnover in CRE transactions in greater Reykjavik rose by over a fourth year-on-year in the first seven months of 2024.

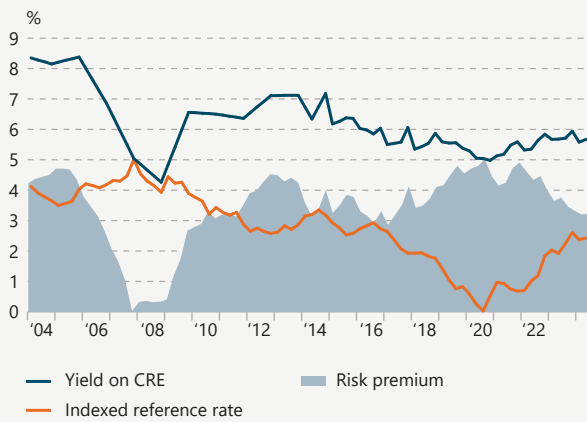
Measures of demand for commercial property suggest that it has eased in 2024 to date. Private consumption has contracted since mid-2023, and GDP growth was negative in the first two quarters of 2024. Furthermore, both job creation and growth in the number of employed persons have slowed year-to-date, although they remain positive. Rising financing costs have also played a part in dampening demand for commercial property.

The calculated risk premium on commercial property has fallen

The three large CRE firms – Eik, Heimar, and Reitir – recorded a 5.7% return on investment assets in H1/2024, broadly the same as in H1/2023. Because of the rise in yields on indexed Treasury bonds in H2/2023, the calculated risk premium on commercial property fell by 0.5 percentage points between years, to 3.2% in H1/2024. The companies' operations were highly profitable in H1, with an annualised return on equity of 19%. This increased profitability is due largely to positive valuation adjustments, as the three companies increased their investment asset values by nearly 23 b.kr. in H1, or about 4.5% of the asset valuation from the beginning of the year. The valuation increases stem largely from a higher general price level during the

Chart I-27

Yield and risk premium on commercial real estate¹
Q1/2004 - Q2/2024



1. The yield is defined as annualised net operating income divided by average investment assets over the accounting period. The indexed reference rate shows the yield on a bond with a long maturity and negligible counterparty risk. Yields are as follows: IBN 38 until Q2/2004, HFF 44 from Q3/2004 through Q2/2017, RIKS 30 from Q3/2017 through Q4/2020, RIKS 33 through Q1/2021 to Q1/2022, and RIKS 37 from Q2/2022 onwards. The risk premium is defined as the yield in excess of the reference rate.

Sources: Leading real estate firms' annual and interim financial statements, Government Debt Management, Central Bank of Iceland.

period.¹⁵ The companies' combined operating cash flow declined in real terms by 3.3% year-on-year in H1/2024.

The large CRE firms' resilience is broadly unchanged. Their combined equity ratio was just under 32% at the end of June and has been virtually unchanged in recent years. Similarly, in real terms, their total liabilities excluding deferred tax liabilities were largely unchanged year-on-year at the end of June. The companies have been actively issuing bonds in Q3 to date, however, partly due to Reitir's plans to expand its asset portfolio.

The firms' combined interest coverage ratio was 0.9 in H1/2024, but it is strongly affected by high indexation on price-indexed debt. Excluding indexation, the ratio was 2.4 for the first half of the year. Their current and cash flow ratios have risen slightly in 2024 to date, and the combined annualised current and cash flow ratio for the three companies was 1.2 at the end of Q2, up from 0.9 at the end of 2023.

Modest growth in fully finished property, but square metres under construction are up

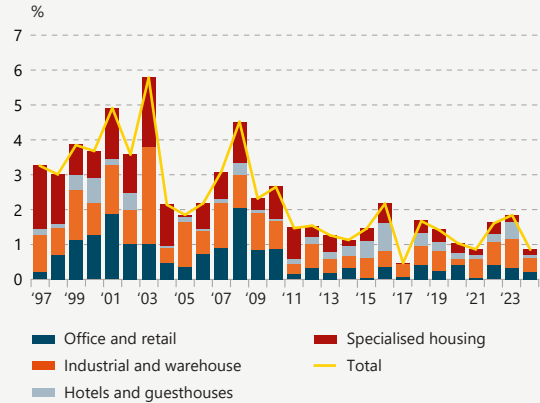
The nationwide CRE stock grew by 0.9% over the first eight months of the year. Proportionally, growth was strongest in hotel and guesthouse construction, although there was a sizeable increase in fully finished industrial and warehouse space as well. About 716,000

15. A majority of the large CRE firms' leases are price-indexed, so all else being equal, higher inflation boosts their future leasing revenues in krónur terms.

square metres are currently under construction, or about 5.3% of fully finished commercial property.¹⁶ This is the largest share of CRE under construction since year-end 2012.

Chart I-28

Growth of commercial property stock and contribution of substocks¹



1. Year-on-year change except for 2024 where the change only includes the first eight months of the year. Fully constructed commercial property nationwide; i.e., construction stages 7-8.

Sources: Housing and Construction Authority, Central Bank of Iceland.

Strong growth in lending to CRE firms

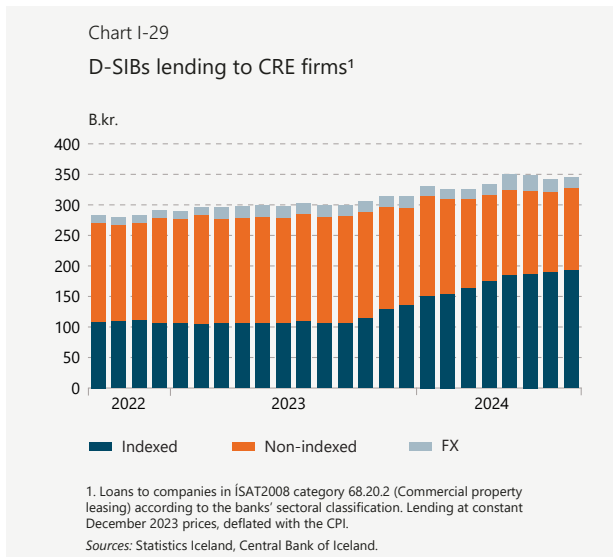
Deposit institutions' loans to CRE firms totalled about 361 b.kr. at the end of August, after increasing by nearly 16% year-on-year in real terms.¹⁷ The CRE firms have increasingly sought out indexed financing in the recent term. Indexed loans accounted for 55% of loans to the sector at the end of August, as compared with 35% a year earlier. Indexed lending rates have risen somewhat over the same period: the weighted average rate on indexed loans from the D-SIBs to CRE firms was about 5% at the end of August, an increase of 1.3 percentage points year-on-year. Interest rates on non-indexed loans to companies in the sector have been broadly unchanged over the same period. Loan quality still appears quite good despite high interest rates, as the non-performing loan (NPL) ratio on CRE loans was 2.8% at the end of July, after falling by 0.5 percentage points between years.¹⁸

CRE-related systemic risk has held broadly unchanged in 2024 to date. The CRE price index has fallen in real terms but is still in line with its long-term trend. There still appears to be some demand for

16. This includes the new Landspítali hospital, at nearly 70,000 square metres.

17. Loans to CRE firms include those classified by the banks as loans to companies in ÍSAT2008 sector 68.20.2 (Commercial property leasing).

18. The NPL ratio is calculated in terms of the claim value of stage 3 loans impairment divided by the claim value of all loans.



commercial property, and arrears among CRE firms have remained low despite a challenging interest rate environment. Growth in D-SIB lending to the sector has been strong recently, however. As economic activity eases, demand for commercial property could taper off; therefore, it is important that the banks continue to safeguard their resilience against possible financial distress among CRE firms.

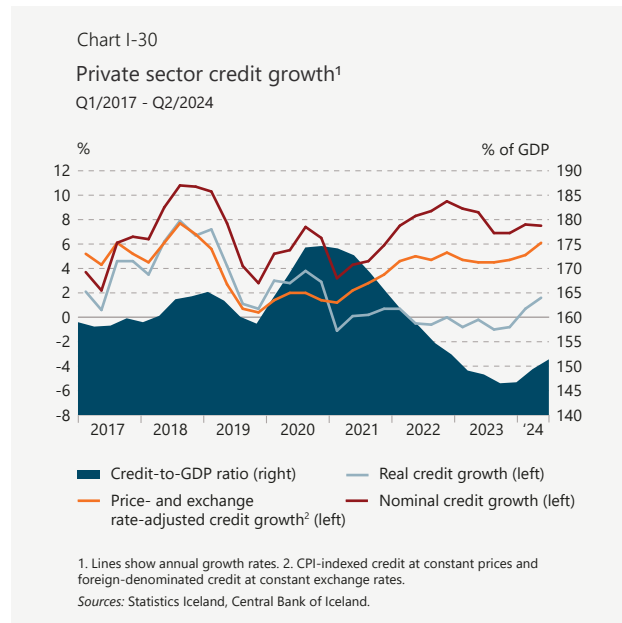
Risk associated with private sector debt

Private sector debt on the rise again¹⁹

Private sector debt turned a corner at the end of 2023. The debt-to-GDP ratio, which had been falling since 2020, was 151% at the end of Q2/2024 and had risen by 3 percentage points year-on-year. Nevertheless, it remains well below its historical average. The increase is due to a rise in real corporate debt concurrent with a slowdown in GDP growth, as GDP is estimated to have contracted by 1.9% year-on-year in H1/2024 as previously stated. At the end of Q2, private sector debt had grown by 1.6% year-on-year in real terms, and by 7.5% in nominal terms. The price- and exchange rate-adjusted growth rate was 6.1%.²⁰ Exchange rate effects were limited during the period, while inflationary effects were considerably stronger. Corporate demand for credit has increased year-to-date, which accords with the banks' responses to the Central Bank's most recent lending survey.

19. The term *private sector* refers to households and commercial enterprises, including publicly owned commercial entities. Financial companies are excluded.

20. CPI-indexed debt at constant prices and exchange rate-linked debt at constant exchange rates.



Household debt contracts in real terms

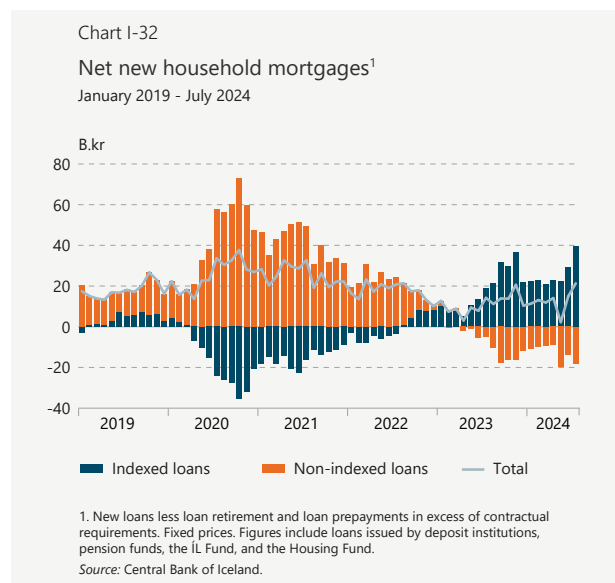
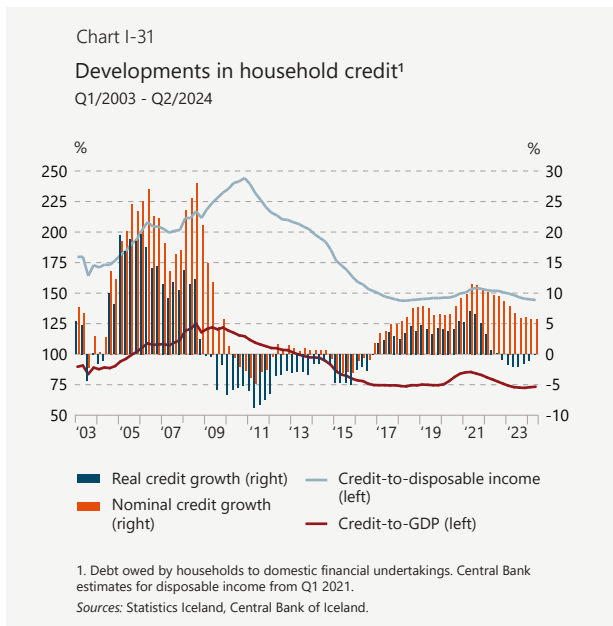
At the end of July 2024, household debt had fallen by 0.8% year-on-year in real terms but had grown by 5.5% in nominal terms. Indexation on CPI-indexed loans explains the lion's share of nominal growth, alongside an increase in household demand for indexed mortgages. The growth rate excluding indexation measures 2.1%.²¹ Household debt ratios have held broadly unchanged in the past year and are low in historical and international context. The household debt-to-GDP ratio was just over 73% at the end of Q2 and was virtually unchanged between years. The ratio of debt to disposable income also fell during the period, to slightly more than 144%.

Demand for mortgages picks up, while other loans contract

Net new lending to households totalled just over 101 b.kr. in the first seven months of the year.²² Residential mortgages accounted for nearly 89 b.kr. of that amount. This equates to a real increase of 18%, as net new lending totalled 86 b.kr. at the same time in 2023. Even so, total new lending is still somewhat below its long-term average. Increased demand for credit could reflect reduced uncertainty and stronger expectations that interest rates and inflation have peaked. Furthermore, demand for housing among Grindavík residents in the wake of the earthquakes and volcanic

21. Excluding the contribution of price indexation on indexed loans to the nominal growth rate.

22. Net new loans are defined as new loans less debt retirement and prepayments in excess of contractual requirements. Overdraft loans are excluded. At constant July 2024 prices.



eruptions on the Reykjanes peninsula have fuelled real estate market activity and household demand for credit during the year. At the same time, other household debt not backed by real estate has contracted somewhat. This indicates that some households that are refinancing their mortgages are using the scope afforded them by the past few years' equity accumulation to convert other loans to mortgage debt. The shift has not had a negative effect on households' collateral position, however, as home prices have risen over the same period. The average loan-to-value (LTV) ratio on new consumer mortgages was relatively stable early this year but has fallen marginally in the past few months, particularly for first-time buyers. The average debt service-to-income (DSTI) ratio for new consumer mortgages has been similarly stable. Nevertheless, the share of loans granted with a high DSTI ratio (over 30%) has increased year-to-date.

Indexed mortgage loans gain market share

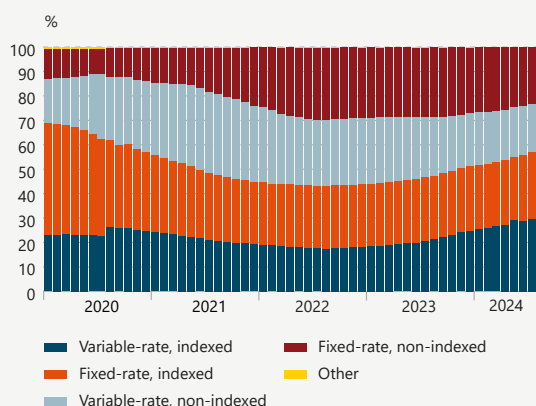
The heavier debt service burden on non-indexed mortgage loans has prompted households to seek out indexed loans in greater measure. The initial debt service burden on an indexed loan is lighter than on a non-indexed loan of the same amount. The weighted average interest rate on new non-indexed variable-rate mortgages was around 11% at the end of July, virtually the same as in September 2023. At the same time, the weighted average rate on new indexed variable-rate mortgages was 3.9% and had risen by just over a percentage point in the previous twelve months, in line with rising real interest rates. In the past few days, all three of the commercial banks have raised interest

rates on indexed mortgages. These changes are not captured in data on weighted average interest rates. Once again, indexed mortgages account for a larger share of outstanding mortgage debt than non-indexed loans do, or close to 57%. The share is lower than before the pandemic, however, when 70% of outstanding mortgages were indexed. It can be assumed that this trend will continue in the coming term, when fixed-rate clauses on non-indexed mortgages expire and interest rates are reset. At the end of July, the stock of non-indexed mortgages with fixed-rate clauses set to expire in the last five months of 2024 totalled 129 b.kr., which comes to 4.8% of outstanding household mortgages. Another 166 b.kr. in non-indexed mortgages are due for an interest rate reset in H1/2025.

Loan maturities on new mortgages grow shorter

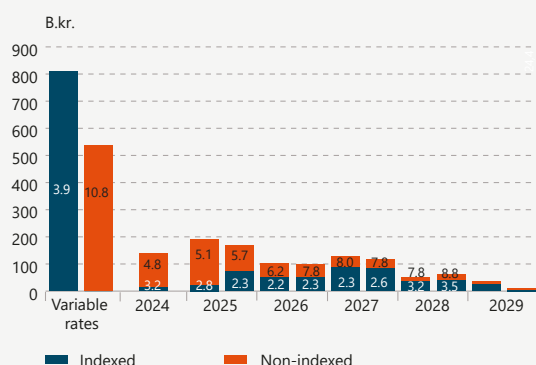
The banks have amended their lending terms for new mortgages several times in the recent past. Among other changes, they have shortened the maximum maturity on indexed mortgages in several instances. Because of this, the weighted average maturity on new mortgages has fallen steadily, from 35 years in October 2022 to 31 years in July 2024. In the recent past, maturities have generally been longer on non-indexed mortgages than on indexed ones. This year, non-indexed maturities have averaged 33 years and indexed maturities 31 years. As is noted above, the initial debt service burden is higher on non-indexed loans than on comparable indexed loans. On the other hand, the nominal principal on indexed loans rises in line with inflation, slowing down equity accumulation. Equity growth can even turn negative if the general price level rises faster than the price of the property.

Chart I-33
Consumer mortgages, by type¹
January 2020 - July 2024



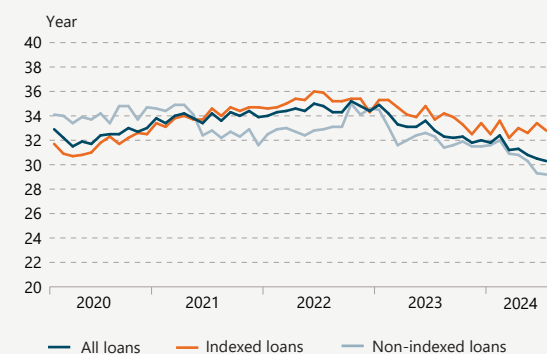
1. Proportional breakdown of consumer mortgages, by type, from the D-SIBs and the Housing and Construction Authority. Including loans from the largest pension funds from August 2020 onwards.
Source: Central Bank of Iceland.

Chart I-34
Outstanding amount of mortgage loans with an upcoming interest rate review and their weighted interest rate¹



1. The figure shows the amount of variable-rate and fixed-rate mortgage loans with a scheduled interest rate review in coming years. The data cover all consumer mortgages issued by the systemically important banks, the Housing and Construction Authority, and the largest pension funds. Based on loan balance as of end-July 2024. Figures in columns show the weighted interest rate on the loan amount in question.
Source: Central Bank of Iceland.

Chart I-35
Weighted average maturity of new mortgage loans¹
February 2020 - July 2024



1. Maturity weighted by amount
Source: Central Bank of Iceland.

Shortening indexed loan maturities can mitigate this equity risk, but debt service risk increases instead, as is discussed in a Box in *Financial Stability 2024/1* entitled “Mortgage loan types and their impact on households’ financial position”.

Corporate debt on the rise again

Total corporate debt equalled 78% of GDP at the end of Q2/2024, after increasing by 2.8 percentage points between years. Over that period, it grew by 3.1% in real terms and 9.2% in nominal terms. In price- and exchange rate-adjusted terms, however, the growth rate was 8.3%. About a third of corporate debt is in foreign currencies, but the exchange rate impact on measured growth in debt was negligible. The main drivers of growth in debt are inflation and the concurrent increase in the share of indexed loans.

Demand for credit has been strong among companies this year, and most of that demand has been met by credit institutions, although debt owed to non-residents has increased as well, particularly among fishing companies.²³ The stock of corporate loans from institutional investment funds has grown during the year, although part of the increase stems from the funds’ purchases of loans from banks or other lenders. Such loans therefore appear in statistics as new bank loans but are then transferred to the funds’ balance sheets and are measured as growth in corporate debt to institutional investment funds, while the banks’ balance sheets shrink accordingly.

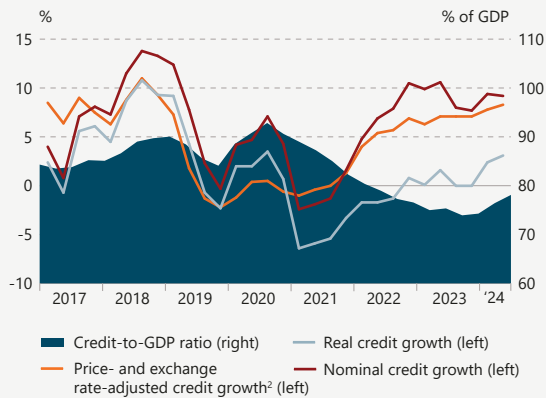
A sectoral breakdown of data on net new corporate loans shows that in recent months, growth has been strongest in lending to real estate firms.²⁴ A small share of new lending to real estate firms in the past few months stems from real estate company Þórkatla’s assumption of mortgage loans in connection with its buy-up of homes in Grindavík. There was also an increase in lending to companies in the services, construction, and fishing sectors. According to the results of the Central Bank’s lending survey, published in late August, the banks expect a marginal increase in demand for corporate loans in coming months, concurrent with an improvement in financing costs.

As households have, companies have been turning increasingly to indexed loans since mid-2023. In the first seven months of 2024, just under 42% of net new loans to companies were indexed and another 20%

23. Debt to foreign financial institutions and bond issuance in foreign markets.

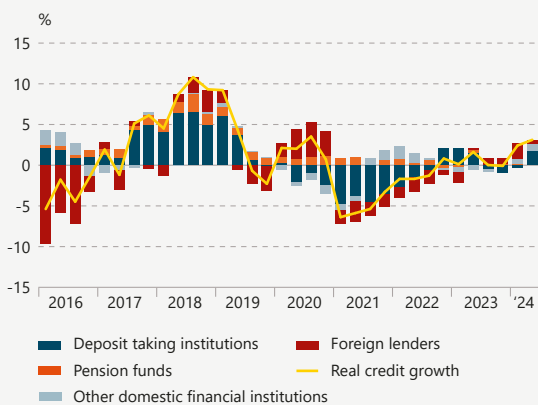
24. Data on net new loans to companies include loans from credit institutions and the Housing and Construction Authority (HMS).

Chart I-36
Corporate credit growth¹
Q1/2017 - Q2/2024



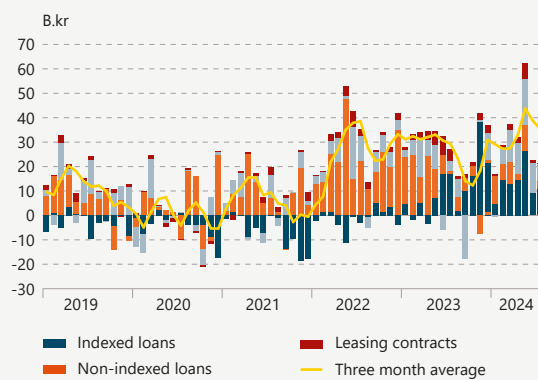
1. Lines show yearly growth rates. 2. CPI-indexed credit at constant prices and foreign-denominated credit at constant exchange rates.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-37
Non-financial corporate's real credit growth by lender¹



1. Annual real growth. Debt to domestic and foreign financial institutions and issued marketable bonds.
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-38
Net new corporate loans¹



1. Fixed prices. New loans less loan retirement and loan prepayments in excess of contractual requirements. Line shows three-month moving average. Figures include loans issued by deposit institutions, the IL Fund, and the Housing Fund.
Sources: Statistics Iceland, Central Bank of Iceland.

were non-indexed. This is a major change relative to the same time in 2023, when 21% of net new loans were indexed and 47% non-indexed. The weighted average interest rate on new indexed corporate loans rose at the end of 2023 but has fluctuated considerably in 2024 to date. As of end-July, the average rate was 4.9% and had risen by 0.6 percentage points in the previous twelve months. At the same time, the weighted average rate on new non-indexed loans lay in the 12-13% range.

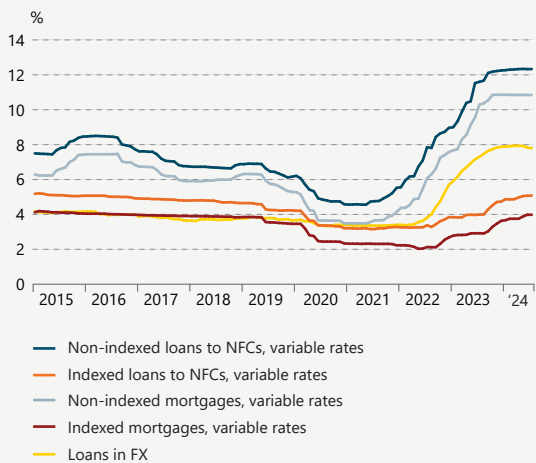
There has been a discernible increase in corporate demand for foreign-denominated financing in 2024. About 30% of net new loans issued by the banks in the first seven months of the year were in foreign currencies, up from 18% during the same period in 2023. Most of them are loans to fishing companies, although firms in the transport and shipping, manufacturing, and services sectors that are protected against exchange rate risk have also sought out foreign-denominated loans. It is important that borrowers and lenders be aware of the exchange rate risk that can develop on the balance sheets of companies whose financing, revenues, and expenditures are not in the same currency, and of the refinancing risk that such an imbalance can create.

Risk associated with households' and businesses' position

Interest rates and inflation test the resilience

Persistent inflation and high interest rates continue to test many households' and businesses' resilience. Interest rates on indexed and non-indexed loans to both groups have developed in line with the Central

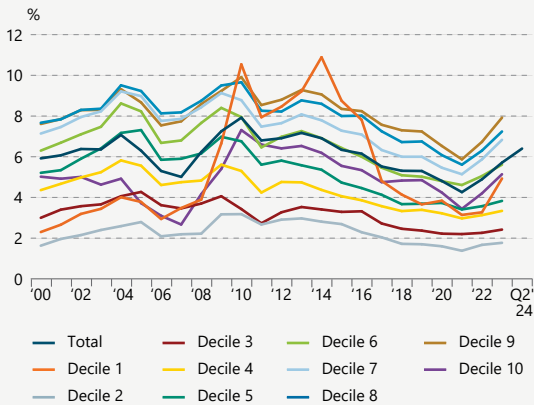
Chart I-39
Weighted average rates on D-SIBs' loans
January 2015 - July 2024



Source: Central Bank of Iceland.

Chart I-40

Mortgage interest expense as a share of households' disposable income¹



1. Household mortgage interest expense as a share of disposable income, by income deciles. Disposable income is income net of taxes. The Q2 2024 value is a Central Bank estimate derived from data on developments in disposable income taken from the Bank's QMM database and interest payment data from the credit register. Sources: Statistics Iceland, Central Bank of Iceland.

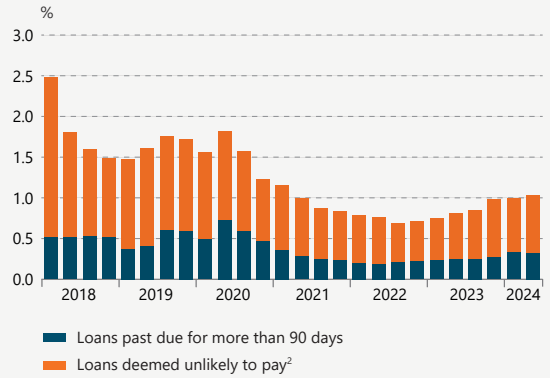
Bank's key interest rate. For instance, variable rates on non-indexed loans have held broadly unchanged this year, while indexed rates have risen in line with the increase in real rates in the bond market. Fixed rates on new non-indexed mortgages have fallen marginally this year, however, and rates on foreign-denominated loans have also tapered off slightly in recent months. Newly published figures from Statistics Iceland on household assets and liabilities, compiled from tax returns, show that the ratio of households' mortgage interest expense to households' disposable income rose markedly in 2023, especially for higher income deciles, but also in the lowest decile. According to the Central Banks' estimates, the ratio continued growing in H1 2024 and reached similar levels as in 2015.

Limited arrears on the D-SIBs' household loans

Even though interest rates are high, there are few signs that households are having difficulty paying their bank loans. The non-performing loan (NPL) ratio on the D-SIBs' loans to households, calculated according to European Banking Authority (EBA) standards, measured 1% at the end of Q2/2024 and was virtually unchanged since the turn of the year. It fell to its lowest level, 0.7%, in 2022. The NPL ratio includes loans that are in arrears by 90 days or more, as well as loans that are unlikely to be paid in full without targeted measures such as realisation of the underlying collateral. Developments in the ratio are therefore based in part on the banks' own assessments of loan quality. Loans in arrears by 90 days or more account for only 0.3% of the banks' outstanding loans to households. This ratio

Chart I-41

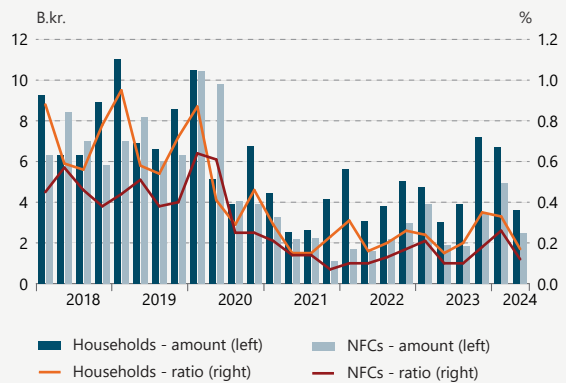
D-SIBs: Ratio of non-performing loans to households¹



1. NPL ratio calculated according to EBA standards. 2. The debtor is assessed as unlikely to pay its credit obligations in full without realisation of collateral. Source: Central Bank of Iceland.

Chart I-42

D-SIBs: Loans to households and NFCs past due >30 days <=90 days¹



1. Percentages show the ratio of loans past due over 30 days but under 90 days to total loans to each sector. Source: Central Bank of Iceland.

has increased by 0.1 percentage points in the past two years. Chart I-42 shows developments in 30- to 90-day arrears on the D-SIBs' household loans.²⁵ The figures are subject to some seasonal fluctuation, but a marginal increase can be detected in the amount in arrears by 30-90 days. As a share of the total stock of household loans, however, the increase is not as obvious. Furthermore, both the amount and the share of 30- to 90-day arrears were somewhat lower at the end of Q2/2024 than before the pandemic.

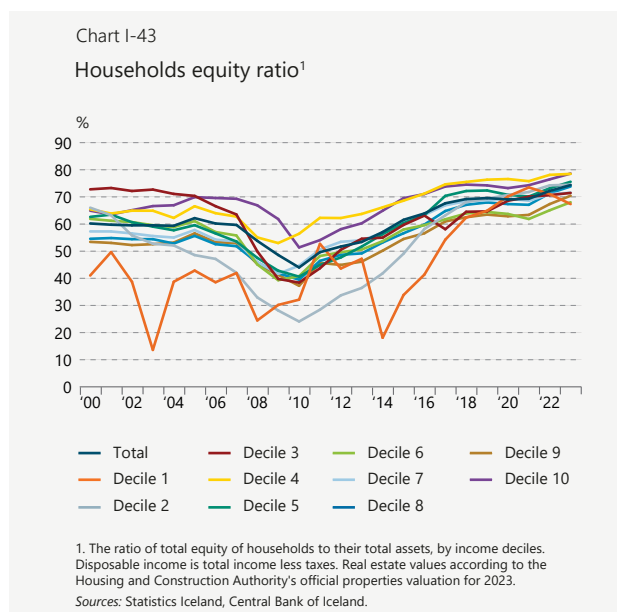
As is noted in the discussion of household debt, many households have refinanced non-indexed debt with indexed loans in order to lower their monthly debt service burden. Households have also taken advantage of other measures, such as lengthening their loan

25. Loans that are performing but past due for 30-90 days. Such loans do not fall under the EBA definition of NPLs, but they can give an indication of potential developments in the NPL ratio in the months ahead.

maturity, converting equal-installment loans to an annuity format, merging loans due to increased collateral capacity, putting a cap on interest payments, and implementing a temporary payment moratorium or loan freeze. For most groups in the labour market, wages have developed in line with the price level and have therefore supported households' debt service capacity. The labour market remains tight, and unemployment is therefore low; however, the Central Bank's most recent macroeconomic forecast, published in *Monetary Bulletin* 2024/3, assumes that seasonally adjusted unemployment will rise this year and peak at about 5% in 2025.

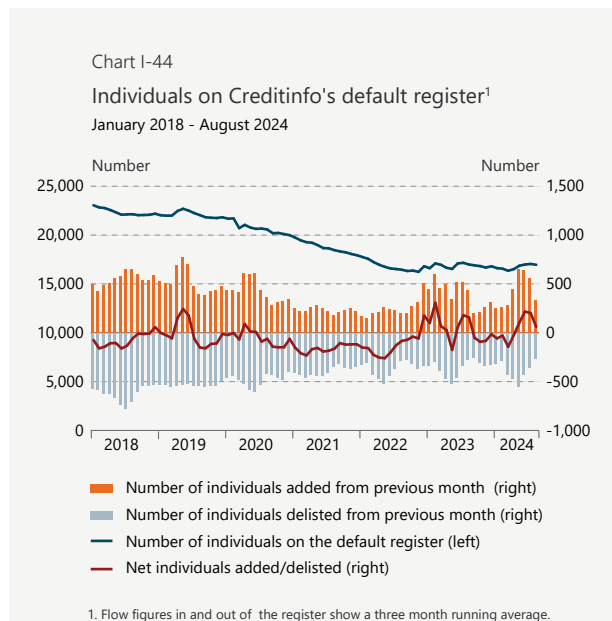
Households remain highly resilient

Statistic Iceland's tax return data show that households' equity position has strengthened significantly in recent years, and indebtedness is historically low. It has also come to light that households' overdraft loans have contracted in the past year, and indicators imply that payday loans and deferred payments have declined in 2024 to date. Homeowners that have accumulated substantial housing equity in recent years are generally well positioned. Therefore, even though financing costs have risen, a high level of resilience and the willingness to take measures to keep debt service within manageable limits have sufficed thus far to prevent an increase in arrears on households' bank loans.



Minor increase in the number of individuals on the default register

The number of individuals on the Creditinfo default register fell steeply from 2018 through year-end 2022. Since then, there has been a marginal increase. The number of individuals on the register is still small in



historical terms, not least if consideration is given to population growth in recent years. The default register is based on information on arrears that is submitted by Creditinfo subscribers. It therefore gives broader insight into developments in household arrears than is provided by information solely on bank loans.²⁶ Recent developments suggest that household arrears remain limited despite inflation and higher financing costs.

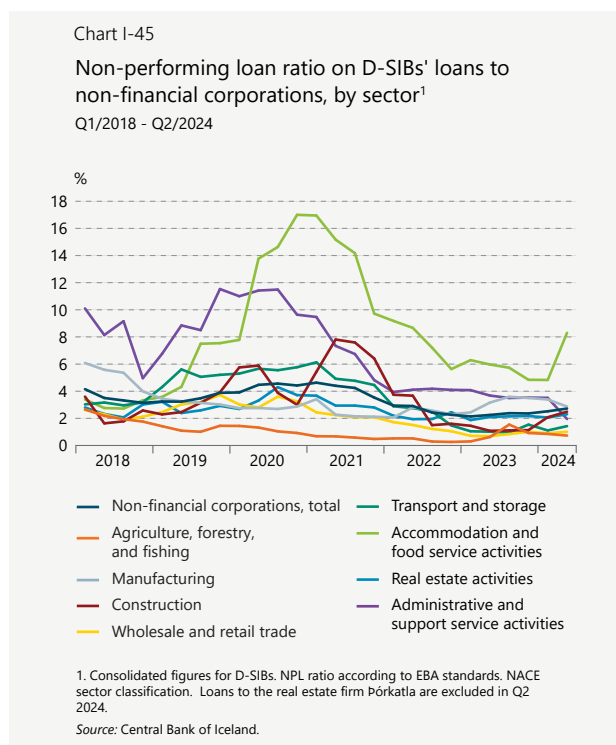
Slight increase in arrears on the D-SIBs' corporate loans

As is noted in the discussion of corporate debt, businesses have turned increasingly to indexed financing to lower their debt service. There are signs of an uptick in demand for foreign-denominated loans as well. Higher financing costs put pressure on most companies' operations. Individual companies' operational difficulties – some of which have been covered in the media recently – can however in most cases be traced to factors other than onerous financing costs. Resolving operational difficulties is often more complex than before, however, because financing costs are high.

The domestic economy is cooling. For many companies, this means reduced revenues and increased operational problems, which requires streamlining. Thus the outlook is still for an increase in corporate arrears in coming months. On the whole, however, arrears on the D-SIBs' corporate loans have risen only

26. In order to qualify for submittal to Creditinfo, a claim must be in arrears by at least 40 days. In the case of individuals, the combined principal amount of the claims must be at least 50,000 kr. Arrears among legal entities may be submitted to the register irrespective of amount. Further information on the requirements for inclusion in the register can be found on the Creditinfo website.

marginally as yet. The NPL ratio on the D-SIBs' corporate loans was 2.7% at the end of Q2.²⁷ It has risen in the past year, after bottoming out at 2.1% at the end of Q1/2023. Developments vary from one sector to another, though. The NPL ratio remains highest in the hospitality industry, at 8.3%, and increased by 3.5 percentage points between Q1 and Q2. The rise is due almost solely to a small number of large loans; therefore, it does not suggest widespread default on bank loans to the sector. Earlier in this report is a discussion of the rise in NPLs on loans to construction firms; however, the ratio is not high in historical context. In other sectors, the NPL ratio has changed less markedly, and in some cases it has fallen. As Chart I-42 shows, 30- to 90-day arrears on the D-SIBs' corporate loans have developed in a manner very similar to that for household loans. The amount in arrears by 30-90 days has risen marginally, and the ratio of past-due loans to the banks' corporate loan stock has inched upwards. Even so, the situation at the end of Q2 was far better than before the pandemic.



Firms on the default register decline in number

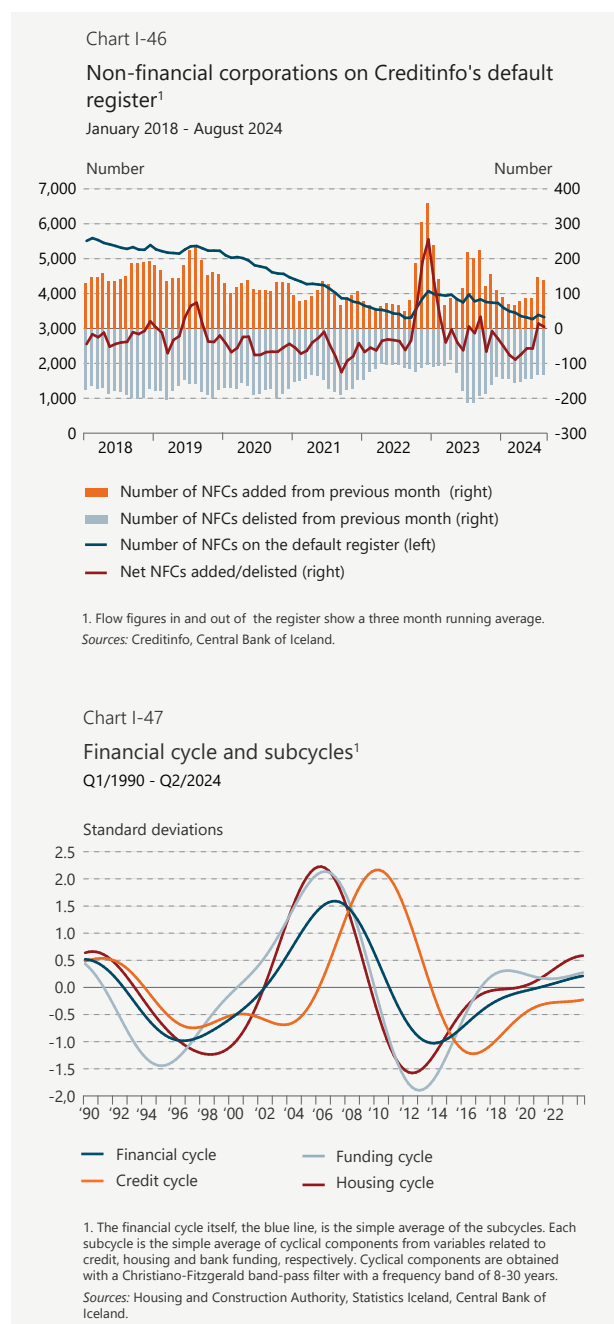
The number of companies on the Creditinfo default register has fallen by nearly 11% thus far in 2024. The decline extends to all key sectors, albeit to differing

27. In May 2024, real estate firm Þórkatla assumed a number of mortgage loans in connection with its buy-up of homes in Grindavík. The loans were then reclassified as loans to a real estate firm, but for technical reasons, the banks are required to classify them as non-performing according to EBA standards. For the purposes of this report, however, these loans are excluded, as they do not represent typical arrears.

degrees. There has been a slight increase in new entries to the register in recent months, but it is offset by a relatively steady pace of delistings. The number of firms on the default register fell sharply from the beginning of 2018 until Q4/2022, whereupon there was a marked increase for three months in a row.

The financial cycle and cyclical systemic risk

The financial cycle continues to rise gradually. Leading systemic risk indicators generally suggest that cyclical systemic risk has held steady or increased slightly in the recent past. Systemic risk associated with the housing market appears to have remained relatively high, however. In recent months, an increase in systemic risk in



the housing market can be detected, but this trend is probably due in part to stronger price pressures owing to Grindavík residents' relocation to other communities in southwest Iceland.

The method for estimating the cycle is designed to look past short-term movements and find fluctuations in underlying data covering a time span of 8-30 years. As a result, it is always important to bring expert opinion to bear on the interpretation of developments in the financial cycle.

All three sub-cycles of the financial cycle have risen in 2024 to date, although the housing cycle has clearly risen the most. The housing cycle now measures nearly 0.6 standard deviations above its long-term mean and is the sub-cycle that indicates the greatest risk. The increase has lost pace somewhat in recent quarters, however. Two components of the housing cycle have risen slightly in the past few quarters: real house prices and the ratio of house prices to building costs. These two indicators are roughly where they were in 2022, however, and both of them declined in 2023. The third component – the ratio of house prices to wages – has fallen since the end of 2023 and is broadly back to its end-2021 level.

The funding cycle has been more or less unchanged in recent quarters and is about the same as at the end of 2019. Components underlying the funding cycle – companies' foreign debt and financial institutions' non-core funding – have fallen somewhat in the past few quarters, however. The funding cycle can be expected to continue fluctuating near its long-term average, as the large banks' business models and the current regulatory framework place restrictions on financial institutions' foreign debt and non-core funding.

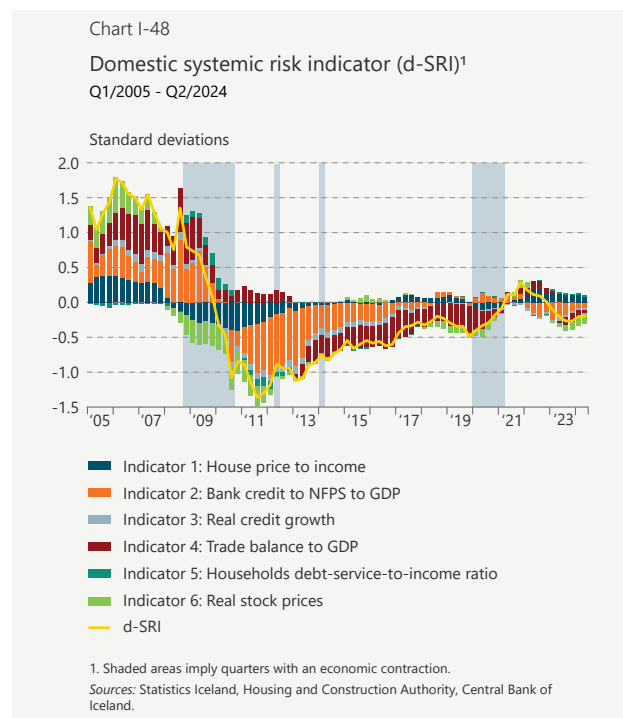
The debt cycle is still somewhat below its long-term average, or by just over 0.2 standard deviations. It appears relatively stable, which reflects long-term developments in its underlying components quite well. These components are real private sector debt, the private sector debt-to-GDP ratio, and the household debt-to-income ratio. All three have been relatively stable since 2018. Although there have been some changes in the components, the longer-term trend – which the estimate is designed to draw forth – shows limited change in recent years. To some extent, this trend suggests that efforts made in recent years to limit the risk that can arise from a spiral between growth in private sector debt and rising house prices, on the one hand, and the output gap, on the other, have been successful.

Cyclical systemic risk has increased slightly

The composite domestic systemic risk indicator (d-SRI) has risen marginally in recent months.²⁸ In general, though, it suggests that cyclical systemic risk is below its long-term average and that all of the sub-cycles are currently less than one standard deviation from their long-term averages.

The d-SRI is based on estimates of six underlying indicators that are considered to signal the development of cyclical risk and can therefore forecast financial crises in European countries. Because most of the sub-indicators that constitute the d-SRI are based on changes over a two- to three-year period, the d-SRI can provide a more timely warning of changes in cyclical risk than the financial cycle can, as the financial cycle is designed to look past short-term movements.

The main changes in developments in cyclical risk in H1/2024 can be traced to two sub-indicators that have moved in divergent directions as regards risk. First of all, the three-year change in the ratio of house prices to income (sub-indicator 1) has fallen somewhat and is now less than half a standard deviation from its long-term value, whereas at the turn of the year, it was above the long-term value by nearly 0.6 standard deviations. This represents a significant change from mid-2022, when it was 1.1 standard deviations above the long-term value. Second, the ratio of bank credit to GDP



28. The d-SRI is discussed in greater detail here: "Anticipating the bust: a new cyclical systemic risk indicator to assess the likelihood and severity of financial crises". ECB Occasional Paper Series No. 219.

(sub-indicator 2) has risen somewhat. Nevertheless, it continues to suggest that bank lending to private sector borrowers is below its long-term average. This ratio was below the mean by 0.3 and 0.2 standard deviations, respectively, at the end of 2023 and in mid-2024, whereas it was 0.6 standard deviations below the mean in mid-2023. Because this sub-indicator weighs heaviest in the d-SRI, relatively minor changes in it can have a significant effect. Other sub-indicators have changed less markedly in 2024. It is worth mentioning, though, that the current account-to-GDP ratio has fallen, which leads to a higher estimate of cyclical systemic risk. According to the d-SRI, a current account surplus mitigates cyclical systemic risk.

The credit-to-GDP ratio and the buffer guide

The ratio of private sector credit to GDP rose somewhat in the first two quarters of 2024, or from just under 147% to slightly more than 151%. In real terms, private sector credit increased by 1.5% over this period, while GDP contracted 3% at the same time. The rise in the ratio is therefore due more to the contraction in the economy than to increased debt accumulation in the private sector. For comparison, the credit-to-GDP ratio was just under 159% at the end of 2019. It has moved closer to its long-term trend, and the deviation from trend is now negative by 6.8 percentage points, owing both to a rise in the ratio itself and a decline in the trend. Because the gap remains negative, the European Systemic Risk Board (ESRB) buffer guide for Iceland is still 0%.

According to Article 85(a) of the Act on Financial Undertakings, no. 161/2002, the countercyclical capital buffer (CCyB) shall be set with respect to the credit-to-

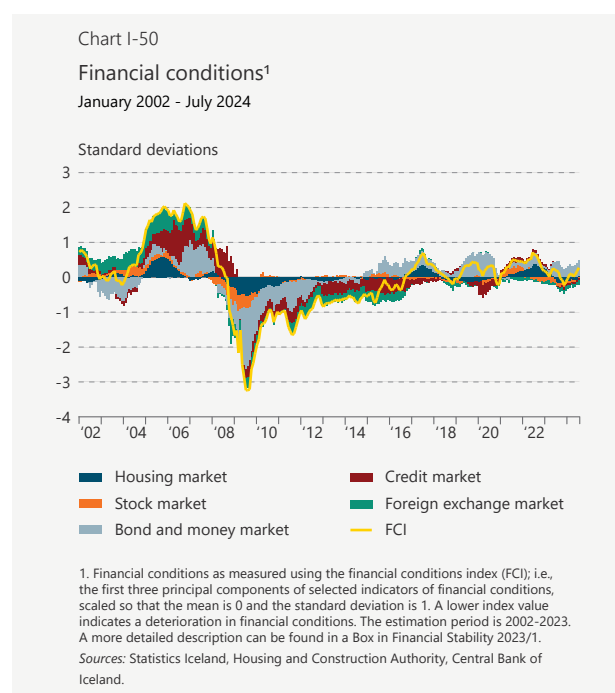
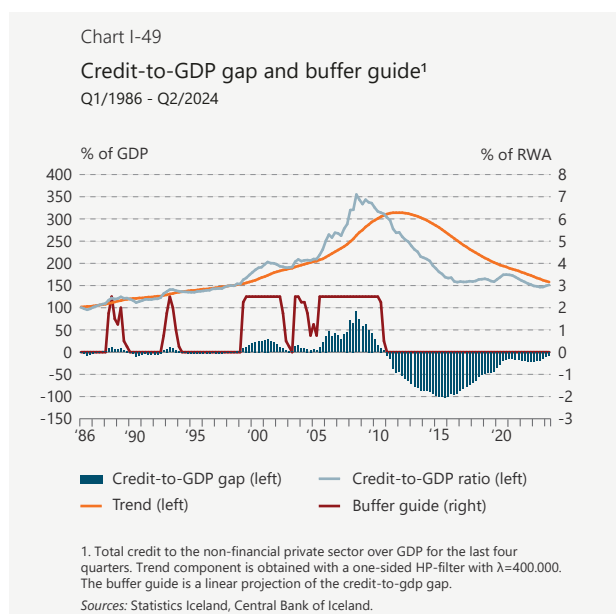
GDP gap and the Basel buffer guide. However, since the CCyB was implemented by law in Iceland, the buffer guide has not been emphasised strongly, as it has not been considered to give an accurate view of cyclical risk in the wake of the 2008 financial crisis.

Despite the shortcomings in the indicator's ability to measure excessive credit growth in Iceland – shortcomings that are due mainly to the pre-crisis credit bubble and post-crisis deleveraging – historical data and international research show that it can nevertheless be useful in estimating excessive growth in credit.

Financial conditions are improving

The main objective of the financial conditions index is to measure households' and businesses' access to funding and assess whether conditions for financial intermediation are favourable or challenging. The financial conditions index has risen somewhat since the publication of the last issue of *Financial Stability*, and it now suggests that financial conditions are slightly accommodative. It implies that conditions have improved this year in all markets that the index captures, apart from the credit and foreign exchange markets.

The part of the index that pertains to the housing market has risen somewhat in 2024 to date. In July, it was positive for the first time since May 2023. The deviation from its long-term average is very small, however. Financial conditions are also very close to their long-term average in the equity securities and credit markets. In the foreign exchange market, conditions have fluctuated this year, owing to changes in the



long-term interest rate spread between Iceland and Germany and to the depreciation of the króna in recent months. The conclusion is that financial conditions in the foreign exchange market were slightly tight in July, and about the same as at the turn of the year. Financial conditions in the credit market have remained slightly tight all year, as growth in households' and businesses' debt has been relatively moderate during the period.

The index implies that conditions in the bond and money market have been relatively accommodative in the recent term. Among the sub-indicators for assessing financial conditions in the bond and money market is the spread between ten-year and two-year government bonds, both indexed and non-indexed. The spread has been negative in the recent past, which shows in a rise in the financial conditions index. The impact of this on the estimation of financial conditions is discussed in *Financial Stability 2023/2*, and other versions of the indicator are examined as well.

The outlook

Indications suggest that the financial cycle has peaked for the present and that cyclical systemic risk has tapered off in the recent term. Systemic risk associated with the housing market still appears to be considerable, however. Short-term real interest rates have risen in the recent past, and it is uncertain whether they will decline in coming months. This should ease the upward financial cycle of recent years still further and could even cause it to turn downwards in coming quarters.

The situation is highly uncertain, however. Particularly pronounced is uncertainty about the housing market, which has remained quite strong despite high interest rates and tighter borrower-based measures, especially since mid-2023. Grindavík residents' purchases of new homes in place of those they had to evacuate because of the seismic activity in the area have exacerbated the tension in the market. Turnover is up sharply this year, and homebuyers more commonly pay a premium on the asking price. As a result, price hikes have been clearly visible in recent months. In sum, it can be argued that systemic risk in the housing market is more likely to remain high than it is to decline.

Housing supply, housing demand, and financial stability

Demand for housing in greater Reykjavík has surged in the past decade. There are a number of underlying causes, but chief among them is a rise in household's average disposable income and booming growth in labour-intensive sectors - growth that has been addressed largely with inward migration of working-age people. Demographic factors such as an ageing population and a changed family structure make a difference as well, as more people live alone and more are childless than before. These trends stimulate demand, assuming a given population level.

The residential housing stock in the capital area has not grown commensurably over the same period, however. House prices are therefore high at present, and housing costs account for a large share of households' average expenses, especially for low-income families. This has been particularly the case in the recent term, when inflation and a tight monetary stance have put pressure on household finances.

Housing problems of this type are not unique to Iceland, however; they are currently under discussion in many countries.¹ Nor are high house prices and onerous housing costs a new problem in historical context. Solutions to problems like these have evolved in recent decades, though. Before the financial crisis of 2007-2009, it was common to provide substantial housing assistance to the general public, either directly from the Government or indirectly, through the credit system. In some instances, this policy was expansionary, fostering even more house price inflation, higher debt levels, and financial instability.² In the recent past, however, emphasis has been placed on supporting and facilitating residential construction so as to meet growing demand with an increase in supply. This policy is considered more consistent with responsible economic policy, but nevertheless, it can counteract such

policy and can undermine financial stability, if pursued too aggressively.³

One harmful cycle can cause the next

The last financial crisis severely weakened the financial position of Iceland's construction industry, when housing demand collapsed at a time when the supply of new construction was at a historical peak. The then-recent growth in the sector and the surge in supply were based in part on substantial debt accumulation. After the Icelandic banks failed, falling house prices and construction companies' limited access to credit caused widespread financial distress in the construction sector, which contracted along with its output potential. This led to a protracted lull in residential construction from 2009 onwards, while the industry was recovering.

These aftereffects of the financial crisis provide an accurate portrayal of the problems facing real estate markets in general. Supply is far more inelastic than demand. When housing demand contracts suddenly, there is the risk that a large unsold stock of newly built property will remain – property that must be sold as soon as possible, particularly when heavily leveraged construction and development companies are involved. These companies, together with other leveraged property owners needing to sell, will kick off a spate of price cuts by underbidding, thereby calling forth a downturn in the market.

When the construction process is disrupted in this way, it can take a long time for it to return to normal. First of all, it can take several years to sell the stock of unsold property and then finish incomplete projects. As a result, sometimes there is no other option than to downsize. Second, it can take a long time to put the companies' finances to rights, restore their creditworthiness, and rehire workers. For example, as of mid-2012, nearly four years after the onset of the financial crisis, 80% of deposit institutions' loans to construction companies had been restructured or were still non-performing.⁴ Over the same period, the number of employees

1. See, for example, Saiz, A. (2023). *The Global Housing Affordability Crisis: Policy Options and Strategies*. MIT Center for Real Estate Research Paper No. 23/01.

2. Housing assistance via the credit system was a major cause of the sub-prime crisis in the US. More information on this can be found, for instance, in Rajan, R. (2011). *Fault Lines: How Hidden Fractures Still Threaten the World Economy*. Princeton University Press.

3. An example of this is Spanish economy in the 2000s. A strong wave of inward migration was addressed with a surge in residential construction, resulting in a nearly threefold increase in the supply of new housing between 1998 and 2006. When the global financial crisis struck, Spain was among the hardest hit in the EU, apart from Greece. This was due mainly to severely affected construction sector and a plunge in home prices. See, for example, Gonzalez, L. and Ortega, F. (2013). *Immigration and Housing Booms. Evidence from Spain*. Journal of Regional Science, Vol. 53, Issue 1, pp. 37-59.

4. See *Financial Stability* 2012/1, p. 32.

in the building and construction sector declined by over 7,000; i.e., nearly by half.⁵

Naturally, housing supply takes longer than housing demand to recover from a shock, as the incentive to build is created only after demand has picked up and market prices can be expected to overtake building costs before project completion. Thus, at the beginning of a new upswing, supply often lags behind demand, so prices can rise above what can be considered a likely equilibrium level. This creates a strong incentive to build property and address the shortage. The pattern comes full circle if the next major demand shock hits precisely when supply is strong. There is much to be gained in mitigating volatility of this type. It can be argued that these fluctuations are the primary cause of housing problems in many countries.

Central Bank policy aims at equilibrium

For the reasons described above, an important macroprudential policy task in recent years has been to work against imbalances and overleveraging in the housing market: to cool down demand when warranted and mitigate the impact of severe economic shocks on the housing market when necessary – as was the case during the pandemic.

The Central Bank first set rules on borrower-based measures in 2017, after a spike in house prices. From then until the beginning of 2020, the greater Reykjavík housing market moved towards equilibrium without large fluctuations, and supply increased. From 2014 through 2017, the number of people employed in building and construction rose by nearly 60%, and by mid-2019 the supply of new housing was better aligned with demand. Furthermore, economic activity started to ease in 2019. All of this was reflected in a longer average time-to-sale and a rise in the number of finished but unsold properties, which lasted until 2020. From mid-2017 until 2020, house prices increased at a leisurely pace, broadly in proportion with the building cost index, general wage index, and rent price index, and at a rate below the thirty-year average. At the end of the period, real house prices in greater Reykjavík were only marginally above long-term trend. The average hypothecation level for residential housing had been stable for some time. Furthermore, the share of young people living in their parents' home declined in 2017, after rising steadily since 2009, and did not start climbing again until 2020.⁶

5. According to data on the Statistics Iceland website, in a table entitled "Number of employed persons by economic activity, by month, gender, age, and background 2008-2024." See [her](#).

6. According to data on the Statistics Iceland website, in a table entitled "Young people living with parents, by gender, age, and domicile 2004-2021." See [here](#).

The next setback came in the form of the COVID-19 pandemic. After it struck, interest rates were slashed in order to support demand, including demand for housing. As the pandemic progressed, rules on borrower-based measures were tightened, as prices had soared and household debt had grown substantially. At the same time, supply chain disruptions – first because of the pandemic and then, from February 2022 onwards, due to Russia's invasion of Ukraine – pushed costs upwards and exacerbated uncertainty for builders, which in some instances slowed the pace of residential development. Interest rates were then increased when inflation picked up, and then raised more as the output gap in the economy widened. Interest rate hikes and tighter borrower-based measures pushed real house prices downwards. They are now 2½% lower than in mid-2022 and about 10 percentage points closer to trend.

In this way, the Central Bank has sought to curtail the build-up of systemic risk and reduce the likelihood of severe shocks in the housing market. Households' financial position is generally sound, and against all expectations, housing has been found for a population that is larger than before. Nevertheless, many are in a tight position, and house prices are prohibitively high for some.

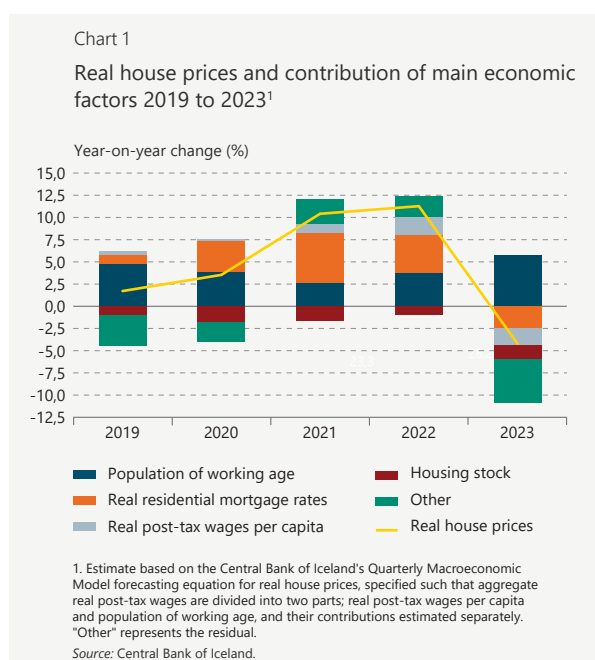
Discussion of housing need is understandable

Discussion of the housing shortage has centred on the concept of housing need rather than housing demand in the recent term. This is understandable, as the house price inflation of the past few years has been driven more by population growth than by rising real wages per capita. Thus the emphasis on need is probably due to the fact that in the past decade, Iceland's population growth rate has been the strongest in the OECD. Such large-scale immigration is an important driver of high house prices.

Statistical analysis sheds light on this. Developments in real house prices can be illustrated with an equation estimating the price impact of developments in population and after-tax real wages per capita, together with other factors. Such an estimation suggests that in 2023, falling real wages per capita fostered a decline in real house prices nationwide, while the upward impact of population growth was stronger. In Chart 1, which shows the effects of population growth on house prices, it can be seen that for years, population growth has had a much stronger impact than real wage growth. In 2019-2023, real house prices rose 22% nationwide. The analysis suggests that of this increase, 17 percentage points are due to population growth and only 1.5 percentage points stem from growth in after-tax real wages per capita. More precisely, the very modest positive

price effect of rising real after-tax wages per capita from 2019 to 2022 was largely reversed during the course of last year. Nevertheless, it should be borne in mind that a part of this population growth can be traced to the surge in domestic demand for labour; therefore it is a response to the same demand shock that causes house prices to rise.⁷

Furthermore, Chart 1 shows that low real interest rates had a strong upward impact on real house prices in 2020–2022. This turned around in 2023, when rising real interest rates pushed prices downwards. It can also be seen that the factor labelled “other” had a fairly strong downward impact on real prices in 2023. This probably stems from items not captured by the equation, such as the delayed effect of tighter macroprudential policy instruments and the interaction between them and higher interest rates.



Demand must be considered as well

The estimate of the housing need is based on demographic and population data over a specified reference period. If the calculated housing need exceeds new construction during that period, there is considered to be a housing shortage that must be addressed later. There are three drawbacks to this approach.

First, this approach ignores the fact that developments in population, like other determinants of housing

7. It would be necessary to break down the rise in population so as to identify the portion not resulting from increased labour demand, and include that portion in the estimated equation. This would make it possible to isolate the part of house price inflation that stems from population growth.

demand, are dependent on economic developments and economic policy. Immigration and emigration are the most difficult parts of population demographics to forecast. Chart 2 shows that when there is a larger output gap in Iceland than in trading partner countries, people of working age are more likely to move to Iceland than to leave. Economic policy aimed at macroeconomic equilibrium therefore curbs population growth. During expansionary periods, a balanced housing market cannot be achieved solely by increasing supply; it is also necessary to temper demand.

Unfortunately, tight monetary policy also has a temporary dampening effect on residential investment and other measures of supply, such as the number of housing starts. On the whole, economic analysis indicates that raising central bank interest rates has a stronger and speedier effect on demand than on supply, as it is usually inefficient from a cost perspective to slow down or halt construction projects already underway. All else being equal, the net impact is generally that property prices fall over a three- to five-year period after the interest rate hike.^{8,9}

Estimates depend on dubious assumptions

Another flaw in the concept of housing need is that it is difficult to pinpoint a period in time when the average housing type is considered to have been in line with needs. Calculating a housing shortage therefore depends on assumptions and on the reference period selected. This can be explained with examples.

In 2004, the Icelandic economy was close to equilibrium. If the end of that year is selected as the beginning of the calculation period, the result is that residential construction did not keep pace with the housing need in 2005–2007. Such was the growth rate of the population. The housing need approach suggests that even more property should have been built in 2005–2007 in order to meet that increased need. However, population growth during these years reflected large-scale but temporary development

8. See, for example, See Ásgeir Danielsson et al. (2001). QMM: A quarterly macroeconomic model of the Icelandic economy – Version 4.0. Central Bank of Iceland *Working Paper* no. 82.

9. Established economic theory states that monetary policy does not have a long-term impact on real variables. There is less consensus about the medium-term effect on housing supply and demand, however. As a result, it can be deemed appropriate to encourage residential construction when interest rates are high; for instance, by increasing the supply of building lots or with other measures that reduce costs, if the need exists and circumstances allow. The need for such an approach depends, among other things, on whether the selling price of new construction is likely to remain above building costs over the period in question, after adjusting for the cost of financing. Furthermore, concessions made to the construction industry should be structured so that they do not prevent the central bank from attaining its inflation target.

projects and, in retrospect, unsustainable and debt-driven expansion. Tighter economic policy would therefore have been appropriate instead of incentives for residential construction. Around the time of the financial crisis, demand plummeted and a glut of supply developed, causing real house prices to fall by 35%.¹⁰

The year 2011 provides another example. At that time, the tourism boom began, the economy started growing again after the financial crisis, and the depopulation of the crisis years started to reverse. The problem with using this as a reference year is that the capital area housing market has seldom been as weak as at the beginning of 2011, when prices were approximately 20% below long-term trend. Households' real disposable income had fallen by 26% in 2009-2010, household liquidity was tight, and access to credit was limited. Financial restructuring of non-performing mortgage loans was still ongoing.¹¹ The excess supply that had developed a few years earlier hardly budged.¹² Consequently, it would be dubious to assert that a housing shortage developed in 2011, even though residential construction did not keep pace with population growth. On the other hand, the oversupply of newly built homes was gradually whittled down over the years to follow.

Based on the discussion above, it would probably be more appropriate to use 2015 as a reference year for calculations of this type, as the slack in the Icelandic economy closed then and a positive output gap opened up for the first time since the financial crisis. At that point, the shortfall, based on certain given assumptions, was nearly 5,200 homes. It would even be possible to use a year between 2017 and 2019 as the starting point for such calculations. If this is done, the calculated housing shortage in the capital area at the end of 2023, ranges between 750 and 3,100 homes. These results primarily shed light on how strongly the calculated housing need depends on which reference period is selected.

Demand is a more useful criterion than calculated need

Third, it is problematic to build housing in accordance with a calculated housing need if that need exceeds demand by

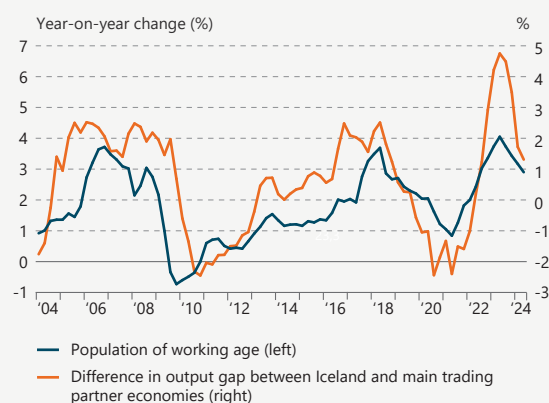
10. It is stated in Monetary Bulletin 2009/1 that in early 2009, over 3,600 homes were under construction in greater Reykjavík, and 4,300 lots were ready for construction. In that report, it is suggested that an oversupply of unsold homes and unused lots would dampen residential investment thereafter.

11. In Financial Stability 2011/2, for instance, it is stated that in H1/2011, the Housing Financing Fund appropriated 388 homes and sold 80.

12. According to Monetary Bulletin 2011/1, there was a large number of unsold new properties that were either finished or in earlier stages of construction. In that report, it was assumed that residential investment would rebound that year, particularly because developers were focusing on finishing half-built homes.

a large margin. A policy of producing housing in excess of demand in a short period of time could upend the construction sector and the housing market alike, greatly to the detriment of households, the overall economy, and financial stability. When all is said and done, it is the analysis of supply and demand rather than housing need that is best suited to promote a balanced housing market.

Chart 2
Correlation between the business cycle and population growth¹
Q1/2004 - Q2/2024



1. People of working age according to Statistics Iceland's job market survey. The difference in the output gap between Iceland and its main trading partners is an estimate of the Central Bank of Iceland.
Sources: Statistics Iceland, Central Bank of Iceland.

Is residential investment weaker than could be expected?

One can attempt to estimate whether residential investment in recent years has been in accordance with the incentives created by demand growth and higher prices. Such an estimate can be based, for instance, on a two-equation model. The first equation describes house prices as a function of demand-side factors such as households' net housing wealth, the ratio of housing wealth to disposable income, the real interest rate, and population growth. The second equation describes residential investment as a function of the ratio of house prices to building costs, among other things.¹³

Such a model assumes that when house prices rise faster than building costs, an expectation of profit is created for the contractor. This expectation then leads to an increase in residential investment and housing supply. Over time, the increase in supply pushes house prices back up towards the level of building costs. Based on the

13. The method is the same as that used by Lúdvík Eliasson (2017). Icelandic boom and bust: immigration and the housing market, Housing Studies, Vol. 32, Issue 1, pp. 35-59. The model is estimated using yearly data covering the period from 1972 through 2023.

parameter estimation in the model, an examination can be made of whether residential investment at any given time was in line with demand pressures and building costs, or whether there was a substantial gap between them. Such a gap could stem from disruptions that the model does not capture.

First of all, an analysis like this one indicates that the impact of population growth on house prices in recent years has been similar to that described above; in other words, it has had a strong upward impact on prices.

Second, the analysis suggests that residential investment in 2009-2015 was weaker than could have been expected based on, for instance, demand pressures and building costs. It is therefore appropriate to assume that Icelanders' housing options gradually grew more limited over this period. For 2016-2018, the analysis implies that residential investment was broadly as could have been expected, but perhaps not strong enough to satisfy the previous years' surge in demand in a short period of time. In 2019, however, investment was very strong, and considerably more than could have been expected based on the parameter estimation in the model. This can be interpreted to mean that the construction industry would have been on well its way towards meeting the increase in demand from the years beforehand – if it had been able to operate more or less undisturbed.

But when the pandemic struck, residential investment suffered, which was also more or less in line with what could have been expected based on the parameter estimation in the model. It was not abnormally weak, but neither was it sufficient to absorb the previous years' surge in demand in a short period of time. For 2023, the model indicates that residential investment was once again stronger than might have been expected, but not at a level like that seen in 2019. The pandemic, the war in Ukraine, and economic

instability have therefore had a protracted effect on supply, but not a crippling one.¹⁴

Equilibrium and stability are part of the solution

This method indicates that the housing market is gradually rebalancing and that the supply side is neither inactive nor seriously underactive. Although both monetary and macroprudential policies have been tight in the recent term, there are few signs that residential construction has sagged significantly, as is discussed in Chapter I and as can clearly be seen throughout the capital area at present. In the opinion of many, nonetheless, the market is adjusting at an uncomfortably slow pace, which affects various income groups to differing degrees.

The discussion above shows, however, that the Central Bank's tight policy stance in the recent term will not exacerbate the housing problem in the long run. The policy stance is an element in closing the gap between supply and demand by tempering demand in the short run and thereby curbing house price inflation. By contributing to macroeconomic equilibrium and working against excessive private sector indebtedness, it reduces the likelihood of severe shocks and serious disruption of construction sector activities.

In other respects, it is the role of Government authorities to design a housing policy that can ease the way for the construction industry and support those households most in need without overstimulating aggregate demand in the market.

14. The drawback with this method is that the measure of building costs captures developments in land prices only to a limited degree, and it does not address developments in construction companies' financing costs at all. Also, an alternative estimate was made, which provides for a rise in land prices well in excess of the building cost index over the period from 2010 through 2014. This change in assumptions has a limited impact on the results. If it were possible to account fully for developments in construction companies' financing costs over the entire period, the analysis would probably show a stronger negative impact on residential investment during the period after the onset of the pandemic.

The financial system



Financial system assets equalled 396% of GDP at the end of Q2/2024, after growing by 15 percentage points since the turn of the year. In nominal terms, assets totalled 17,076 b.kr. at the end of June, an increase of 4.8% since the beginning of the year, whereas in real terms they increased by 1.1%, while GDP contracted. Deposit institutions' assets accounted for a third of total financial system assets at the end of June. This ratio has held broadly unchanged for more than a decade. In nominal terms, deposit institutions' assets increased by 5% between mid-2023 and mid-2024, to 5,589 b.kr. at the end of June 2024.¹ It is noteworthy

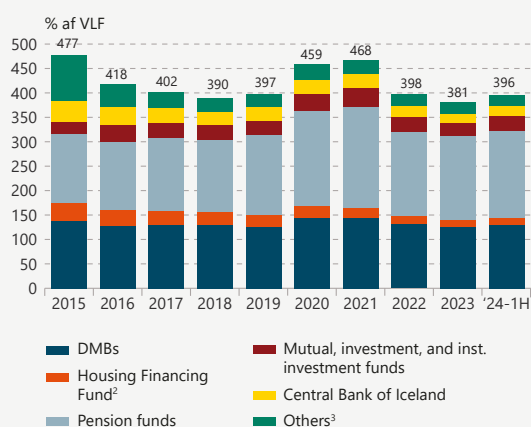
that while the four commercial banks' assets increased by 4.8% from mid-2023 to mid-2024, the savings banks' assets grew over the same period by 38%, to nearly 57 b.kr. at the end of June 2024. This surge in savings banks' assets is due primarily to Indó savings bank, which started operation in 2022. Its assets totalled 19 b.kr. at the end of June 2024, an increase of 12.5 b.kr. year-on-year.

The pension funds own nearly 45% of total assets, an increase of almost 2 percentage points year-on-year. They have steadily increased their share of financial system assets over the past decade, from 30% at the end of 2013 to the aforementioned 45%. Their share of total financial system assets can be expected to keep growing in coming years, as inflows into the funds are well in excess of paid-out pension benefits. Pension fund assets totalled 7,722 b.kr. at the end of June 2024, an increase of 11% over the preceding twelve months.

Profitability

The domestic systemically important banks (D-SIB) recorded a profit of nearly 37 b.kr. in H1/2024, as compared with a profit of 40 b.kr. for the same period in 2023. Their return on equity declined by 1.7 percentage points year-on-year in H1, to 10.3%. The reduction in profit during the half was due mainly to increased impairment, which in turn is due to the repercussions of the seismic activity in the Grindavík area. There were few changes in specific revenue and expense items relative to H1/2023, but since the pandemic, the banks' net interest income has surged and both financial income and impairment have fluctuated widely.

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



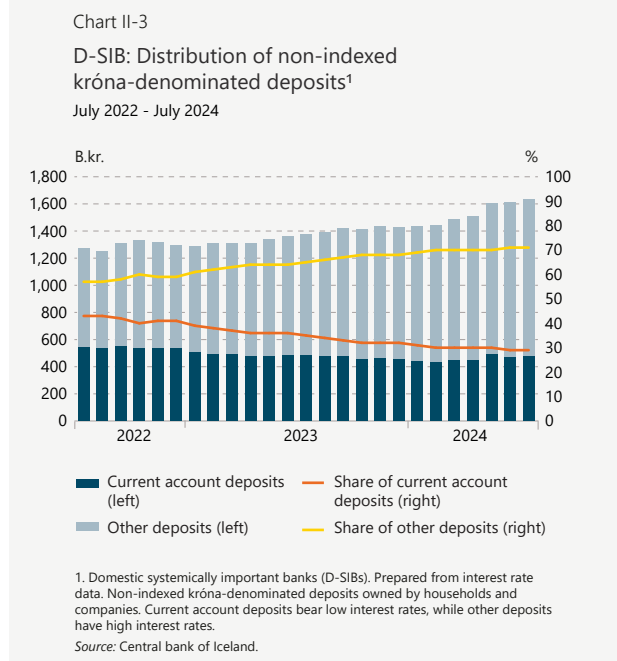
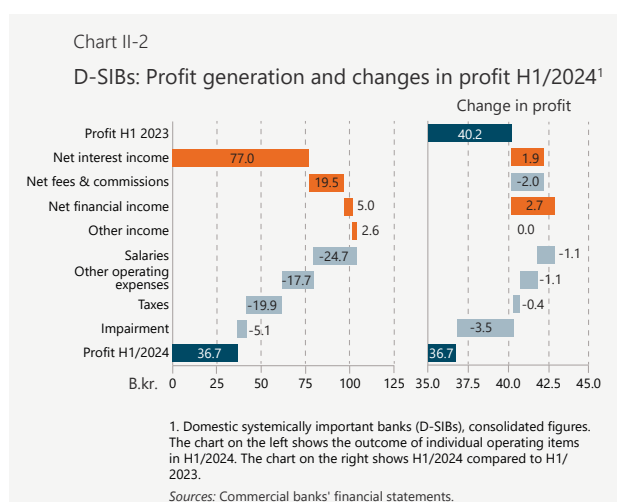
1. Parent companies. 2. The Housing Financing Fund (HFF) merged with the Iceland Construction Authority on 1 January 2020. HFF assets from 2020 onwards are the assets of the IL Fund, which took over the processing of the HFF's assets and liabilities. 3. Other: Failed financial institutions that have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

Sources: Statistics Iceland, Central Bank of Iceland.

1. Based on deposit institutions' assets at the parent company level.

The banks' income grew by 2.6% year-on-year in H1, and their expenses rose 5.5%. Their regular income was unchanged between years, as costs rose concurrent with a downturn in core operations. The D-SIBs' return on equity from underlying operations, excluding one-off items, declined from 13.7% in H1/2023 to 12.5% in H1/2024.²

Net interest income came to 77 b.kr. in H1, an increase of 2 b.kr. year-on-year. The rise in net interest income is due to balance sheet expansion, as the D-SIBs' total assets amounted to 5,240 b.kr. at the end of June, an increase of 232 b.kr. relative to the same time in 2023.



The Central Bank's key interest rate remained unchanged at 9.25% in H1/2024, as compared with an average of 7.2% in H1/2023. Concurrent with higher interest rates, the banks' returns on liquid assets increased. All else being equal, this would have widened their interest rate spread between periods. However, the interest rate spread on their total assets narrowed by 0.07 percentage points year-on-year during the period, to 2.98% in H1/2024. This narrowing occurred because funding costs rose proportionally more than interest income. Higher costs on deposits are the main factor, particularly the shift from low-interest current accounts to higher-yielding accounts that may or may not have a commitment period (see Chart II-3). If the shift in households' and businesses non-indexed króna-denominated deposits from low-interest accounts to higher-yielding deposits had been the same in H1/2024 as in H1/2023, the banks' interest expense on deposits would have been lower by 2.5 b.kr. and their interest rate spread would have been 3.07% instead of 2.98%. This migration from low-interest current accounts to higher-interest accounts began in earnest in early 2022, so the total effect is stronger. This trend will probably ease over time, but it could continue to some extent, as long as the Central Bank's key interest rate remains as high as it is now. On the other hand, the banks' interest rate spreads should widen upon the expiry of fixed interest rate clauses on non-indexed loans taken when interest rates were far lower than they are now.

Fixed reserve requirements on credit institutions, including the banks, have been increased twice: from 1% to 2% in mid-2023 and from 2% to 3% in April 2024. At the end of June 2024, the D-SIBs held about 90 b.kr. in non-remunerated fixed reserves with the Central Bank. Because this fixed reserve requirement has been raised from 1% to 3%, the banks lose interest income in the amount of 5.5 b.kr. per year. All else being equal, such a situation would have had an adverse impact on the banks' net interest income and interest rate spreads. However, the banks have responded to the rise in the fixed reserve requirement by lowering interest rates on selected deposit accounts.

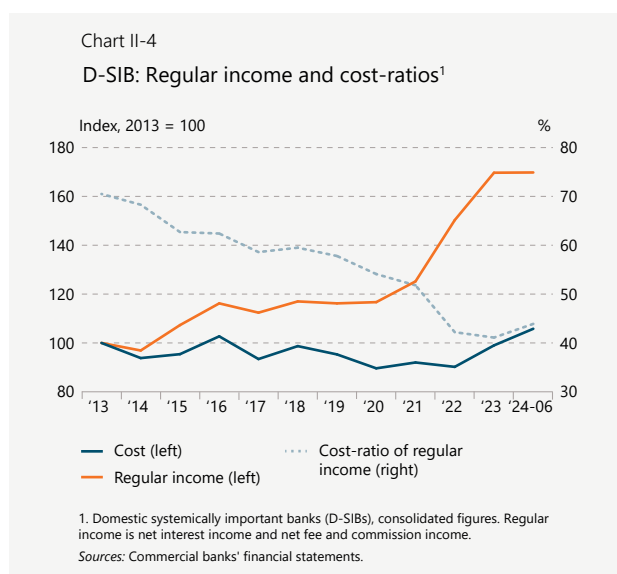
Net fee and commission income fell by 9.4% year-on-year, to 19.4 b.kr. in H1/2024. All of the banks were affected by the decline, which stemmed mainly from high interest rates; for instance, income from asset management and investment banking activity fell somewhat between years. The D-SIBs' regular income – i.e., net income from interest and from fees and commissions – was unchanged year-on-year at 96.4 b.kr.

2. Underlying returns are defined here as 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.

Net income from financial activities was positive by 5 b.kr. in H1, which represents a turnaround of 2.7 b.kr. relative to the prior year. In general, market conditions have been challenging and fair value adjustments in equity and debt securities have been negative during the year. Positive income from financial activities in H1 is due primarily to interest income on marketable bonds at fair value, which one of the D-SIBs enters as financial income. Other operating income came to 2.6 b.kr. in the first half and remained unchanged year-on-year.

Staffing levels increase

The D-SIBs' combined operating expenses totalled 42.3 b.kr. in H1/2024, an increase of 5.5% between years. In real terms, expenses declined by 0.8%, as real wage expense fell by 1.5% and other operating expenses were unchanged (also in real terms).



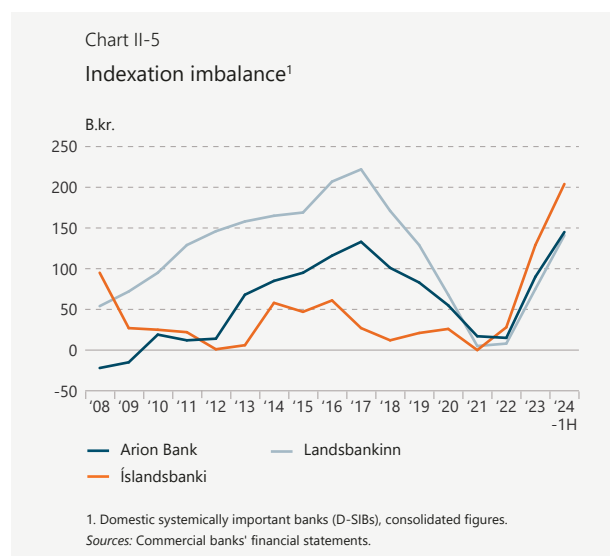
The D-SIBs have cut staffing levels by one-third over the past decade. Their real costs fell steeply as a result, but now the banks are starting to expand staffing again. At the end of June, the D-SIBs had 2,407 full-time position equivalents, an increase of 93, or 4%, relative to June 2023. It is noteworthy that nominal wage costs rose by only 4.8% over the same period.

The D-SIBs' expense ratio in H1/2024 was 40.7%, an increase of 1.1 percentage points year-on-year. In H1/2024, Íslandsbanki was fined 570 m.kr. due to flaws in its anti-money laundering defences. The bank had expensed 100 m.kr. of this amount in 2023. At the same time, Arion Bank was fined 585 m.kr. for similar shortcomings. If the fines levied in 2023 and 2024 are excluded, the D-SIBs' expense ratio was 39.7% in H1/2024 and the increase unchanged between years,

at 1.1%.³ The expense ratio for regular income was 42.8%, excluding the aforementioned fines. This is an increase of 2.2 percentage points between years.

Indexation imbalance continues to grow

The D-SIBs' loans to households and businesses increased by 6% in the first seven months of 2024, to a total of 3,937 b.kr. at the end of July. The increase for the same period in the prior year measured 3.8%. Despite tight monetary and macroprudential policies, the D-SIBs' private sector lending has picked up again. Thus far in 2024, growth in lending to companies has been about twice the size of the increase in household lending, at 8.4% and 4.1%, respectively. Growth in private sector lending over the first seven months of the year was concentrated mostly in indexed loans. The price- and exchange rate-adjusted stock of indexed loans grew by 225 b.kr. over the period, while foreign-denominated loans increased by 47 b.kr. and non-indexed loans declined by 92 b.kr.



Stronger demand for indexed loans has caused the D-SIBs' indexation imbalance – i.e., the difference between indexed assets and indexed liabilities – to widen significantly, as new indexed loans are funded only to a limited degree with indexed deposits and bonds. This mismatch totalled 490 b.kr. at the end of June, as compared with 196 b.kr. at the turn of the year.

As of end-June, indexation imbalances as a share of capital totalled 76% for Arion Bank, 94% for Íslandsbanki, and 47% for Landsbankinn. These sizeable mismatches are probably temporary, as the banks

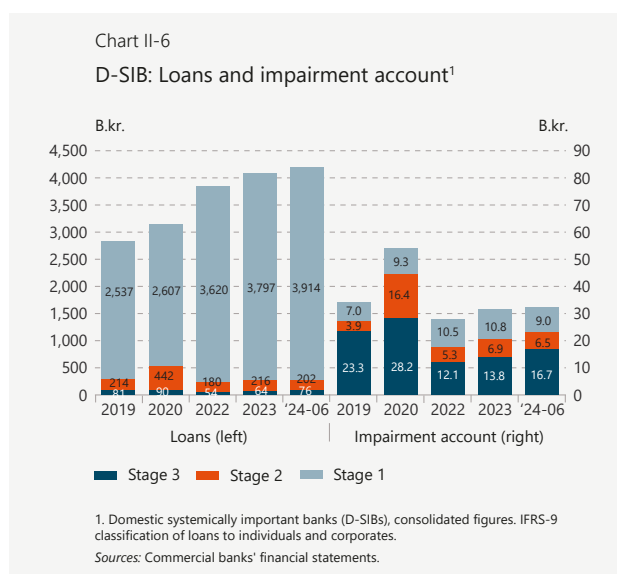
3. In 2023, Íslandsbanki was fined 1,160 m.kr. due to its execution of the sale of a 22.5% Government-owned stake in the bank. However, it had already expensed 300 m.kr. of this fine in 2022; therefore, the charge in 2023 totalled 860 m.kr.

are of the opinion that some of the customers that have recently switched from non-indexed to indexed loans will switch back once interest rates fall.⁴

Loan impairment increases

The effects of tighter monetary policy have come clearly to the fore in the form of slower economic activity in the recent term, with a nearly 2% contraction in private consumption in H1 and the prospect of weak GDP growth in 2024 as a whole. Tighter financial conditions generally have a negative impact on loan quality, but with low unemployment and a positive output gap, private sector arrears have increased only slightly and remain low in historical context.

At the end of June, the facility-level non-performing loan (NPL) ratio on the banks' household loans was unchanged year-to-date at 1% but had risen by 0.2 percentage points relative to June 2023. The corporate NPL ratio was 2.7% at the end of June, after rising by 0.2 percentage points since end-2023 and 0.4 percentage points since June 2023.5



The change in borrowers' position can also be seen in the change in IFRS-9 classification. Developments in stage 3 loans, which are considered to be in [serious] default, are virtually the same as in the EBA definition above. At the end of June, 1% of household loans and 2.6% of corporate loans fell into the stage 3 category, as compared with 0.8% and 2.2%, respectively at the end of June 2023.

4. In assessing additional capital requirements for the supervisory review and evaluation process (SREP), the Central Bank has set required reserves to cover indexation risk at 3.53% for a positive indexation imbalance and 6.46% for a negative one.
5. This refers to non-performing loans as defined by the European Banking Authority (EBA).

At the end of June 2023, 3.2% of household loans and 6.1% of corporate loans were in stage 2. Following the seismic activity in Grindavík, loans to households and businesses in the community were moved from stage 1 to stage 2, as appropriate. At the end of 2023, 3.5% of household loans and 7.3% of corporate loans were classified as stage 2. This year, real estate firm Þórkatla, which administers the State's buy-up of homes in Grindavík, had taken over a large share properties there and assumed the associated mortgages. In the banks' financial statements, these loans are classified as corporate loans at fair value. Stage-2 household loans have declined since then, to 3.0% at the end of June 2024. Because there is greater flexibility in defining corporate loans to Grindavík borrowers, stage-2 corporate loans fell to 6.6% by June.⁶ Impairment totalled 5.1 b.kr. in H1/2024, an increase of 3.5 b.kr. year-on-year. About two-thirds of this year's impairment can be attributed to the repercussions of the seismic activity in and around Grindavík. In H1, impairment equalled 0.09% of the loan portfolio, and the banks now consider an annual impairment level of 0.25% to be appropriate in a normal economic climate. This year's H1 impairment is therefore no greater than could be expected in a typical environment.

The share of forborne D-SIB loans to companies has fallen steadily since the beginning of 2021. It measured 2.6% at the end of June (51 b.kr.), compared to 3.8% in June 2023 and 3% at the end of 2023. The share of forborne D-SIB loans to companies was 2.4% by March 2024 and therefore rose by 0.2% in Q2, indicating a reversal in Q2/2024. About 1.1% of loans to individuals (24 b.kr.) were forborne and performing, and the balance was unchanged in H1 2024.

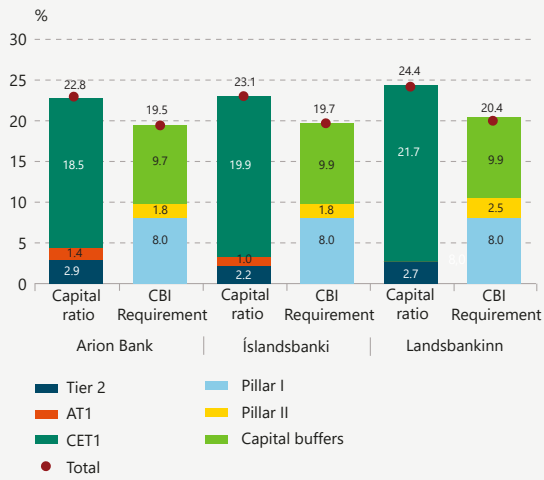
Capital ratio declines

The D-SIBs' capital amounted to 712 b.kr. at the end of June, after having shrunk by 15 b.kr. since the turn of the year; however, it was 25 b.kr. higher than in June 2023. The banks' combined capital ratio was 23.6% at the end of June, 0.7 percentage points lower than at the turn of the year, as well as at end-June 2023. The D-SIBs' minimum overall capital ratio according to Central Bank rules ranges between 19.5% and 20.4%, based on the banks' year-end 2023 position. At the end of June, the D-SIBs' capital ratios were 3.3-4.0 percentage points above the Bank's requirement.

6. Loans are moved from stage 1 to stage 2 if credit risk has increased significantly relative to the initial position. Loans are moved to stage 3 if they are in serious default and impairment can be expected. Impairment must be based on expected credit losses over the lifetime of the loan.

Chart II-7

D-SIB capital requirements and capital adequacy ratios at the end of June 2024¹



1. Domestic systemically important banks (D-SIBs), consolidated figures. In calculating the capital ratio, the portion of first half 2024 profit to be paid as a dividend in 2025 has been deducted from the capital base.
Sources: Commercial banks' financial statements and other published materials.

Their dividend payments in H1/2024 totalled 42 b.kr., and their share buybacks came to 10.5 b.kr. In the D-SIBs' interim accounts for H1/2024, 28 b.kr. – the estimated amount to be paid in 2025 as a dividend on H1/2024 profits – has been deducted from the capital base.

Risk-weighted assets decline as a share of total assets

The proportion of residential mortgages in the D-SIBs' loan portfolio has risen significantly in the past five to six years. Because risk weights (and therefore required reserves) are markedly lower on mortgage loans than on generic corporate loans, the ratio of risk-weighted assets to total assets has fallen. This decline in the risk base has afforded the banks increased scope for dividend payments.

The amount of share buybacks and dividend payments since 2014 totals 485 b.kr. Chart 8 shows that from 2015 through 2018, the D-SIBs' total assets and risk-weighted assets developed similarly, and the ratio between the two changed very little. At the end of 2018, this ratio was 73%. Since 2019, the risk base has increased less in proportional terms than total assets have; therefore, the ratio between them has fallen, to 63.4% as of end-June 2024. It is estimated that the fall in the ratio since 2018 has boosted the banks' scope for dividend payments by 90-100 b.kr. Since 2018, the D-SIBs' dividend payments and share buybacks totalled 296 b.kr., whereas their aggregate profit was 363 b.kr. Payouts have therefore been well in excess of the three large banks' dividend payment policy, which assumes

that payments to shareholders will total 50% of profits, either as dividends or as buybacks.

The smaller rise in the risk base and increased issuance of subordinated instruments classified as Tier 1 and Tier 2 capital have therefore enabled the banks to pay out more to shareholders than their policies indicate.

The D-SIBs have limited scope for issuance of such subordinated instruments. The banks can expand their capital base by issuing instruments classified as additional Tier 1 capital – particularly Landsbankinn, which has not issued any such bonds. Scope for Tier 2 issuance is limited.

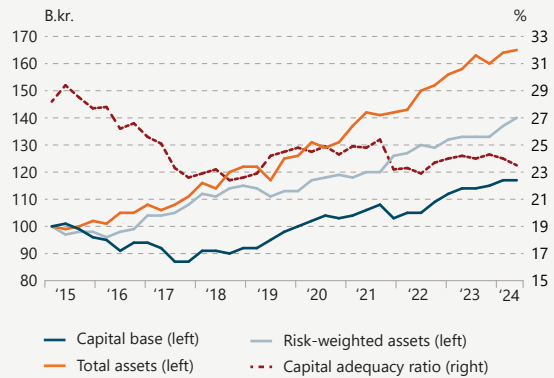
The D-SIBs' leverage ratios lay between 11.9% and 13.4% at the end of June, and their combined leverage ratio was unchanged year-on-year at 12.9%. The calculation of the leverage ratio does not take account of risk weights; therefore, the sizeable dividend payments of recent years have caused the ratio to fall. At year-end 2019, for instance, it was 14.8%. Despite the decline in the leverage ratio, Iceland's banks still have some of the highest ratios in the European Economic Area, where the average for the region was 5.8% at the end of Q1/2024.⁷

MREL

The Act on Resolution of Credit Institutions and Investment Firms, no. 70/2020, authorises the Central Bank of Iceland's Resolution Authority to determine minimum requirements for financial undertakings' own funds and eligible liabilities. These requirements, generally referred to as MREL, represent the own funds and eligible liabilities a financial undertaking must hold so

Chart II-8

Risk-weighted and total assets¹
Q4/2015 - Q2/2024



1. Domestic systemically important banks (D-SIBs), consolidated figures.
Sources: Commercial banks' financial statements.

7. The leverage ratio, computed in accordance with the Act on Financial Undertakings, no. 161/2002, is calculated as Tier 1 capital divided by exposures. The minimum leverage ratio is 3%.

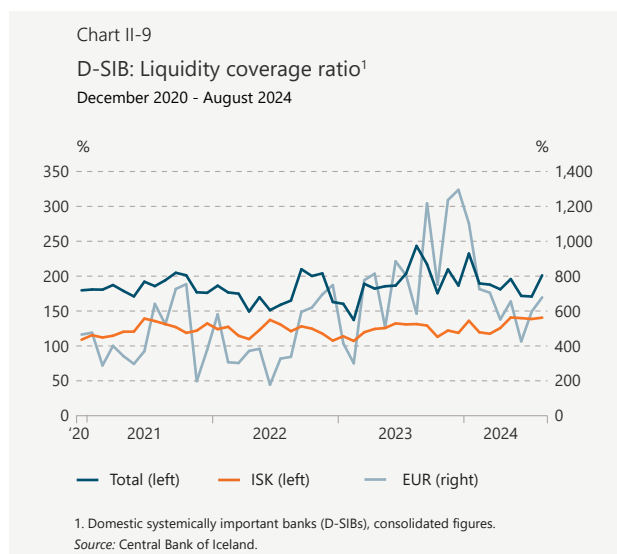
as to ensure that it can absorb unforeseen losses and recapitalise its activities without Government support if it should be deemed failing or likely to fail.⁸ According to the Resolution Authority's MREL requirements, the D-SIBs' own funds and eligible liabilities shall equal at least double the minimum own funds requirement (i.e., two times Pillar I and Pillar II). The banks must also satisfy a combined capital buffer requirement.

Recovery plans have been prepared for the D-SIBs and four savings banks, and the appropriate MREL requirements have been made. The financial institutions have sufficient own funds and eligible liabilities to satisfy the Resolution Authority's MREL requirements.

Liquidity and funding

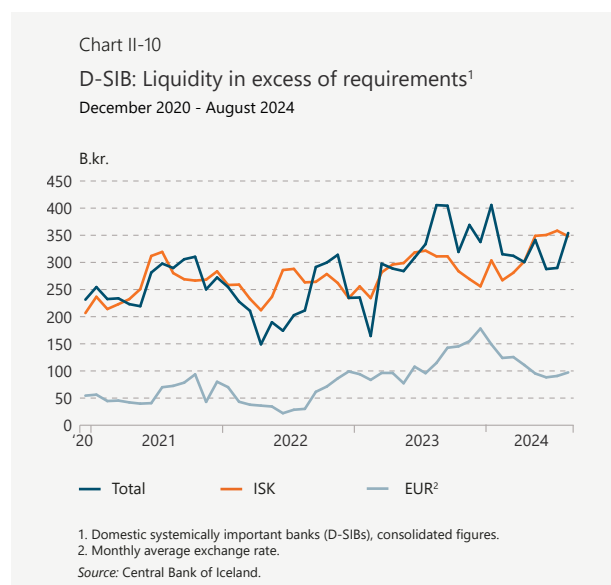
The D-SIBs' liquidity remains strong

The D-SIBs' liquidity coverage ratios (LCR) have risen marginally year-to-date. At the end of August, they were well above the Central Bank minimum, and the banks' liquidity remains strong.⁹



The banks' liquidity in excess of requirements in all currencies combined totalled 354 b.kr. at the end of August. Excess liquidity has increased by nearly 14 b.kr. in 2024 to date. As before, the banks' internal criteria determine the scope they have for disposition of liquid assets. Based on a minimum liquidity ratio of 120%, liquidity in excess of internal criteria was 284 b.kr. at the

end of August. The D-SIBs therefore hold ample excess liquidity, which gives them greater scope to issue new loans, cover unexpected withdrawals of deposits, pay dividends, and buy back their own shares.



As before, the D-SIBs' high-quality liquid assets consist mainly of government bonds, government bills, and deposits with the Central Bank. At the end of August, the banks held 704 b.kr. in high-quality liquid assets in all currencies combined. High-quality liquid assets have declined by 17 b.kr. thus far in 2024. At the end of August, the banks' high-quality liquid assets in Icelandic krónur totalled 540 b.kr., while their high-quality foreign-denominated assets came to 164 b.kr. The ratio of high-quality liquid assets to total assets was 12% at the end of August and has decreased slightly in 2024 to date.

Growth in deposits and unsecured bond issuance

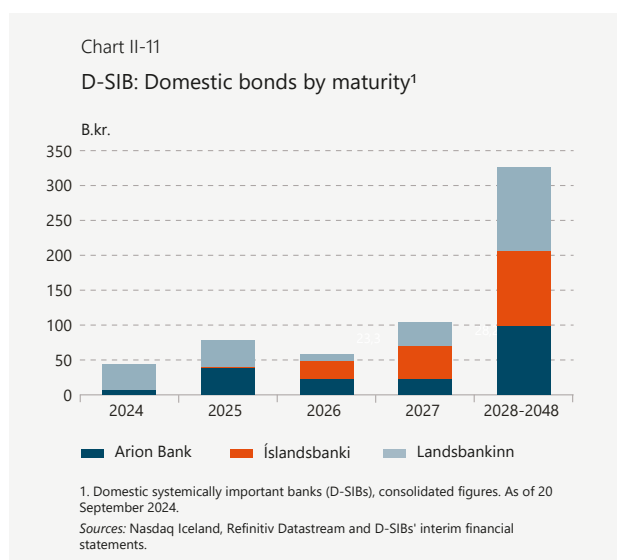
The majority of the banks' funding is in the form of deposits and marketable bonds. Deposits account for 68% of the D-SIBs' funding; i.e., total deposits and borrowings. Among European banks, deposits constitute an average of 60% of funding.¹⁰ In the past twelve months, the D-SIBs' total deposits have increased by 195 b.kr., or 7% year-on-year. Retail deposits were up by slightly more than 259 b.kr., while deposits held by large companies and financial institutions contracted by 32 b.kr. each. Foreign-denominated deposits account for 12% of the banks' total deposits and have remained virtually unchanged at that level in the past year.

8. MREL stands for minimum requirement for own funds and eligible liabilities. Further discussion of the Central Bank of Iceland's MREL policy can be found in Box 9 of *Financial Stability 2022/1*.

9. According to the Rules on Credit Institutions' Liquidity Ratio, credit institutions must maintain a liquidity ratio of at least 100% in all currencies combined, 50% in Icelandic krónur, and 80% in euros if 10% or more of the relevant institution's total liabilities are denominated in euros.

10. See Norges Bank (2024) "Financial Stability Report 2024 H1".

In recent years, the D-SIBs have offered special digital-only savings accounts. This savings option has gained in popularity this year, and by mid-year about 5% of deposits were held in such accounts. These deposits are given particular attention in the Central Bank's regular stress tests on the D-SIBs' liquidity, and as before, the banks have performed well on the tests.



Overall, concentration in deposits has tapered off, and about one-fourth of deposits have a commitment period of more than 30 days. Deposits that are guaranteed by the Financial Institutions' Insurance Fund's (TIF) deposit division constitute about 45% of total D-SIB deposits and have held steady at that level in recent years.

The banks' net stable funding ratios (NSFR) have been relatively unchanged in the past several years and were well above the minimum level at the end of June 2024.¹¹

The D-SIBs issue covered bonds in Icelandic krónur almost monthly. Their outstanding króna-denominated covered bonds totalled 571 b.kr. at the end of June 2024. In 2024 to date, they have issued króna-denominated covered bonds in the amount of nearly 74 b.kr. Furthermore, the banks have issued senior preferred bonds in Icelandic krónur for nearly 13 b.kr., which is an increase relative to recent years. In addition, the D-SIBs have issued Tier 2 subordinated bonds in Icelandic krónur for about 15 b.kr. in 2024 to date, as compared with 21.6 b.kr. in 2023. With the introduction of MREL requirements, the D-SIBs' need to issue unsecured bonds has increased, and it is

11. According to rules on credit institutions' funding ratios, institutions must maintain a funding ratio of at least 100% in all currencies combined. Effective 1 January 2024, NSFR reports must be submitted on a quarterly basis.

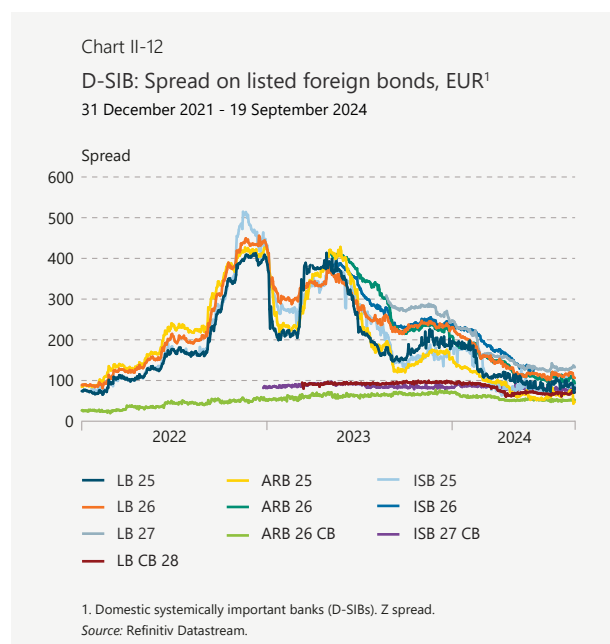
important to expand the buyer group for these króna-denominated bonds so that the banks can build up a domestic bond market and rely less heavily on issuing in foreign markets.

Króna-denominated covered bonds totalling 44 b.kr. are scheduled to mature in the remainder of 2024. Landsbankinn accounts for most of this amount, with 37 b.kr. maturing in November. About 79 b.kr. will mature in 2025. These issues are split more or less evenly between Arion Bank and Landsbankinn, as Íslandsbanki has only about 1 b.kr. set to mature during the year.

Foreign market access has continued to improve

Interest rate spreads on the D-SIBs' foreign bond issues have been narrowing steadily since year-end 2023, and they are now broadly the same as at the beginning of 2022. This has made a positive impact on the banks' foreign funding. Thus far in 2024, the banks have each issued a eurobond for 300 million euros, and at far better terms than were offered in 2023. They have also bought back foreign bonds that they issued on less favourable terms. A similar trend has been seen in bond markets in the Nordic countries.

This year, the D-SIBs have issued foreign-denominated bonds for about 191 b.kr., roughly the same as in 2023. Since the turn of the year, foreign denominated maturities and bond repurchases have totalled 130 b.kr. The banks' net new foreign bond issuance year-to-date therefore totals 61 b.kr.



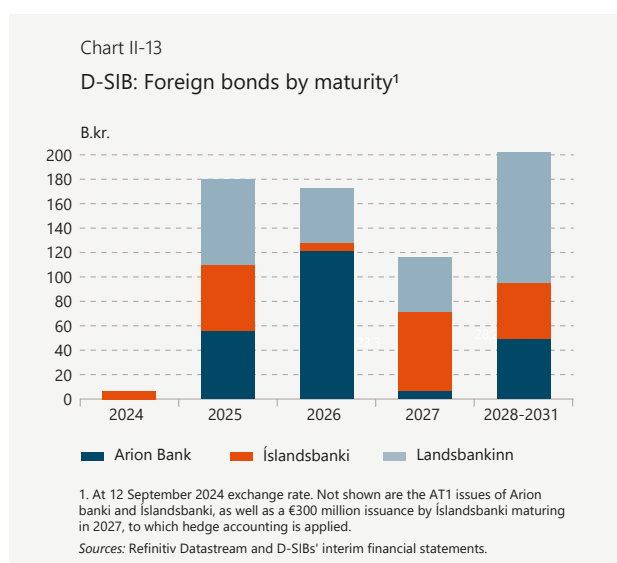
At the beginning of September 2024, Landsbankinn issued senior non-preferred bonds for 1 billion Swedish kronor and 250 million Norwegian kroner, which equates

to just under 17 b.kr. It is the first issue of its kind from an Icelandic bank. Further information on this and other foreign bonds issued by the D-SIBs over the past twelve months can be found in Table 8 in the Appendix.

In April 2024, Standard & Poor's upgraded its ratings on Iceland's systemically important banks from A-2/BBB to A-2/BBB+, with a stable outlook. Later that month, Arion Bank ended its rating relationship with Standard & Poor's and now receives credit ratings from Moody's only. Moody's has assigned the bank a rating of A3 with a stable outlook. Íslandsbanki also has an A3 rating from Moody's and is the only Icelandic bank with two global credit ratings.

In all, the D-SIBs have sold covered eurobonds for 1,100 million euros in recent years. The bonds mature between 2026 and 2028. The issues were used mainly to refinance unsecured foreign-denominated bonds issued on less favourable terms. In recent years, the banks have also issued covered bonds for their own use, allocating the proceeds to repo transactions with foreign banks in order to strengthen their foreign liquidity during periods when their access to foreign markets was tighter than it is now.

Their outstanding foreign-denominated maturities for the remainder of 2024 total just under 7 b.kr. Next year, the banks have large eurobond maturities, as well as smaller maturities in Nordic currencies, for a combined total of 180 b.kr. The D-SIBs' foreign liquidity position is quite acceptable, and they have enough liquid assets to pay off all of their foreign bonds maturing in 2024 and 2025.



It is important that the D-SIBs continue to maintain a strong foreign liquidity position, in case access to foreign markets grows tighter once again.

Other financial market entities

The pension funds' asset portfolio

Pension fund assets amounted to 7,674 b.kr. at the end of Q2/2024, after growing by 396 b.kr., or 5.4%, in H1. Their mutual pension divisions' assets increased by 5.2%, to 6,819 b.kr., and their private pension divisions' assets came to 855 b.kr., an increase of 7.5%. Foreign assets accounted for 40.5% of total pension fund assets at the end of June, the largest share on record. As before, the pension funds' foreign assets consist almost entirely of unit shares. These assets generated strong returns in H1, as foreign market prices have risen during the year. The funds' foreign assets grew by 336 b.kr., or 12%, while their foreign currency purchases over the same period totalled 40 b.kr. The second-largest asset class held by the pension funds is domestic marketable bonds and bills, which account for roughly a third of total assets and grew by 94 b.kr., or 3.8%, over the same period. Virtually all of the increase stemmed from the indexation component of index-linked bonds.

If John Bean Technologies' (JBT) voluntary takeover offer for Marel materialises, the pension funds' share of foreign assets will rise further. Pension funds hold some 42% of Marel shares, directly and indirectly. All else being equal, though, none of the funds will exceed the current foreign asset cap of 51.5% as a result of the takeover.¹²

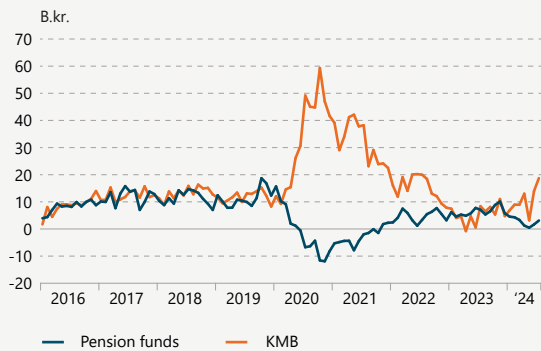
The pension funds' lending activity

At the end of June, loans to pension fund members totalled 663 b.kr., or 8.6% of total assets. Net new mortgage loans amounted to 15 b.kr. over the first six months of the year, as compared with 32 b.kr. for the same period in 2023. This differs from the situation for the D-SIBs, whose net new mortgage lending in H1/2024 totalled 54 b.kr., up from 19 b.kr. in the same period of 2023. The pension funds' market share in net new mortgage lending has therefore shrunk markedly between years, from over 60% to slightly more than 20%. The pension funds' internal rules, which generally provide for lower loan-to-value ratios than the banks' rules do, could weaken their competitive position at present.

In June, Parliament approved amendments to the pension funds' investment authorisations, with the aim of facilitating the funds' investment in the rental housing market. With these amendments, the funds are

12. According to Article 36(d) of the Act on Mandatory Insurance of Pension Rights and on Activities of Pension Funds, no. 129/1997, pension funds must ensure that 48.5% of their total assets are in the same currency as their liabilities.

Chart II-14
Net new household mortgages¹
January 2016 - July 2024



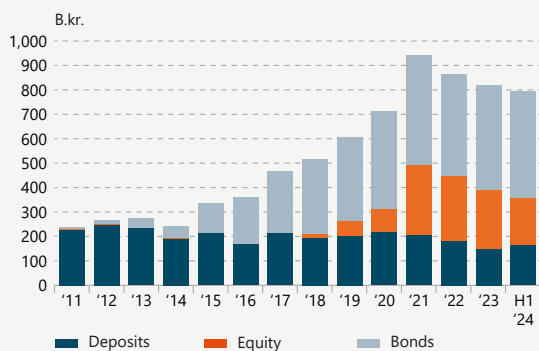
1. New loans less loan retirement and loan prepayments in excess of contractual requirements. Fixed prices. Figures include loans issued by deposit institutions, pension funds, the IL Fund, and the Housing Fund.
Sources: Statistics Iceland, Central Bank of Iceland.

now permitted to commit 5% of their assets to unlisted financial instruments issued by companies engaged mainly in renting homes to individuals. This is in addition to the current 20% maximum for unlisted assets. The legislative change facilitated the pension funds' investment in leasing company Heimstaden through the fund SRE III slhf.

The pension funds' investment in the banking system

The pension funds' total banking system-linked investment and deposits amounted to 794 b.kr., or 10% of the asset portfolio, at the end of Q2. In recent years, the funds have been broadening their investments in the banking system. For example, they have invested in unsecured and subordinated bonds issued by the banks in the recent term. Nevertheless, indexed and non-indexed covered bonds weigh heaviest in the funds' investments in the banking system, at a total of

Chart II-15
The pension funds' investments in the banking system¹



1. Fixed prices.
Sources: Statistics Iceland, Central Bank of Iceland.

338 b.kr. as of end-Q2, or 60% of the banks' outstanding króna-denominated covered bonds.

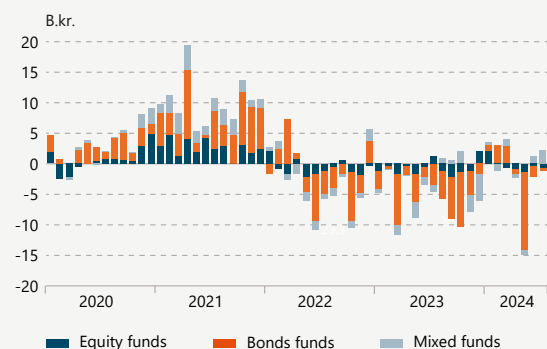
Mutual funds and alternative investment funds

Assets held by mutual funds and alternative investment funds¹³ totalled 863 b.kr. at the end of July, after increase by 84 b.kr. since the turn of the year. The pension funds hold nearly one-third of units in these funds, making them the largest investor group, followed by households, with a share of 26%.

Outflows from these funds have been relatively steady since the beginning of 2022, owing to challenging conditions in the domestic financial markets. Net outflows in 2023 totalled 94 b.kr., including 49 b.kr. in outflows from bond funds. The surge in investors' interest early this year proved short-lived. Over the first three months of 2024, net inflows into mutual funds, bond funds, and mixed funds were positive by 9 b.kr., but the trend reversed from April through July, and net outflows from the same funds totalled 17 b.kr. As a result, net outflows over the first seven months of 2024 came to 8 b.kr., as opposed to outflows of over 35 b.kr. during the same period in 2023.

Mutual funds' total assets have declined concurrent with the downturn in equity market prices. After totalling 117.7 b.kr. at the beginning of 2024, they had shrunk by 6.6%, to 109.8 b.kr., by the end of July. Bond funds' total assets have increased by 4.6% over the same period, however, to nearly 483 b.kr. Mixed funds' total assets grew by 9.5% over the first seven months of 2024, owing mainly to an increase in their foreign equity securities holdings.

Chart II-16
Net flow of funds



Source: Central Bank of Iceland.

13. Excluding alternative investments.

Operational security

As they have in the recent past, governments in Western countries place strong emphasis on the operational security of payment intermediation and the associated infrastructure. Cyberthreats are one of the chief threats considered to have escalated in view of the changed global situation. It is vital that financial market entities have in place strong security systems to combat cyberattacks. According to the 2023 annual report of Iceland's Computer Emergency Response Team (CERT-IS), the number of incident reports rose sharply relative to the prior year, from 700 in 2022 to 1,266 in 2023. In both years, most reports fell into the category of swindling or fraud involving phishing and attempts to access sensitive information such as payment card numbers or passwords.¹⁴

In May 2023, the European Council held its summit in Reykjavík. In connection with the summit, there were a number of distributed denial of service (DDoS) attacks on Icelandic websites, causing temporary disruptions in service. In some instances, the attacks affected not only the targeted websites but also internet and telephone service. In addition to these attacks, thousands of attempts were made to log into web portals via Icelandic e-ID authentication, including the website www.island.is, leading to temporary interruptions in service.

Developments in 2024 have been similar. Financial institutions have experienced an increased number of attempts at swindling or fraud. In addition, several large-scale attacks have been made on companies and institutions. A salient example is the massive system malfunction at Microsoft in July 2024, causing computer systems to crash all over the world. That malfunction was caused not by a cyberattack, however, but by a faulty update of anti-virus software from cybersecurity company CrowdStrike, which has run on Microsoft's Windows operating systems. In some cases, payment systems abroad were down, causing chaos in retail stores. In Iceland, Landsbankinn's online bank and banking app were down for a while. Microsoft managed to solve the problem quickly, but problems of this type are a reminder of how important it is to have well-designed contingency plans and how pervasive the impact can be when a large number of market participants rely on software or services from the same provider.

The Central Bank of Iceland and operational security of digital payment intermediation

The Central Bank's financial supervisors monitor supervised entities' compliance with the relevant regulatory

instruments, including compliance with operational security requirements. The current legislation on financial services, which is based mainly on the regulatory framework for the European internal market, contains numerous provisions on operational risk or operational security requirements that are made of financial market participants. Furthermore, the Financial Supervisory Authority has issued Guidelines on Risks due to Information Systems Operated by Supervised Entities, no. 1/2019, and Guidelines on Outsourcing by Supervised Entities, no. 6/2014. In addition, the Central Bank Supervisory Authority adopts, publishes, and enforces various guidelines of the European Financial Supervisory Authorities (EBA, ESMA and EIOPA) as regards information and communications technology-related (ICT) risk management. Iceland is planning to introduce statutory amendments providing for tighter operational security requirements and harmonising requirements for entities operating in the financial market, in a change from the current legal environment.

Like the European Banking Authority (EBA), the Central Bank Supervisory Authority has recently placed strong emphasis on cybersecurity and on the importance of strengthening the Bank's expertise in this area, owing to the growing threat stemming from cyberattacks. The Central Bank Supervisory Authority has published a report outlining its priorities for the current year, which include cyber- and IT risk and the operational resilience of the financial system. According to the report, the goal is to strengthen the resilience and defences of supervised entities facing broad-based digital transformation and the associated increase in risk, which simultaneously includes the growing threat of cyberattacks and fraud and extends to market abuse and a range of other vulnerabilities that must be addressed with targeted measures. The report states that Central Bank's supervisory timetable for the year includes inspections and checks aimed at contingency and business continuity frameworks, as well as specific aspects of IT systems relating to acquiring. It also notes that Bank plans to conduct checks on oversight and structure of procedures, and on supervised entities' operational risk. Furthermore, it makes reference to the aforementioned plans for legislative amendments, as IT security requirements made of supervised entities will increase, and it is important that market participants prepare for them.¹⁵

14. The CERT-IS annual report for 2023 can be found [here](#).

15. The report can be found [here](#).

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

Since 2021, the Central Bank of Iceland has operated a cooperation forum on operational security of financial market infrastructure (SURF), modelled on similar bodies established by Nordic central banks. Membership is voluntary. SURF aims to create a common vision for measures to enhance the resilience of the cyber- and IT systems of important financial infrastructure elements and to coordinate measures in case of operational disruptions that could affect financial system security and efficacy.¹⁶ Particular emphasis is to be placed on shoring up cybersecurity defences and financial system resilience against cyberattacks. In this context, consideration shall be given to the Government's current cybersecurity regulatory instruments and framework, with reference to possible overlapping, interactions, and views on harmonisation.

Two working groups have been operating on SURF's behalf during the year: a group focusing on mapping payment intermediation services and a group entrusted with preparing an integration plan for the financial market. The aim of such an integration plan is to ensure prompt, coordinated, and efficient responses, as well as ensuring that the parties concerned communicate in a structured way, so as to minimise disruptions in the financial market to the maximum extent possible. A dedicated incident centre will be established in order to simplify communications between parties when incidents occur, thereby shortening lines of communication and reducing risk in the system. The working group on mapping has identified key payment service components, assessed the impact of a potential interruption in service, and examined the connections between infrastructure components, with the particular aim of mapping out the connections between components and identifying possible concentration in the system.

Membership of Nordic Financial CERT (NF-CERT)

In 2022, the Central Bank became a member of Nordic Financial CERT, or NF-CERT, an organisation established by three Nordic commercial banks in 2017.¹⁷ Since then, a number of banks have become members, including all of Iceland's systemically important commercial banks, as well as 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 other things, by sharing information on all types of attempted cyber fraud and on the best ways to safeguard against them. NF-CERT also cooperates actively with governments, police departments, and international institutions. Moreover, NF-CERT conducts active cybersecurity monitoring and assists its members in handling and responding to cybersecurity incidents, as well as re-establishing operations that may have been disrupted by such incidents.¹⁸

Cybersecurity testing and contingency exercises

The Central Bank of Iceland has established a cybersecurity testing framework, TIBER-IS, for institutions and companies that are important for the Icelandic financial system.¹⁹ The framework aims to enhance testing participants' understanding of the capability to defend against cyberattacks, thereby bolstering the resilience of individual participants and the financial system as a whole. TIBER-IS is based on the European Central Bank's (ECB) TIBER-EU framework, and participation is voluntary. The Central Bank underwent its first TIBER tests in spring 2024, and further tests are ongoing. Legislative amendments are expected in Iceland, as the Minister of Finance and Economic Affairs has circulated for commentary a draft bill of legislation on digital operational resilience in the financial market, the aim of which is to implement the European Union's so-called DORA Regulation and DORA Amending Directive. Further discussion can be found in Box 2, Operational security – an amended regulatory framework (DORA).

This spring, the Central Bank participated in NATO's joint Locked Shields exercise. It was Iceland's second time participating in the exercise, which was held by the NATO Cooperative Cyber Defence Centre of Excellence. Participating this year in addition to the Central Bank were experts from Iceland's Computer Emergency Response Team (CERT-IS), the Icelandic Coast Guard, the National Commissioner of the Icelandic Police, RB, and the Ministry for Foreign Affairs. The exercise was structured as a two-day competition in protecting against cyberattacks. It entailed protecting an actual computer system from real-time cyberattacks and simulating measures and decision-making in an environment characterised by an ongoing cyberattack.

16. Members of SURF in addition to the Central Bank are as follows: Arion Bank, Íslandsbanki, Kvika banki, Landsbankinn, Nasdaq CSD Iceland, the Computer Emergency Response Team (CERT-IS), Ministry of Finance and Economic Affairs, Reiknistofa bankanna (RB), and the Icelandic Financial Services Association (SFF).

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

18. Further information on NF-CERT can be found [here](#).

19. See Box 6 in *Financial Stability 2023/1*, pp. 51-52.

The Central Bank and the satellite connection agreement

Digital payment intermediation relies not only on secure and effective financial market infrastructure but also on electricity, electronic communications, and the internet. The Central Bank has made an agreement on the provision of a satellite connection to transmit trading orders currently routed between Iceland and other countries via submarine cable, both to reduce operational risk for the financial system and to function as an emergency route if current submarine cable-based internet connections should become non-functional.²⁰ It should be borne in mind in this context, however, that the payment systems operated by merchants that use point-of-sale (POS) devices to accept payments depend on cross-border connections. The above-mentioned satellite solution does not cover such retail payment intermediation. A working group for the Payment Council, led by Greiðsluveitan ehf., has been examining merchants' responses to interruptions in digital payment intermediation, such as those occurring during power outages or when network connections are down, see further discussion in Chapter IV.²¹

Amendments to the Act on the Central Bank of Iceland, no. 92/2019 – operational security of payment intermediation

For some time, the Central Bank has been cooperating with deposit institutions in establishing a domestic retail payment solution that would be independent of foreign ownership and foreign infrastructure, so as to enhance the resilience of payment intermediation in Iceland. In summer 2024, Parliament passed a bill of legislation amending the Central Bank Act, with the aim of strengthening the Central Bank's authorisations relating to operational security of payment intermediation. Under the amendment, the Central Bank is authorised, in the interest of increased resilience, security, and efficacy of payment intermediation, to set rules on the operational security of payment intermediation, subject to prior approval from the Financial Stability Committee. Such rules could include infrastructure for digital retail payment intermediation, infrastructure for cross-border payment intermediation, and banknotes and coin. The rules authorise the Bank to stipulate necessary measures such as the arrangements for payment intermediation infrastructure, cybersecurity,

arrangements for payment instructions, authentication, accountability and settlement of payments, access to infrastructure, and required participation by Icelandic credit institutions. Furthermore, the amendment clarifies the Central Bank's authorisation to levy per diem fines on legal entities that, among other things, do not comply with the Bank's proposed rules on operational security of payment intermediation.

20. The agreement was made with RB, with the assistance of an electronic communications service provider.

21. Greiðsluveitan is an independent private limited company (ehf.) owned by the Central Bank of Iceland. Further information can be found [here](#).

Operational security – an amended regulatory framework (DORA)

The Ministry of Finance and Economic Affairs has circulated for commentary a draft bill of legislation on the digital operational resilience of the financial market. The purpose of the bill is to incorporate European instruments into Icelandic law: the Regulation (EU) 2022/2554 on digital operational resilience for the financial sector (DORA), and the DORA-related Directive (EU) 2022/2556. These instruments are part of the EU's digital financial package, which was first introduced in 2020.¹ A particular purpose is to help ensure that the financial market framework meets modern needs, fosters innovation and competition, shores up cyber- and IT security, and supports financial stability.²

DORA is broad in scope. The draft bill of legislation assumes that virtually all supervised entities in the financial market, as well as cyber- and IT service providers, will be covered by it. Furthermore, it is proposed that pension funds be included, thereby making the legislation broader in scope than DORA. It is worth noting in this context that DORA does cover institutions for occupational retirement provision (IORP). However, because Icelandic pension funds are governed by Act no. 129/1997 and not the EU regulatory framework for occupational pension funds, they must be explicitly included within the scope of the law. Doing so will ensure that the precautionary principles applying to other financial market entities will apply to pension funds as well.³ It is assumed that in their operations, financial market entities' adherence to the requirements in the Regulation will take account of the proportionality principle, as less stringent requirements are made of certain smaller entities, and there are several special provisions pertaining to microenterprises.

According to the draft bill of legislation, the Central Bank is a competent authority in the sense of DORA and the Central Bank Financial Supervisory Authority is entrusted with the tasks assigned to the competent authority. Various provisions of DORA will be laid down in greater detail in delegated

regulations (technical standards), which for the most part will be implemented in Iceland with the adoption of Central Bank rules. The following is a summary of key substantive provisions of DORA and the pending bill of legislation.

Framework for risk management and contingency.

The objective of the legislation is to promote digital operational resilience among financial institutions by laying down harmonised requirements for risk management and contingency. DORA outlines the underlying principles and sets forth coordinated requirements concerning the risk management and contingency frameworks that financial market entities should have in place in the area of cyber- and IT security. This includes all financial activities based on the use of cyber/IT systems and information and communications technology (ICT). The substantive rules laid down in DORA are consistent with internationally accepted criteria for best practice in the field.⁴ DORA requires that financial market entities regularly update and document their cyber/IT frameworks, which shall be subject to active supervision by the board of directors. Senior management is required to inform the board on a regular basis of the status of ICT risk, and the board shall define, approve, oversee, and bear responsibility for all measures relating to the ICT risk management framework. Among other things, it must establish policies and procedures aimed at ensuring stringent requirements concerning data access, reliability, integrity, and confidentiality. Furthermore, the board must define roles and responsibilities, as well as organisational structure and governance practices. It is particularly important that there be in place a policy and plan for business continuity, as well as contingency and recovery plans. These plans shall be documented, rehearsed, and updated on a regular basis, as appropriate. It is emphasised that financial market entities must have a clear view of their operations at all times and maintain a register of the important and critical ICT assets upon which they rely in their operations. Furthermore, they must map out the connections between their own operations and the ICT assets, so that the assets can be used safely and effectively; for instance, in case of serious incidents. They shall conduct analysis-based risk assessments regularly, with an eye to identifying the

1. The package also includes Regulation (EU) 2023/1114 on markets in crypto-assets, and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937 (MiCA); and Regulation (EU) 2022/858 on a pilot regime for market infrastructures based on distributed ledger technology, and amending Regulations (EU) No 600/2014 and (EU) No 909/2014 and Directive 2014/65/EU. The pilot regime has been translated into Icelandic law with the Act on Market Infrastructure Based on Distributed Ledger Technology, no. 56/2024.

2. The EU financial package is discussed to some extent in the Bank's *Financial Stability* 2023/2, pp. 54-56.

3. Further information can be found in the comments on the draft bill of legislation, specifically the comments on Article 2.

4. Guidance on cyber resilience for financial market infrastructures (June 2016).

potential impact of different scenarios on the company's operations and risk profile, and with consideration given to potential cyber-risk.

It should be noted that the proposed act of law will be special legislation vis-à-vis general cybersecurity law, particularly the current Act on the Cyber and Data Security of Critical Infrastructure, no. 78/2019. In this way, the new law implementing DORA will take precedence over the general legislation to the extent that it imposes stricter requirements on financial market entities.

Reporting requirements and incident handling.

DORA lays down a harmonised reporting requirement stipulating that the competent authority must be notified of serious incidents. Financial market entities are required to establish an incident management procedure, categorise incidents, and notify the Central Bank Financial Supervisory Authority of the incidents and any severe cyberthreats of which they are aware. The notification and reporting process is in three steps:

1. initial notification of the incident;
2. interim report containing updated information; and
3. final report submitted once handling and analysis are complete.

In all instances, the Central Bank Financial Supervisory Authority shall confirm receipt of the information, and it is authorised to provide general guidance or feedback. Furthermore, it is permissible to discuss measures in response to incidents, as well as methods to minimise and mitigate adverse effects throughout the financial sector. Notwithstanding such feedback, financial market entities bear full responsibility for the handling and repercussions of ICT-related incidents. Furthermore, upon receiving initial notifications, interim reports, and final reports, the Central Bank Financial Supervisory Authority is required to notify specified parties promptly, as applicable, of severe ICT-related incidents. It must notify the following parties in particular:

- the Electronic Communications Office of Iceland (ECOI);
- the ECOI's Computer Emergency Response Team (CERT-IS);
- the Central Bank of Iceland Resolution Authority;
- the National Commissioner of the Icelandic Police's (NCIP) Department of Civil Protection and Emergency Management; and
- the Data Protection Authority.⁵

5. The following shall also be notified, as applicable: The European financial supervisory authorities (EBA, ESMA, and EIOPA) and the European Central Bank (in cases involving credit institutions, payment institutions, or electronic money institutions).

In the comments accompanying the draft bill of legislation, it is stated that reporting of this type demands 24-hour monitoring by the Central Bank Financial Supervisory Authority, as it is assumed, among other things, that relevant information will be forwarded promptly, as is discussed above.

It should be noted that the requirements laid down in Chapter III of DORA, on ICT-related incident management, classification, and reporting, also apply to Article 23 of DORA, on *operational or security payment-related incidents and major operational or security payment-related incidents*,⁶ where they concern credit institutions, payment institutions, account information service providers, and electronic money institutions. With this provision, the reporting requirement pursuant to Article 100 of the current Payment Services Act, no. 114/2021, is repealed vis-à-vis payment service providers falling under the scope of DORA. The aim of this is to simplify the regulatory framework and potentially remove a duplicate reporting requirement affecting the relevant parties.⁷

Information sharing.

Article 45 of DORA provides for information sharing agreements on cyberthreat information and intelligence. Financial entities pursuant to Paragraph 1 of this provision are authorised to exchange information and intelligence on cyberthreats, including indicators of compromise, tactics, techniques, and procedures, cybersecurity alerts, and configuration tools, upon fulfilment of specified requirements. First, such information and intelligence sharing shall aim to enhance the digital operational resilience of financial entities, in particular through raising awareness in relation to cyberthreats, limiting or impeding the cyberthreats' ability to spread, supporting defence capabilities, threat detection techniques, mitigation strategies, or response and recovery stages. Second, it is required that the information sharing take place within trusted communities of financial entities. Third, the information sharing must be implemented through information sharing agreements that protect the potentially sensitive nature of the information shared, and that are governed by rules of conduct in full respect of business confidentiality, protection of personal data, and guidelines on competition policy. The information

6. These terms are defined in Article 3, Items 9 and 11 of DORA.

7. Cf. the amendment made to Article 96 of EU Directive 2015/2366 (the second Payment Services Directive, or PSD2), which was implemented in Iceland via Article 100 of the Payment Services Act, no. 114/2021, and with reference to Article 7, Item 5 of Directive (EU) 2022/2556 on digital operational resilience for the financial sector (the DORA Directive).

sharing agreements shall define the conditions for participation and, where appropriate, shall set out the details on the involvement of public authorities and the capacity in which they may be associated to the information sharing agreements, on the involvement of ICT third-party service providers, and on operational elements, including the use of dedicated IT platforms. Financial entities shall notify competent authorities (the Central Bank Financial Supervisory Authority) of their participation in information sharing agreements, upon validation of their membership, or, as applicable, of the cessation of their membership, once it takes effect.

Cybersecurity testing.

The Central Bank has established a cybersecurity testing framework, TIBER-IS, for institutions and companies that are important to the Icelandic financial system. Membership is voluntary.⁸ However, with the implementation of DORA and the passage of the proposed legislation, participation in testing will be mandatory. Financial entities other than microenterprises shall adopt a digital operational resilience testing programme consistent with the provisions laid down in Article 24 of DORA, as part of their internal ICT risk management framework. Further information on digital operational resilience testing can be found in Chapter IV of DORA. In the comments on the draft bill of legislation, it is stated that this testing refers to, for instance, vulnerability assessments and scans, open source analysis, network security assessments, gap analysis, scenario-based testing, and penetration testing. It is noted that even though microenterprises are not required to adopt a testing programme, they must nevertheless conduct minimum testing. Furthermore, it is stated that the competent authority (the Central Bank Financial Supervisory Authority) shall determine which financial entities shall, according to Article 26 of DORA, carry out advanced threat-led penetration testing (TLPT) at least one every three years. This decision shall be taken using a risk-based approach; for instance, taking into account the potential impact on financial stability. A summary of the results, a plan for remedial action, and data showing that TLPT has been carried out shall be submitted to the Central Bank Financial Supervisory Authority, which may request that the entity conduct testing more or less frequently, based on the risk profile of the financial entity and taking into account operational circumstances. According to Article 5, Paragraph 4 of the draft bill of

8. Further discussion of TIBER-IS can be found in Chapter 2.3 on operational security and on the [Central Bank of Iceland website](#). TIBER-IS is also discussed in Box 6 of *Financial Stability 2023/1*, pp 51-52.

legislation, the Central Bank of Iceland is responsible for matters relating to threat-led penetration testing in Iceland pursuant to DORA.⁹

Management of ICT third-party risk.

DORA lays down detailed requirements on the monitoring of risk that may arise for a financial entity in relation to its use of ICT services from ICT third-party providers. Financial entities shall adopt and regularly review a strategy on ICT third-party risk. On this point, the comments on the draft bill of legislation state, among other things, that managing ICT third-party risk is an integral component of the ICT risk management framework, cf. Article 6 of DORA, but should be based on the principle of proportionality. In this context, the contractual arrangement shall be appropriately documented. Key contractual provisions are laid down in Article 30 of DORA. Furthermore, financial entities shall maintain and update a register of information concerning all contractual arrangements on the use of ICT services provided by third parties. It is also assumed that the competent authority (the Central Bank Financial Supervisory Authority) will be informed promptly of any type of proposed contractual arrangements on the use of ICT services that support critical or important functions, as well as when a function has become critical or important. For third-party services that support a financial entity's critical or important functions, the entity shall put in place an exit strategy and appropriate contingency measures, as is further provided for in Article 28 of DORA, and shall take into consideration their potential ICT-related concentration risk; cf. Article 29 of DORA.

Oversight framework of critical ICT third-party service providers.

Chapter V of DORA contains provisions on a Union-wide oversight framework for critical ICT third-party service providers. This refers to the most active international ICT service providers within the European Economic Area (EEA) – i.e., other than those designated supervised entities in the conventional sense of financial services legislation – and the requirements that are made of their operations, as it is assumed that compliance with such requirements will be actively monitored. The European financial supervisory authorities,¹⁰ and the EFTA Surveillance Authority (ESA) on behalf of EFTA states within the EEA, shall designate such third parties under the oversight framework and shall share

9. Cf. Article 26, Paragraph 9 of DORA; cf. also the discussion in Sections 3.1 and 3.4 of the comments on the draft bill of legislation.

10. EBA, ESMA, and EIOPA; cf. the Act on a European Financial Supervisory System, no. 24/2017.

among themselves the role of Lead Overseer. It is assumed that the underlying criteria for such designation will be provided for in a Commission Delegated Regulation. These criteria will focus on systemic importance and the number

of customers that rely on the services of a given ICT service provider. A party cannot be so designated unless it provides cross-border ICT services.

Central Bank stress test 2024



Summary

At the time the Central Bank's stress test scenario was designed, three risks were considered most likely to materialise: a potential setback in tourism due to seismic activity on the Reykjanes peninsula, potential financial distress among borrowers due to high interest rates and inflation, and the possibility of an erosion in collateral values if asset prices should fall. The objective of the test was therefore to assess the potential impact on the systemically important banks (D-SIB) in the event that these risks should materialise, and to assess whether the D-SIBs' resilience would be sufficient to maintain an unchanged supply of credit and continue supporting the economy even if conditions should deteriorate.

The D-SIBs' net interest income has been strong in the recent term and the stress test results indicate that even if interest rate spreads narrow, the D-SIBs' income will be strong enough to offset the loan losses that materialise in the stress scenario. Loan losses derive mainly from loans to tourism and construction companies, although there are some losses on loans to individuals. The banks' risk-weighted assets (RWA) grow due to inflation, a weaker króna, and overall credit growth. Both loan losses and a rise in the risk weighted assets cause a decline in the D-SIBs' capital ratio.

All of the banks satisfy the overall capital requirement and the common equity Tier 1 (CET1) requirement in the stress test. Individual banks' capital in excess of requirements ranges between 2.9 and 3.6 percentage points at their worst, or between 3.3 and 5.8 percentage points in terms of CET1 alone. In addition, the banks' managers actually have considerable scope to take a variety of measures to protect the

banks' position, such as working with borrowers to prevent loan losses, but it is prohibited to allow for such management measures in the stress test.

In this particular scenario, the D-SIBs will generate operating losses in the first year, or 4.9 b.kr. after tax, which is considered small. For instance, their profit totalled 80 b.kr. in 2023 and is estimated at just under 90 b.kr. in the first year of the baseline scenario. In the second and third years of the scenario, the D-SIBs will generate operating profits. The results of this stress test show that even in the face of a dramatic reversal in the economy, the D-SIBs are highly resilient against the challenges identified.

Purpose and key assumptions

The Central Bank of Iceland conducts its system-wide stress test each year. Participants in the stress test are the three domestic systemically important banks (D-SIB), which accounted for 94% of deposit institutions' total assets as of end-2023. Testing their resilience therefore gives a very accurate view of the state of the banking system as a whole.

The stress test is carried out in cooperation with the D-SIBs, but the results published here, which are estimated by the Central Bank, give an indication of how the banks' operations, balance sheets, and capital ratios could develop in the stress scenario.

Some variables may be difficult to forecast, and others could depend on subjective assessments at any given time. As a consequence, the stress test entails simple assumptions that lead to a prudent assessment of the result and equalise the position of individual banks. One of these assumptions is that no action is taken by the banks' management. This means that the relative

composition of loan portfolios or funding is not adjusted, no operational streamlining is assumed, and no equity instruments are issued to boost the banks' capital ratios. Another assumption is that loans moved at any point in time to IFRS-9 stage 3 are not moved back to stage 1 or 2 during the horizon covered by the stress scenario. Furthermore, the banks are not authorised to write off loans during the horizon of the stress scenario, as write-offs lead to a lower risk weighted assets and therefore a higher capital ratio, all else being equal.¹

Scenarios

Two scenarios were designed at the beginning of the process: a stress scenario and a baseline scenario. The baseline scenario is built on assumptions about economic developments in coming years as described in the Central Bank's baseline forecast in *Monetary Bulletin 2023/4*, with the exception of interest rates. Developments in short-term interest rates are based on the average of forecasts prepared by the three large commercial banks in late 2023, and developments in five-year interest rates are derived from the Treasury yield curve as of 29 December 2023.

The stress scenario is based on an analysis of the key risks and challenges to financial stability. It does not represent a forecast of expected developments in macroeconomic or other variables. In general, the Central Bank uses cyclical stress scenarios, which implies that their severity increases when cyclical systemic risk is considered greater.

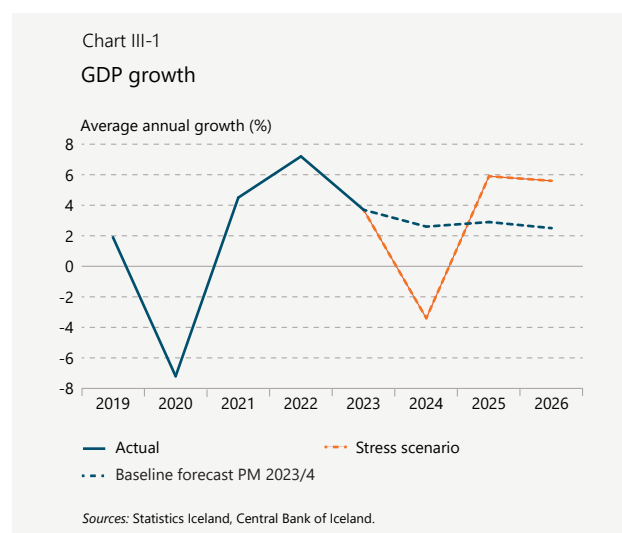
When the severity of the stress scenario and desirable developments in key variables have been selected, continuous and cohesive time series are obtained using the Bank's macroeconomic model (QMM).

The stress scenario that begins in 2024 assumes that two separate events occur during the year. The first of these is that wage agreements providing for unsustainable pay rises are signed at the beginning of the year, causing inflation to be more persistent than it would be otherwise and requiring a steep rise in interest rates as early as Q1/2024. The second, assumed to take place in H2/2024, involves a volcanic eruption in the ocean off Reykjanes peninsula, with volcanic ash disrupting transport to and from Iceland. Flight offerings are erratic during the eruption, which is assumed to last until January 2025. During the horizon of the scenario, flight offerings are cut in half relative to expectations, and tourist arrivals total 1.65 million in

2024 instead of 2.3 million. Thereafter, it takes some time for growth in tourism to resume, and the summer 2025 season is well below previous expectations in terms of visitor numbers. The export shock hitting the tourism industry causes the positive output gap to close and a slack to open up, with inflation tapering off relatively quickly in the latter years of the period and interest rates falling as well. Inflation is therefore 7% in Year 1 instead of the 5.7% provided for in the baseline, but it will be back to target in 2026. Short-term interest rates rise above 11% in Q1/2024 but then decline again within the year, so that the yearly average is only 0.4% above the level in the baseline scenario in 2024 and falls considerably below the baseline projection in the years to follow.

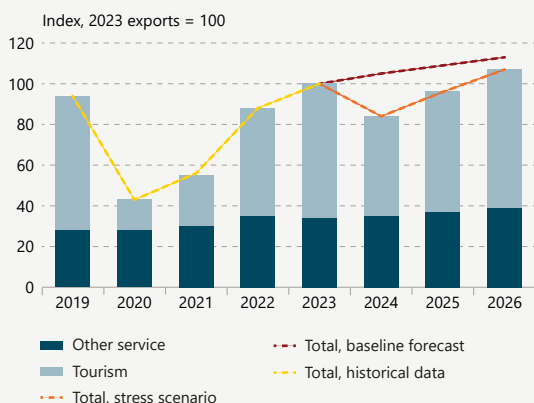
All of this has a detrimental effect on key asset markets. Chief among them is the commercial real estate market, where prices fall by 32% in real terms between end-2023 and 2025. It is also assumed that hotel buildings will fall even more in price, or by 38% over the same period, as the tourism industry will be hit hardest by the shock. Residential property prices fall much less sharply (a 12% real decline from end-2023 through end-2024), as limited residential investment supports the market to a degree. One assumption about house prices is that the gap between newly built and existing properties closes, so that the value of properties on contractors' and construction firms' books falls more than the house price index indicates, or by 17% in real terms from end-2023 through end-2024. Domestic share prices fall in nominal terms by over 29% in the first two years combined, owing to higher interest rates, a poorer economic outlook, and capital flight.

The króna depreciates by nearly 11% in trade-weighted terms in Year 1 of the scenario, as export



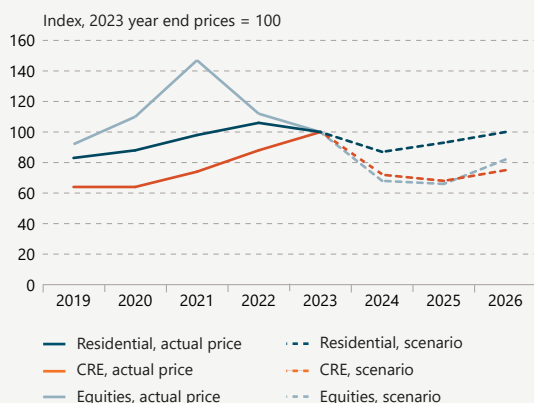
1. A more detailed description of the Central Bank stress test and the methodology used can be found in the report entitled *The Central Bank of Iceland's approach to stress testing the Icelandic banking system*.

Chart III-2
Exports of goods and services



Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-3
Real prices of key asset classes



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

revenues contract and capital moves from Iceland to lower-risk economies. The króna weakens further in Year 2 but then gradually appreciates in Year 3.

Higher financing costs and a poorer economic outlook cause business investment to contract by over 12% in Year 1. Residential investment contracts slightly (by 0.3% in Year 1), but public investment is assumed to remain unchanged relative to the baseline scenario (contracting by 3.1% in Year 1), as the authorities are struggling with both unemployment and high inflation.

Unemployment peaks at 5.7% in 2024, but part of the labour force leaves the country, as the employment situation is better abroad and other aspects of living standards in Iceland deteriorate. Real disposable income contracts by 1.9% in 2024 despite a 10% nominal pay rise, owing to a weaker króna, high inflation, and the effects of unemployment. Real disposable income picks up strongly in Years 2 and 3, however, when economic conditions improve again.

In some cases, individual events in the stress scenario offset one another; for instance, reduced tourist numbers bring about a slack in the economy, which mitigates the inflation triggered by the wage agreements. Furthermore, the shock affects various sectors to differing degrees, so the contraction in GDP measures only 3.4% in real terms in Year 1, which is relatively mild in comparison with the most recent economic shocks. The economic recovery therefore proves relatively swift, at 5.9% in Year 2 and 5.6% in Year 3. This is due partly to the depreciation of the króna, which bolsters the tourism industry's competitive position and fostering a return to growth in Year 2. Because of reduced flight offerings and difficulties in staffing tourism industry jobs, tourism exports are weaker than in the baseline in all years of the stress scenario.

The contribution of net trade to GDP is negative in 2024, primarily because of a 16% contraction in services exports (which includes a 26% contraction in tourism). Goods exports contract marginally at the same time, due to generally unfavourable developments in foreign commodity market prices. The price of Iceland's key export products tumbles – in Year 1, aluminium prices fall by 15% and marine product prices by over 20%. Total goods exports therefore contract by 3.3% in 2024 instead of growing by 2.6%, as in the baseline scenario. Imports contract as well, but by less than exports do during the first year. However, the drop in imports is longer-lasting than the contraction in exports and continues into Year 2 of the stress scenario, when exports start to grow, with the associated positive impact on GDP growth during that year.

Access to financing is not assumed to deteriorate, but spreads on corporate bond issues and bank funding are expected to widen, to 150 basis points on

Table III-1 Key variables in the stress scenario¹

%	2024	2025	2026
Private consumption	-0.2	1.4	-6.6
Exports of goods and services	-9.7	10.5	8.3
Imports of goods and services	6.1	-0.1	8.4
GDP growth	-3.4	5.9	5.6
Unemployment (average for the year)	5.7	4.1	3.2
Inflation (average for the year)	7.0	3.9	2.5
Nominal house prices (year-end values)	-5.9	86	10.0
Nominal CRE prices (year-end values)	-22.3	-3.5	12.5
Change in short-term interest rates (percentage points)	9.6	5.4	4.5
Change in five-year nominal interest rates (percentage points)	7.3	5.9	6.3

1. Change from prior year (%) unless otherwise specified.

Source: Central Bank of Iceland.

CPI-indexed domestic market funding and 200 basis points on non-indexed funding. The premium on the banks' foreign funding over and above reference rates is 550 basis points.

Results

The D-SIBs' loan losses, measured as an increase in the contribution to the impairment account, total 102.4 b.kr. for the three banks combined over the entire stress scenario. The loss stems mainly from loans to companies (78.7 b.kr.) in the tourism and real estate sectors, which are most strongly affected by the scenario. There are also losses on loans to households, however, totalling 23.7 b.kr., which is proportionally much smaller, as the collateral coverage on mortgage loans is generally very high.

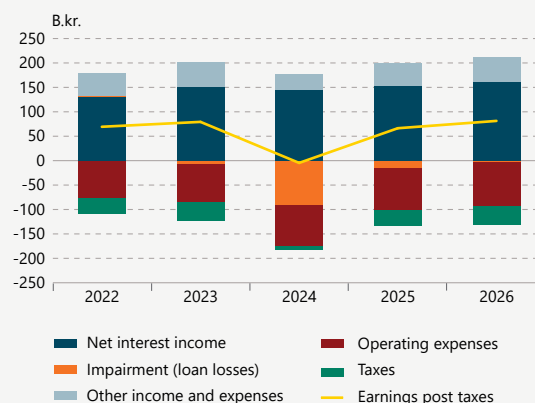
The D-SIBs' impairment is intended to cover both losses on loans that could go into default in the near future and losses on loans that are already in default or are unlikely to be paid in full. One of the objectives of the IFRS-9 standard followed by the banks is that impairment should be increased as soon as increased arrears are expected; furthermore, it should be sufficient to cover losses that materialise in the future. The standard is based on the expectation that impairment is recognised promptly, which was indeed the case during the pandemic, when impairment was increased as soon as Q1/2020.

The D-SIBs' strong capital and liquidity ratios have enabled them to support borrowers in the recent high-interest rate environment, but the stress test does not assume that the banks will grant moratoria on payment or adopt other measures to assist indebted customers. It is assumed, however, that borrowers will continue to shift from non-indexed to indexed loans, as they did in 2023.

The D-SIBs' interest rate spreads amounted to 3.1% of their average total assets in 2023, but this could change during a shock. The stress test examines what would happen if short-term interest rates should rise more than long-term rates. In general, the banks are funded in large part with deposits or short-term funding, while their assets bear interest that follows the long end of the yield curve. Furthermore, premia on their market liabilities could rise if investors detect increased risk in banking operations.

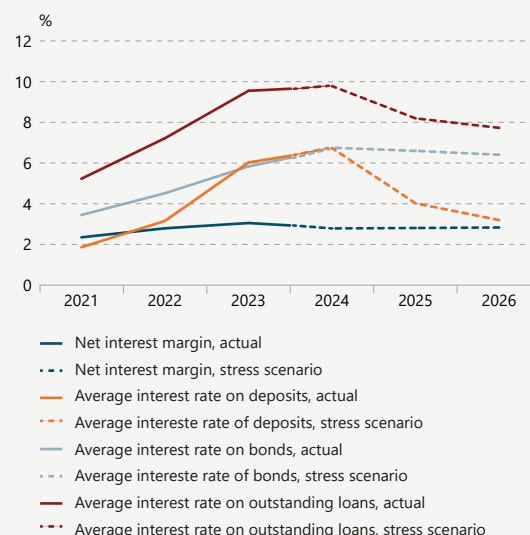
The result of the stress test is that the interest rate spread narrows to 2.8% in Year 1 and remains at that level throughout the scenario. The decline will not be greater than this, as the banks have refinanced and lengthened their foreign debt in the recent term,

Chart III-4
Stress scenario: D-SIBs' income and expenses¹



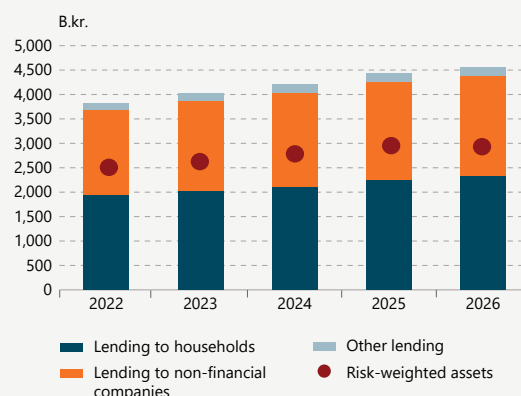
1. Domestic systemically important banks (D-SIBs).
Sources: Arion bank, Íslandsbanki, Landsbankinn, Central Bank of Iceland.

Chart III-5
Stress scenario: D-SIBs' net interest margin and its components¹



1. Domestic systemically important banks (D-SIBs).
Sources: Arion bank, Íslandsbanki, Landsbankinn, Central Bank of Iceland.

Chart III-6
Stress scenario: D-SIBs' lending¹



1. Domestic systemically important banks (D-SIBs).
Sources: Arion bank, Íslandsbanki, Landsbankinn, Central Bank of Iceland.

and the low-interest portion of their loan portfolio is shrinking. Their net interest income therefore totals 144.5 b.kr. in Year 1 of the scenario, which represents a decline of 6.4 b.kr. relative to 2023. It starts to grow again thereafter, owing to banking system growth, and reaches 153 b.kr. in Year 2 and 161 b.kr. in Year 3.

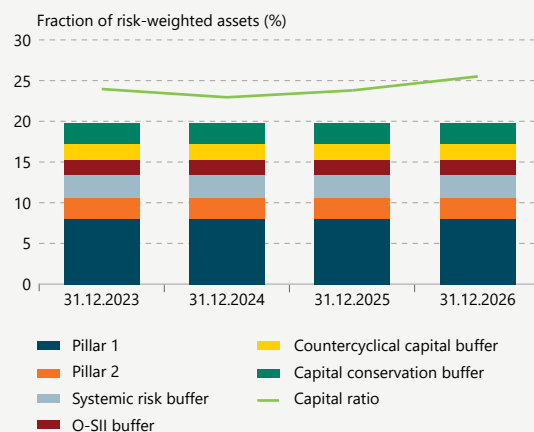
Under the scenario, wages and other operating expenses rise in line with inflation and the general wage index, while the item "other income and expenses" falls significantly, owing to reduced income from fees and commissions, losses on investment assets, and exchange rate losses. Finally, taxes total 9.2 b.kr. in Year 1 of the stress test, and the after-tax loss is 4.9 b.kr. for the banking system as a whole. It is clear from this that the D-SIBs' underlying operations are profitable enough that they can withstand the estimated loan losses assumed in the stress scenario. Their operations rebound quickly. The banks' profit totals 65.7 b.kr. as soon as Year 2 and rises to 81.4 b.kr. in Year 3, as compared with a year-2023 profit of just under 80 b.kr.

The largest part of the D-SIBs' risk weighted assets, risk-weighted lending, grows because of indexation on price-indexed assets, the adjusted foreign-denominated asset position, and credit growth. To place this credit growth into context, the D-SIBs' total assets grow by an average of 4.6% per year in the scenario, as compared with an actual average of 7% per year since 2017.

The risk weights themselves increase as well, though. The main impact will be from a larger share of homes with a loan-to-value (LTV) ratio over 80%. The portion of those loans that is above 80% LTV receives a risk weight of 100% instead of 35%. Increased arrears also lead to higher risk weights, as the unsecured share of non-performing loans is assigned a higher risk weight. The result is that in Year 1 of the scenario, RWA increase by 175 b.kr., or 5.5 percentage points.

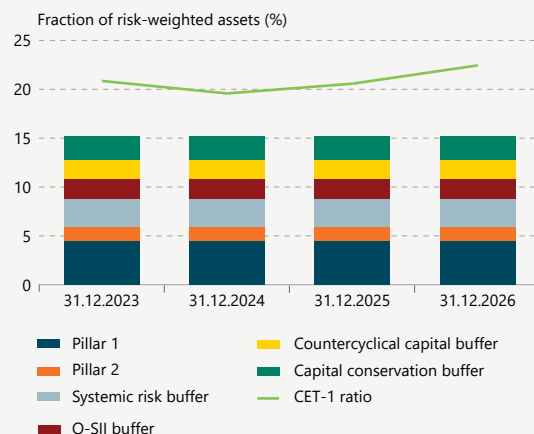
CET1 capital rises or falls in line with after-tax profits or losses, as the stress test does not assume that any dividends will be paid. The capital base is also exposed to exchange rate effects, however, as a portion of additional Tier 1 and Tier 2 capital is issued in foreign currency and grows when the króna depreciates, as is the case in the stress scenario. The weighted average ratio of CET1 capital to the D-SIBs' RWA is 20.9% at the beginning of the stress test, but during the test it declines to 19.6% in Year 1 and then begins to rise. The reduction averages 1.3 percentage points for all of the banks. At the same time, the capital ratio declines by only 1 percentage point, owing to the aforementioned increase in additional Tier 1 and Tier 2 capital.

Chart III-7
Stress scenario: D-SIBs' capital ratio and requirements¹



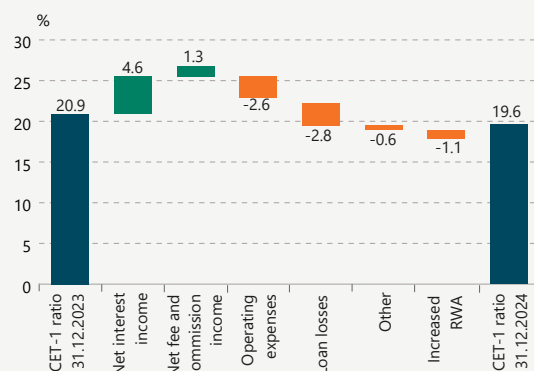
1. Domestic systemically important banks (D-SIBs).
Sources: Arion bank, Íslandsbanki, Landsbankinn, Central Bank of Iceland.

Chart III-8
Stress scenario: D-SIBs' CET1 ratio and requirements¹



1. Domestic systemically important banks (D-SIBs).
Sources: Arion bank, Íslandsbanki, Landsbankinn, Central Bank of Iceland.

Chart III-9
Disaggregated development of D-SIBs' CET-1 ratio¹



1. Domestic systemically important banks (D-SIBs).
Sources: Arion bank, Íslandsbanki, Landsbankinn, Central Bank of Iceland.

At the beginning of the scenario, the three large commercial banks' mandatory overall capital ratio according to the Financial Supervisory Authority of the Central Bank of Iceland's requirements ranges between 19.4% and 20.1% (weighted average 19.8%). Each of the banks satisfies the requirement throughout the horizon of the stress test. At the end of Year 1, when capital ratios are at their lowest, they are 2.9-3.6 percentage points above the overall requirement. The required CET1 ratio was 15.0-15.4% at the beginning of the scenario (weighted average 15.2%), and when the ratios bottom out during the horizon they are 3.3-5.8 percentage points above the required level.

Chart III-9 shows a breakdown of developments in the CET1 ratio from year-end 2023 until the trough according to the scenario, which occurs at the end of Year 1. The first three items (net interest income, net commission and fee income, and operating expense) have the most impact on the banks' day-to-day operations and result in a higher CET1 ratio. Loan losses reduce it by 2.8 percentage points, and the expansion of the risk weighted assets, which is due to credit growth and marginally higher risk weights, lowers it by an additional 1.1 percentage points. The credit growth that materialises is based not only on supply but also on demand for credit. If it materialises to a limited degree or not at all, the CET1 ratio can be expected to be fall less markedly.

The increase in the countercyclical capital buffer (CCyB) to 2.5% took effect on 16 March 2024. The stress test uses year-end 2023 as a reference, however, and assumes a CCyB of 2.0%. The stress test combines a real shock in the form of reduced tourist numbers and higher unemployment and a financial shock characterised by a steep drop in asset prices and losses in the banking system, making a reduction in the CCyB a possible response. The impact of the stress scenario in the stress test is mild enough that a partial reduction in the CCyB – by 1.5%, for instance – would be enough to cover the decline in capital ratios.

Significant resilience

Because the stress test is conducted from a macroprudential perspective, a possible spiral between the banking system and the real economy is given particular attention. If the banking system withstands the shock entailed in the stress scenario without cutting back on lending to profitable projects, no negative spiral will develop.

The results of the stress test show that the banking system is highly resilient and well able to support

the economy even if shocks strike. Their strong capital position gives the banks scope to maintain lending growth even in the face of an economic contraction and a surge in arrears, thereby supporting investment during a downturn. Furthermore, it should be noted that management measures are excluded from the stress test, but the banks' managers would doubtless take a range of actions to support borrowers and protect their own interests if a shock like that described in the stress scenario should materialise. These actions would probably mitigate the impact of the shock on the D-SIBs' balance sheets.

Financial market infrastructure



Development and prospects

Payment outflows in domestic financial market infrastructure

Financial market infrastructure is a blanket term that refers to systems used for payment intermediation, registration, and settlement. These systems are necessary in modern society to execute electronic transfers of funds between payers and payees through various payment service providers. One of the Central Bank of Iceland's roles is to promote an active and secure financial system, including domestic and cross-border payment intermediation.

In Iceland, there are two types of infrastructure that transfer payments between bank accounts: the banks' internal (or intrabank) payment systems and the Central Bank's interbank payment system (MBK). The latter of these is designated a systemically important payment and settlement system. Transactions and settlement of payments between banks and savings banks and the Central Bank take place in the interbank system (see Chart IV-1). The securities settlement system is also an important infrastructure component because of the scope of its role in the economy.

In 2023, an average of 670 b.kr. per business day were transferred between accounts through these two payment infrastructure components that equates to about 12% of GDP.¹ Of that total, 345 b.kr. changed hands; i.e., households, businesses, financial institutions, and public entities withdrew funds from their own accounts and transferred them to accounts owned by

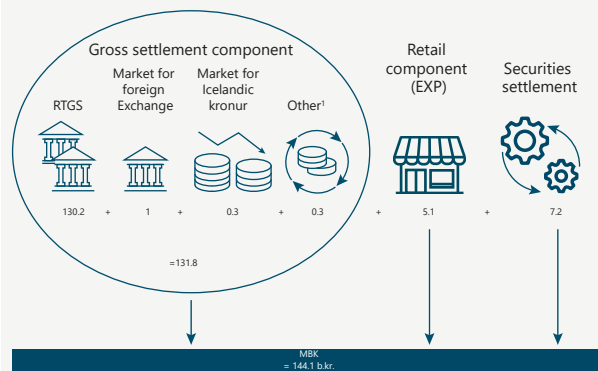
others. Of this latter amount, an average of 201 b.kr., or 58%, was settled in deposit institutions' internal payment systems, and the other 42%, or 144 b.kr., was routed through the interbank system. If this infrastructure were to be seriously disrupted – due to a cyberattack, for instance – it could have a severe impact on the entire financial system and all economic activity, and therefore on financial stability. The economic cost of such an occurrence can be extremely high and can erode confidence in the financial system for a long period of time.

Payment intermediation in the interbank system

Examining turnover by type of payment shows that large-value RTGS payments account for a considerably greater share than other types of payment do. Turnover is generally much higher on Wednesdays than on other business days, as market activity between the Central

Chart IV-1

Payments of interbank system settlement, average per business day in 2023



1. Other: Interest payments to participants from the Central bank and fees paid for participation in the interbank system. Transactions processed between deposits accounts owned by the same participant are not included. That part averaged 16,7 b.kr. per business day.

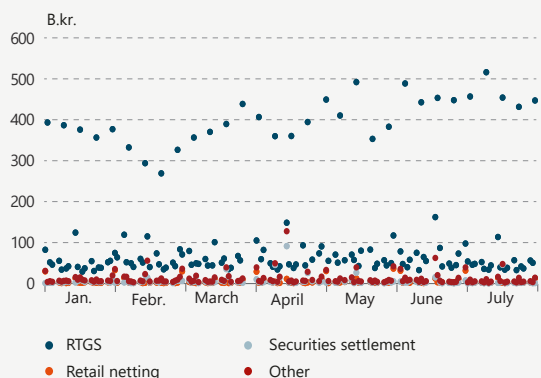
Source: Central bank of Iceland.

1. This amount represents all transfers taking place in the banking system, between banks and between accounts within the same bank and branch.

Chart IV-2

Breakdown of interbank system settlement¹

2 January - July 31 2024



1. Daily turnover.

Source: Central Bank of Iceland.

Bank and the commercial and savings banks takes place on Wednesdays. Activity classified as “other” in Chart IV-2 includes transfers between accounts owned by the same participant, fees for interbank system participation, and the Central Bank’s interest payments to participants.

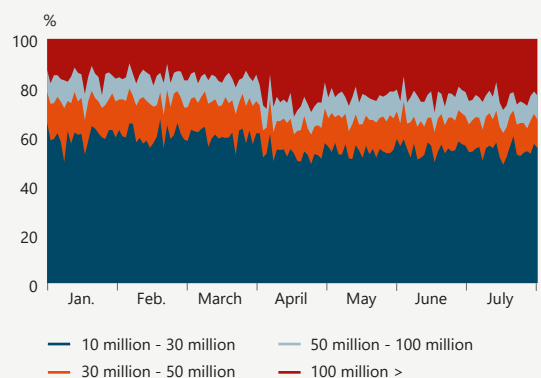
Gross settlement (RTGS) component

In the first seven months of 2024, RTGS system turnover averaged 132 b.kr. per day, in an average of 676 transactions. Turnover was 1.9% lower than in the same period of 2023. On the other hand, the number of transactions during the period rose by 12.8%. The average amount per transaction therefore declined by 13%, from 225 m.kr. to 195.2 m.kr. About half of transactions settled between participants range between 10 m.kr. and 30 m.kr., and one-fifth are for amounts equalling

Chart IV-3

Breakdown of interbank system payments, by amount¹

2 January - 31 July 2024



1. Share of total RTGS payments between participants. Daily turnover.

Source: Central Bank of Iceland.

The interbank payment system (MBK)

The Central Bank of Iceland owns and participates in Iceland’s interbank payment system, where all final settlement of króna-denominated transactions between financial institutions takes place. There are currently twelve participants in MBK: the Central Bank, the commercial banks, the savings banks, and the foreign securities settlement entities Euroclear and Clearstream.

The interbank system is the only one of its kind in Iceland. It is subject to Central Bank Rules no. 1030/2020 and is recognised by law pursuant to Act no. 90/1999. It is divided into two components, the gross settlement component (RTGS) and the retail component (EXP). Payments between two parties (including the Central Bank) in amounts of 10 m.kr. or more are settled in the RTGS component of the system.

The monetary part of securities settlement is also routed through the RTGS component, which is open each business day from 9:00 hrs. until 16:30 hrs. Participating financial institutions may not have a negative balance at the end of the day, but if so, the system creates an overnight loan.

Payments between financial institutions in amounts of less than 10 m.kr. are routed through the retail component of the system, EXP. Payments are collected in batches, and twice a day a net payment is deducted from or added to each participant’s RTGS account. The interbank system was brought into use in October 2020, replacing the older interbank payment system. Technical operation and hosting of the system is outsourced to RB, which also monitors the system outside opening hours. In general, central banks operate RTGS systems in their own currency areas, while retail payment systems are often owned and operated by private entities.

or exceeding 100 m.kr. In comparison with the past five years, the number of payments of 100 m.kr. or more has increased by 5%, while the number of 10-30 m.kr. payments has declined.

Effective intraday management of large-value settlement

The Central Bank urges interbank system participants to settle as many transactions and amounts as possible early in the day, particularly large-value transactions,

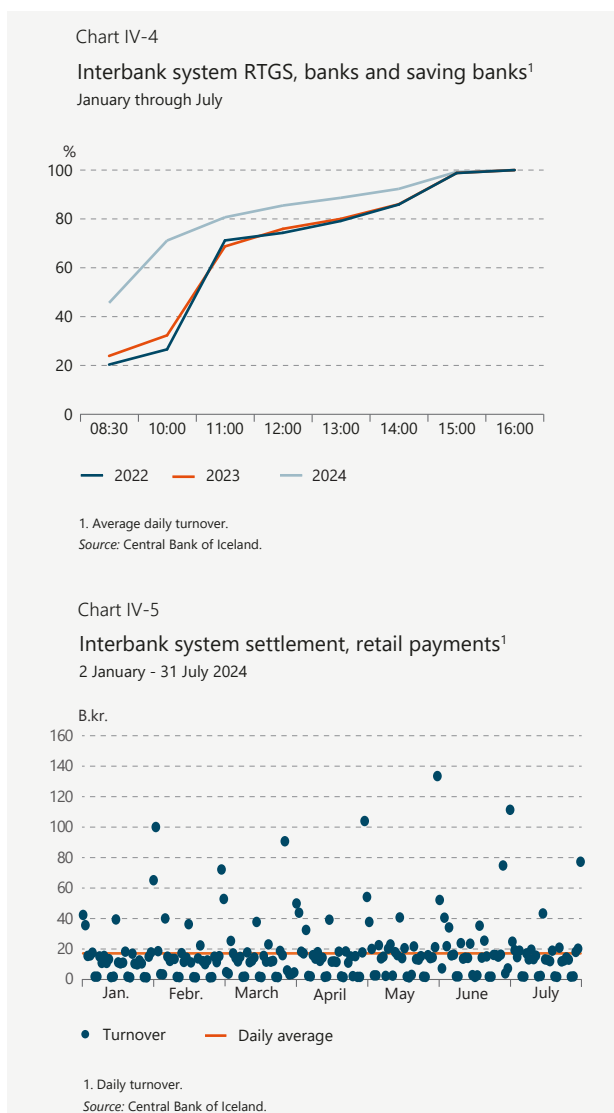
as RTGS payments are often classified as time-critical.² Settling more transactions early eases strain on payment systems if a serious incident occurs during the day, in addition to reducing the likelihood that overnight loans will be needed at the end of the day. Strain on the system peaks at regular intervals, mainly when taxes, interest, and bond principal are paid. Transaction numbers also tend to increase on the days just before and after holidays. The busiest day in 2024 to date was 15 May, when 1,816 transactions were settled, whereas turnover peaked at 516 b.kr. on 10 July.

In the first seven months of the year, RTGS participants had completed settlement of an average of 46% of their payments (in terms of daily turnover) before 10:00 hrs. and about 88% by 13:00 hrs. These percentages are higher than for the same period in 2023, which is a favourable development. Nevertheless, some large payments are sent for settlement in the last hour

TARGET¹

The European Central Bank's (ECB) Target system is an infrastructure component that could substitute for the Icelandic interbank system. The Central Bank has begun examining Target, following in the footsteps of the Nordic central banks that have decided to adopt all or part of the system in place of the infrastructure they currently use. The Bank of Finland already uses Target, as it is a member of the eurozone. The project is broad in scope and involves not only technological design but also the regulatory environment, administrative considerations, monetary policy, financial stability, costs, scope, and not least, participants' interests. The Central Bank's aim in examining Target is primarily to understand more fully what implementing it would entail as regards the above-listed points. The Bank has signed a letter of intent with the ECB, as a declaration of its genuine interest in adopting the system. Making such a declaration initiates a relationship with the ECB, which facilitates analysis and information gathering. A working group within the Central Bank will then analyse in greater detail whether the Target system is a viable option for payment intermediation in Iceland.

1. A Box on Target services can be found in *Financial Stability 2024/1*.



before the interbank system closes, creating a certain amount of operational and liquidity risk. The average amount of these payments relative to the total amount sent for settlement each day has declined year-on-year, however.

Retail component

In the first seven months of 2024, an average of 131,000 transactions per day were settled in the interbank system. This is 7.3% more than over the same period in 2023. The turnover represented by these transactions averaged 17 b.kr. per day, an increase of 10%. The average amount per transaction is virtually unchanged between years. Some 79% of retail payments are for amounts less than 100,000 kr., and only 0.3% are for 5 m.kr. or more. Price hikes increase retail system turnover but can have the opposite effect on RTGS payments, as there are often fewer large transactions and investments in a high-inflation environment.

2. Time-critical payments.

In retail payment intermediation, strain is usually greatest around the turn of the month, when wages and public benefits are deposited to individuals' bank accounts. Loan payments and household bills are often due at that time, and consumers usually do more shopping around the turn of the month. The peak day in 2024 to date was 31 May, when turnover totalled 133 b.kr., and the number of transactions equalled around 924,000.

Table IV-1. Breakdown of retail payments by amount¹
January-July 2024

Amount	Number of transactions (millions)	Of total %	Turnover b.kr.	Of total %
0 - < 100,000.	22.5	79.3	420.1	11.4
100,000 - < 500,000	4.3	15.2	990.5	26.6
500,000 - < 1 million	0.9	3.3	628.5	17.0
1 million - < 5 million	0.5	1.9	1,082.8	29.5
5 million - < 10 million	0.1	0.3	567.1	15.4
Total	28.4	100.0	3,689.1	100.0

1. Breakdown of interbank system payments, retail component
Source: Central Bank of Iceland.

Securities settlement

Transactions with securities issued in Icelandic krónur are routed through the settlement systems at Nasdaq CSD SE or the VBM central securities depository. The vast majority of transactions are settled in the Nasdaq system. In the first seven months of 2024, securities turnover averaged 22.7 b.kr. per day, down from 23.7 b.kr. per day over the same period in 2023. The turnover figure derived from an average of 461 transactions per day, as compared with 510 a year earlier. Settlement system turnover fell 4.4% year-on-year during the period, and the number of transactions declined by 10%. The reduction in transaction numbers was due to a decline in settlement of equity securities and Treasury bond trades. Funds' turnover grew by 35%, although they constitute only a small proportion of total securities settlement in the Nasdaq system.

The peak day in 2024 to date was 24 January, when 1,054 transactions were settled and the turnover totalled 85,6 b.kr.

Table IV-2 Settlement of trades, by securities type¹

b.kr.	Bond market	Thereof treasury bonds	Equities	Funds/other transactions
January-July 2022	13.2	11.3	6.2	0.3
January-July 2023	17.9	15.6	5.4	0.3
January-July 2024	17.3	14.6	5.0	0.4

1. The greatest strain on the settlement system thus far in 2024 was on 24 January, when 1,054 transactions were settled. Turnover peaked at 85.6 b.kr. on the same day.
Sources: Nasdaq Iceland, VBM (Central securities depository), Central Bank of Iceland.

Operational risk

The interbank system is governed by Central Bank Rules no. 1030/2020. Among other provisions, the Rules lay down requirements or obligations pertaining to the cyber- and operational security of participants and of the Central Bank as system owner. These requirements are outlined in greater detail in contractual agreements made between the Bank and the participants. According to Article 31 of the Rules, the Central Bank is responsible for the day-to-day operation of the interbank system and oversees its operation on the basis of statutory provisions and international criteria laid down in rules on best practice for efficacy and operational security. The Article references the BIS/IOSCO Core Principles for Financial Market Infrastructures (PFMI).³ The PFMI place strong emphasis on active risk management, including operational risk, and are provided for in greater detail in the *Guidance on cyber resilience for financial market infrastructures*, which must be followed in operating and overseeing the interbank system.⁴

Preparation for an assessment of the interbank system vis-à-vis the criteria in the PFMI began in spring 2023 and is still underway. It was assumed at the outset that the review would take 18-24 months. The Central Bank aims to satisfy the criteria laid down in the PFMI at all times; therefore, they must always be considered when changes are made to the financial market infrastructure environment.

One measurement that sheds light on operational risk in payment intermediation is the number and type of incidents (operational deviations) that occur. A total of seven incidents in interbank system operations were recorded in the first seven months of the year. One of them was classified as severe. Even so, the incident did not disrupt market transactions.

At the beginning of 2024, it was decided to stop recording automatic rejections of RTGS payments as incidents, as such rejections do not disrupt system operations. If this same practice had been applied in 2023, there would have been 24 incidents instead of 31. The number of incidents has therefore fallen year-on-year, and system uptime since the beginning of 2021 has been 100%.

Liquidity risk in the interbank system

Payments between interbank system participants are settled instantly and finally in real time, provided that

3. The PFMI can be found [here](#).

4. The Guidance on cyber resilience can be found [here](#). It is discussed briefly in the Central Bank's *Financial Market Infrastructure* (2016) report, pp 34-38.

the sending party has enough liquidity to meet its financial obligations as and when expected. Payment orders that would cause participants to exceed their intraday credit limits are automatically rejected. This significantly reduces the risk of default. On the other hand, real-time settlement increases the participant's need for liquidity.

Interbank system participants can generally rely on three sources of funds to settle their payment obligations within the business day:

- 1) incoming payments from other interbank system participants;
- 2) their own account balance with the Central Bank; and
- 3) an intraday overdraft authorisation provided by the Central Bank against eligible collateral.⁵

Payments do not flow at the same pace throughout the day, and flows seldom occur at a 1-to-1 ratio. As a result, liquidity risk can materialise in the interbank system; for example, when a participant delays payment while it has insufficient funds to cover the obligation when due, or when a participant is unable to submit payment because of an interruption in the operation of its own payment systems or related systems. It is therefore important to manage intraday payment flows effectively so as to minimise risks if incidents should occur in the system.

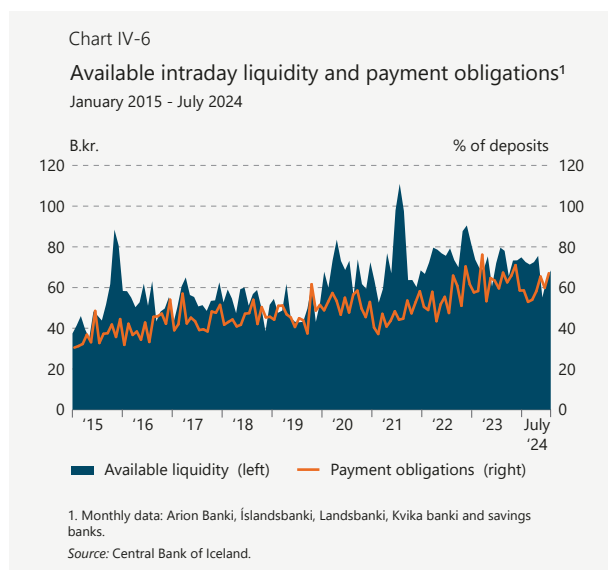
Participants' combined end-of-day average balance in the interbank system declined by 2% year-on-year, from 71.4 b.kr. to 69.9 b.kr., in the first seven months of 2024.⁶ Participants' intraday liquidity in the system remains good, however, and they should be able to withstand shocks in payment intermediation. Naturally, there is greater risk on days when interbank system payment flows are heavy, as participants rely more on incoming payments and overdrafts at those times.

Over the first seven months of 2024, participants financed an average of 76% of their system activity by using their own account balance and just under 24% with inflows from other participants. They used intraday credit for less than 1% of their financing.⁷

5. In Iceland and many other countries, banks that participate in interbank systems can usually obtain liquidity from their central bank by providing sufficient collateral in the form of an intraday overdraft that remains in effect through the business day.

6. The balance is estimated for Arion Bank, Íslandsbanki, Landsbankinn, Kvika, and the savings banks.

7. Further information on system overdraft authorisations can be found in *Financial Stability report 2023/2*.



Overnight loans in the interbank system

In recent years, demand for overnight loans has been limited relative to the period during the financial crisis. At present, participants take overnight loans mainly because they have underestimated their intraday account balance or their payment obligations, or because of an unexpected large-value payment made just before the system closes. In 2023 as a whole, the Central Bank granted two overnight loans to participants. It did not grant any overnight loans in the first seven months of 2024.

Interbank system participants pass stress tests

The Central Bank conducts regular stress tests of payment intermediation among interbank system participants. The aim of the test is to measure the resilience of payment systems with respect to participants' intraday liquidity and ability to cover their payment obligations in the event of a disruption of payment system operations, such as a cyberattack. The last stress test was carried out in August 2024. The test was conducted based on actual transaction numbers and turnover data for settlement of all payments made by four banks in the RTGS component of the system on business days from 2 January through 30 June 2024.⁸

Three scenarios were presented, one for each bank, so as to determine the resilience level of the bank in question. The test assumed that a disruption occurred at the beginning of the day and the bank affected was unable to regain control of its payment intermediation before the following day. In order to test the system's

8. The data are based on the RTGS component of the interbank system. Participants' transfers between their own accounts in the Central Bank are excluded from the test, as is final settlement of retail payments and securities transactions.

tolerance limits, it was assumed that other banks continued to send payments to the affected bank. This caused liquidity to accumulate at that bank instead of being redistributed to other payment system participants (a liquidity sink effect). The stress test results showed that participants were able to provide sufficient liquidity (including their overdraft limits) to respond to the shock, provided that their collateral did not fall in value at the same time. On average, each bank was able to settle 92% of its payment obligations, although expected payments from participants were missing.

Retail payments: developments and prospects

Electronic payment intermediation

About 99% of retail payments in Iceland are routed through digital retail payment systems. Intermediation of retail payments between systems takes place each time a household or business transfers funds via online bank or banking app, deposits or withdraws funds via ATM, and purchases goods using a digital payment instrument. All retail payments between financial institutions are collected in batches and sent to the inter-bank system for settlement twice a day.

In the first seven months of 2024, turnover in digital retail payments totalled 9,851 b.kr., or an average of 46.3 b.kr. per day. This represented an increase of 4.5% year-on-year, and transfers via online bank and banking app accounted for 93% of turnover. Underlying this turnover were 130.4 million transactions, or an average of 612,000 per day. Roughly 75% of transactions were associated with payment cards used to purchase goods and services. Use of banking apps in smart devices was up 56% year-on-year in the first seven months of 2024.

Options for digital transfers of funds

Transfers via online bank and banking app fall into three main categories:

- 1) *Claims* appearing in the payer's online bank or banking app via the RB claim system (Payables pool).⁹ In the first six months of 2024, 2,455 b.kr. went through the claim system, or an average of 13.5 b.kr. per day.
- 2) *Direct debit*, where the amount of an invoice appears in the account owner's online bank and banking app prior to the due date and is

9. The RB claim system (Payables pool) is an infrastructure component that guarantees a certain baseline functionality in the collection of claims by administering the preparation, calculation, distribution to payers, and payment of claims.

Financial market infrastructure fora

Greiðsluveitan, a company owned by the Central Bank, operates three fora on behalf of the Bank. Their role is to promote harmonisation and further development of financial market infrastructure and to ensure that financial market infrastructure in Iceland is always secure, effective, and efficient. Within each forum are various working groups focusing on topics such as payment intermediation, rulebooks, and so forth.

The role of the Strategic Forum is to focus on a vision and priorities for the development of financial market infrastructure in Iceland. It includes members representing the Central Bank, the Ministry of Finance and Economic Affairs, deposit institutions, and RB. The Strategic Forum is also tasked with accepting and evaluating proposals for new collaboration in the field of financial market infrastructure. It only considers projects that the Central Bank considers necessary and consistent with the Bank's statutory role, or that are conceived in the interest of more than one systemically important bank. Since the Strategic Forum's establishment, a number of collaboration proposals have been submitted. These pertain, among other things, to execution of foreign payment instructions, joint operation of ATMs, and domestic retail payment intermediation.

The proposal for retail payment intermediation is currently being examined by a working group within the Forum, and it has been proposed that the group examine the possibility of implementing centralised infrastructure for payment requests. The aim of implementing such infrastructure is to enhance the resilience of payment intermediation. The Strategic Forum is expected to take a decision on implementation at the beginning of 2025.

The Rulebook Council is a forum whose role is to analyse and issue rulebooks laying down provisions on financial market infrastructure participants' rights and responsibilities, set forth harmonised groundrules for them, set standardised procedures, and enhance transparency in system operations. Members of the Rulebook Council represent deposit institutions, RB, and the Central Bank. The Council is currently working on issuing an Icelandic Instant Credit Transfer (ICT) Rulebook for real-time payment intermediation in Icelandic krónur.¹

1. The ICT Rulebook mainly affects the activities of deposit institutions and their tech service providers. It is based on the SEPA Instant Credit Transfer Scheme Rulebook (SCT Inst) from the European Payments Council (EPC).

The first draft of the rulebook has been published for commentary on the Central Bank and Greiðsluveitan websites. The Council is also considering issuing two additional rulebooks, one on confirmation of payee and one on payment requests and payment of claims.

The *Payment Council* is a forum for Government authorities, market participants, and other stakeholders to discuss and exchange information on matters relating to payment intermediation and financial market infrastructure. Its role is to discuss and present various issues pertaining to payment intermediation and financial market infrastructure. The Payment Council is authorised to establish working groups and has already established one on interruptions in payment intermediation. The working group's tasks are discussed in greater detail later in this chapter.

automatically debited from the owner's bank account. Direct debits in the first six months of 2023 totalled an estimated 233 b.kr.¹⁰ In a spring 2024 survey of households' payment behaviour, carried out by Gallup for the Central Bank, households were asked whether they used direct debit, and one-third of respondents said they did.

- 3) *Other transfers*, where funds are transferred via online bank or banking app from a bank account owned by one individual, company, or public institution to a bank account owned by another party.

Chart IV-7
Digital payments¹

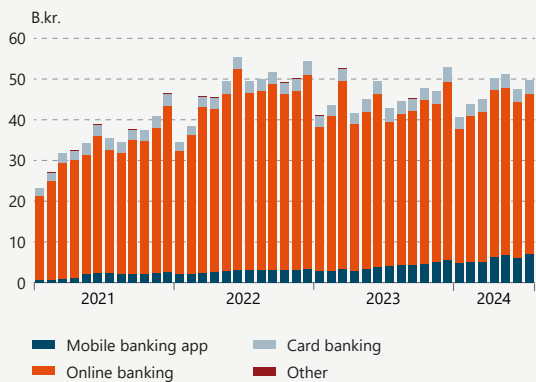


Chart IV-8
Digital payments¹

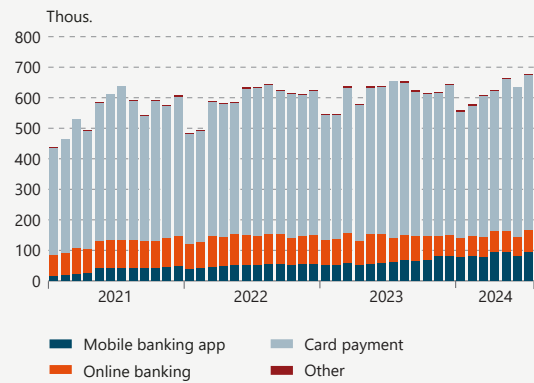


Chart IV-9
Breakdown of credit transfer
July 2024

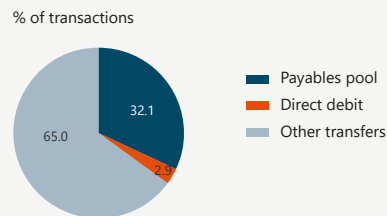
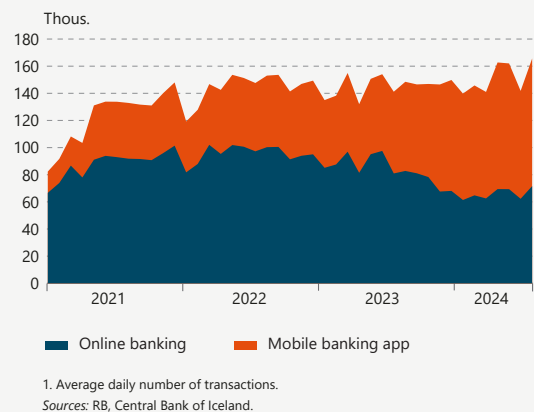


Chart IV-10
Credit transfer¹
January 2021 - July 2024

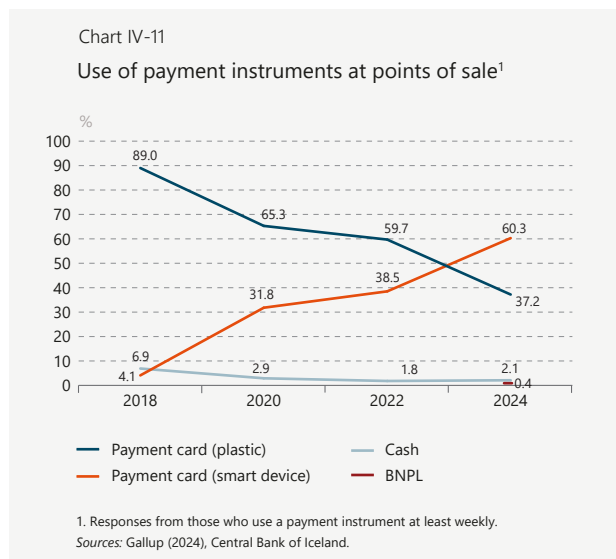


Payment instruments at physical outlets in Iceland

The aforementioned survey of households' payment behaviour revealed that in nearly 92% of cases, a digital payment instrument, usually a payment card, was used to pay for goods and services. In over 97% of cases, such payments occurred at least on a weekly basis. These percentages are virtually unchanged since the previous survey, taken in 2022. Of those who used digital payment instruments regularly (at least weekly), 60% used

10. The Central Bank does not have more recent figures at its disposal. The Central Bank is working on gathering regular data on direct debits from deposit institutions.

smart devices linked to a payment card or a buy-now-pay-later (BNPL) solution, up from 38.5% in the previous survey.¹¹ BNPL solutions accounted for less than 1%.



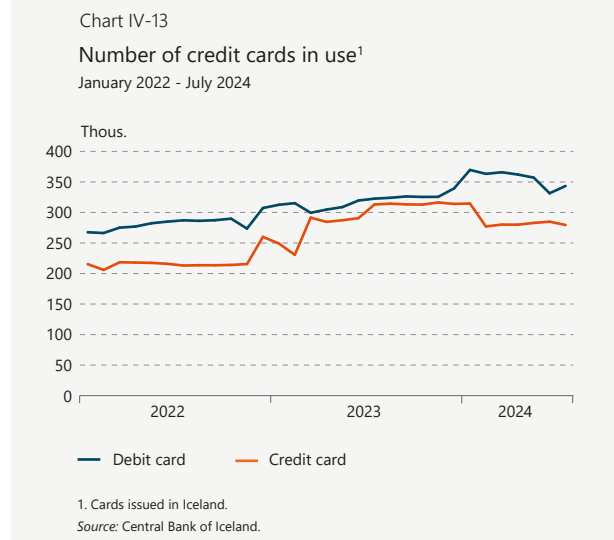
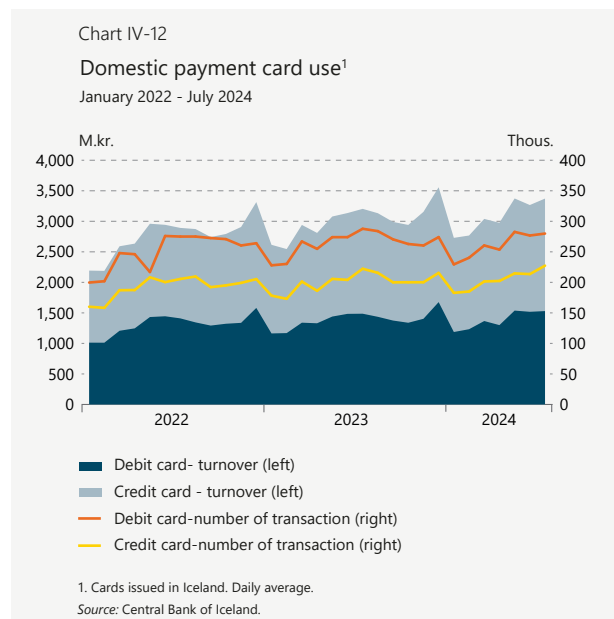
Payment card use at domestic retailers

Over the first seven months of 2024, turnover using domestic payment cards totalled 646 b.kr. This represented a nominal year-on-year increase in both debit and credit card turnover. Credit card turnover grew by nearly 9% and debit card turnover by 3%. The number of transactions rose as well during the period, by 7%, mainly due to credit card transactions. Households commonly use both debit and credit cards, and measurements have shown that when their finances grow tighter, they postpone payments by using their credit cards more, which is the equivalent of a loan. This could explain the increase in credit card use. The number of active credit cards rose by 20% in 2023, but the increase has lost pace in 2024, indicating that those households that have credit cards use them more than before to buy goods and services, and use their debit cards correspondingly less.

Iceland still has a higher rate of credit card use than neighbouring countries do, although credit cards are gaining ground elsewhere. In Norway, for instance, the domestic debit card BankAxept, which has a dominant market share at physical outlets in the country, cannot be used for online shopping. Furthermore, BankAxept cards are seldom linked to apps in smart devices.¹² It is important to remember that credit card

11. BNPL is a digital payment instrument that is registered to a smart device and provides for retroactive payment of invoices.

12. BankAxept is a domestic debit card system owned by Vipps A/S, a company owned by several Norwegian banks, including DNB, Nordea, and Sparebank, which also issue BankAxept debit cards.

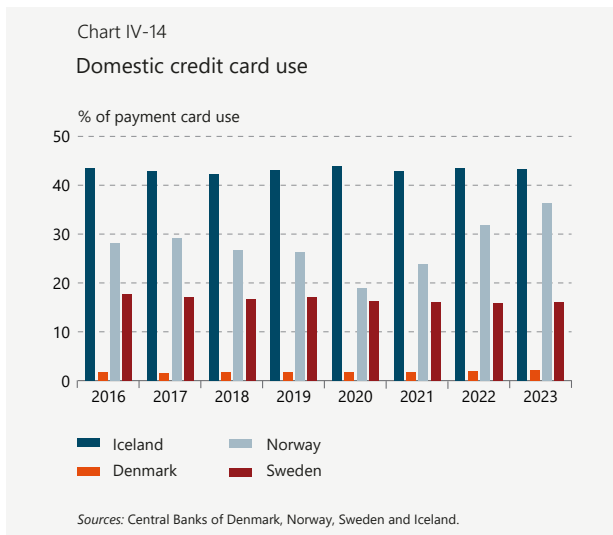


use constitutes the equivalent of a loan, with the associated risk of default. This is expensive for households, as penalty interest on overdue credit card debt is high. Furthermore, using a credit card is generally more expensive than using a debit card.¹³ On the other hand, credit cards frequently offer various perks, including loyalty points, additional services at airports, and guaranteed reimbursement if needed. This may well explain their popularity.

Use of payment instruments for e-commerce

In general, online shopping, or e-commerce, is secure and interruptions in payment intermediation are few. The advent of strong authentication has reduced the

13. The annual fee on credit cards is much higher than on debit cards. Furthermore, merchants pay higher fees per credit card transaction, and this expense is added to mark-ups on the prices consumers pay for goods and services.



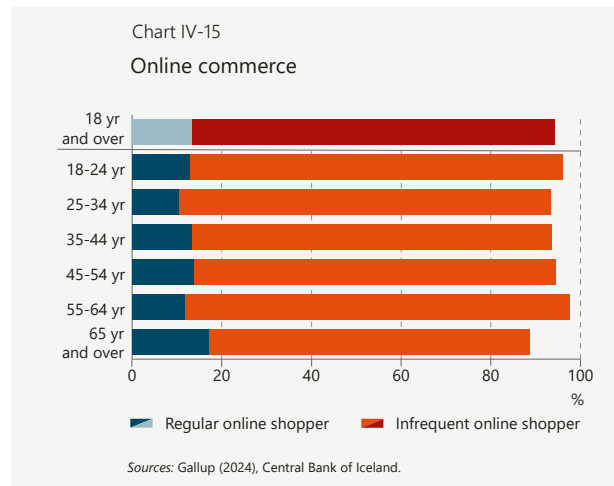
frequency of cyberfraud. Over the first five months of 2024, domestic e-commerce totalled 79 b.kr., an increase of 16% relative to the same period in 2023. E-commerce accounts for 17.5% of total domestic payment card turnover, which is similar to the share seen in many other countries. In Norway, the share is higher, at 28%.

According to the aforementioned survey of households' payment behaviour, 94% of respondents said they shopped online. This was unchanged from the 2022 survey but up by 12% from the 2018 survey. Of that total, 13% said they shopped online regularly, but the share of those who shopped online at least weekly had fallen by 4.5% relative to the previous survey, mainly because that survey was taken in 2022, during the COVID-19 pandemic. In the 2024 survey, online shopping is more or less equally distributed across age groups, although slightly less common in the 65-or-older group. In the European Central Bank's survey from 2022, the share of respondents who used e-commerce was 68%, far below that in Iceland. The same share was 75% in Sweden and 88% in Denmark.¹⁴

Foreign payment service providers in Iceland

The number of companies engaged in payment intermediation has grown in the recent term, and foreign entities have increasingly entered the market. For a long time, only two domestic acquirers were under supervision in Iceland, but now there are four: Straumur (owned by Kvika), Landsbankinn, Rapyd, and Teya. Several foreign acquirers also operate in Iceland, including Nets, Planet, and InterCard, all of which are

14. European Central Bank, Sveriges Riksbank, and Danmarks Nationalbank. Figures from 2022 are not entirely comparable, as there are slight differences in the wording of the survey questions. The results should therefore be interpreted with some caution.



subject to supervision in their home countries. A Gallup survey of businesses' payment behaviour, carried out for the Central Bank this past summer, showed that 6.5% of respondents were in a contractual relationship with foreign acquirers. There was no significant difference among sectors or regarding whether the acquirer was domestic or foreign.

Foreign companies also provide other digital payment services in Iceland, including Paypal, Revolut, Alipay, N26, and Euronet. In the household payment behaviour survey, it was revealed that just over half of respondents said they had at some point used the services of foreign payment intermediation service providers. This is an 8% increase from the 2022 survey. Of those who used foreign payment services, one of every ten had used foreign services regularly, an increase of just under 1% from the previous survey. The rise in the number of companies operating in the domestic payment market boosts competition and can be of benefit to consumers; for instance, by increasing variety and lowering costs. On the other hand, transparency and confidence in the basic functionality of payment intermediation must be in place so that it will be possible to contain the damage if services are interrupted.

The Central Bank has been gathering information from a larger number of payment intermediation entities in Iceland for some time, and revised figures on turnover with foreign cards in Iceland, as well as turnover with domestic cards in Iceland and abroad, were published in August 2024. This is the first step in the Bank's work towards expanding and improving payment intermediation statistics.

Payment fraud

According to information from the National Commissioner of the Icelandic Police, the number of reported payment card fraud incidents in Iceland declined in

2023 in comparison with the six years beforehand. The number of cybercrimes, which includes all types of phishing, has remained unchanged for the past two years, after increasing during the years before that time.

In August 2024, the European Banking Authority (EBA) and the European Central Bank (ECB) published their first joint report containing statistical information on payment fraud in the European Economic Area (EEA), which is reported to supervisory bodies by payment service providers.¹⁵ According to the report, payment fraud totalled 4.3 billion euros in 2022 and about 2 billion euros in H1/2023. In general, payment fraud is limited in all EEA countries as a share of total turnover and total transaction numbers, but most incidents stem from digital transfers of funds and card transactions.¹⁶

According to the report, fraud involving transfers of funds averaged about 0.003% of the total number of transactions and 0.015% of the total number of card transactions in H1/2023. In general, there is more card fraud in countries where card use is widespread. Iceland has had few incidents of fraud in transfers of funds compared to other countries, or 0.001% of total transfers, and was below average in the number of card fraud incidents, at 0.008% of total card transactions. No incidents of fraud involving cash withdrawals were reported from Iceland. The level of card fraud as a share of the total value of card-based payments was highest in Iceland, at 0.087%, and lowest in Finland, at 0.009%.

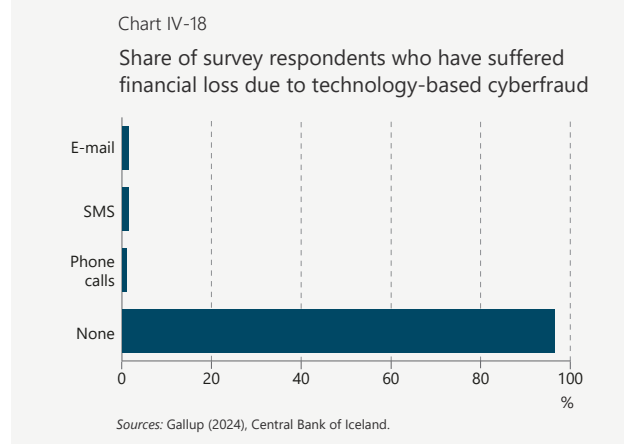
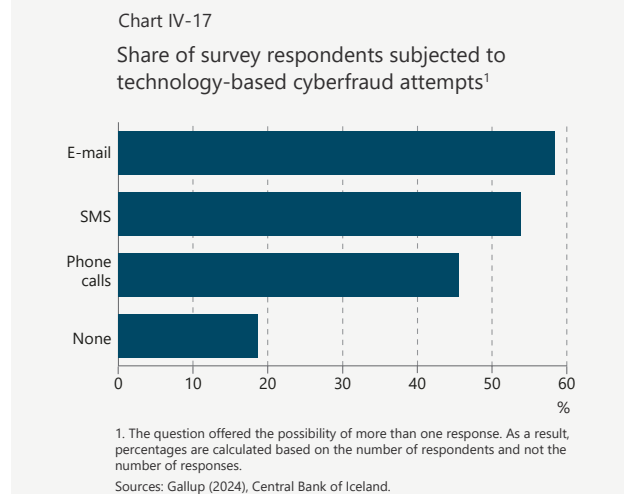
The report assumes that payment fraud will not increase in coming years but will instead remain unchanged. This is due in particular to the strong authentication that customers are required to use when they transfer funds digitally to another account.

The number in the aforementioned report represents a summary from supervised entities in the financial market and does not necessarily provide a comprehensive overview of the number of violations committed, as it is known that customers are reluctant to report payment fraud.

In the above-mentioned survey taken among households in Iceland, 18% of respondents said they had been subjected to attempts at fraud in connection

15. The report can be found [here](#). According to the second Payment Services Directive (PSD2), each payment service provider must submit statistics on fraud in connection with the payment instruments it handles to the supervisory authority in its home state at least once a year. Similarly, the supervisory authority is required to send a summary of the data to the EBA and the ECB. PSD2 was implemented in Iceland with the passage of the Payment Services Act, no. 114/2021.

16. In comparing data across countries, it is important to note that there are significant differences in the data submitted by service providers, as well as in methodology, report preparation, scope, data contents, and geographical distribution.



with payment card use, and of that group, just under 23% had suffered a financial loss.¹⁷ The youngest group (aged 18-29) was noticeably more likely to be subjected to such attempted fraud than older groups were. Far more respondents, or 81%, said they had experienced attempts at fraud in connection with telephone calls, SMS text messages, and e-mail. In those instances, 4% had suffered a financial loss, slightly more than in the Danish and Swedish surveys.¹⁸ The survey also revealed that 47% of those who suffered losses covered the loss themselves, while in the rest of cases banks or card companies did.

Although payment fraud is not overly common today, a single instance can have severe repercussions for a household's financial position. The general public must be able to trust payment intermediation in Iceland; therefore, it is important that companies, supervisory bodies, and consumers be constantly aware of the risks and report incidents to financial supervisors. This gives the Central Bank a better overview of the status of retail payment intermediation in Iceland and helps improve organisational structure and decision-making.

Cash in circulation contracts

Cash in circulation equalled 1.8% of GDP at the end of 2023, down from 2.1% at the end of 2022. This share is high compared to that in the other Nordic countries but low in a broader international context. As a share of M1, cash accounted for 9.3% at the end of 2023. The value of banknotes and coin in circulation totalled just over 75.7 b.kr. as of end-2023, after falling by 5 b.kr. year-on-year. Demand for the 10,000 kr. banknote, the highest denomination issued, contracted by 2.3% between years. Just under 11% of cash in circulation, or 8.2 b.kr., was held in deposit institutions' so-called overnight cash balance. Another 3%, or just over 2 b.kr., was held in custody at foreign financial institutions, and an estimated 75%, or 58 b.kr., was used at some point to pay for goods and services at physical outlets.¹⁹ The remaining 10% is assumed to be stored in Iceland and abroad, or used in some other manner.

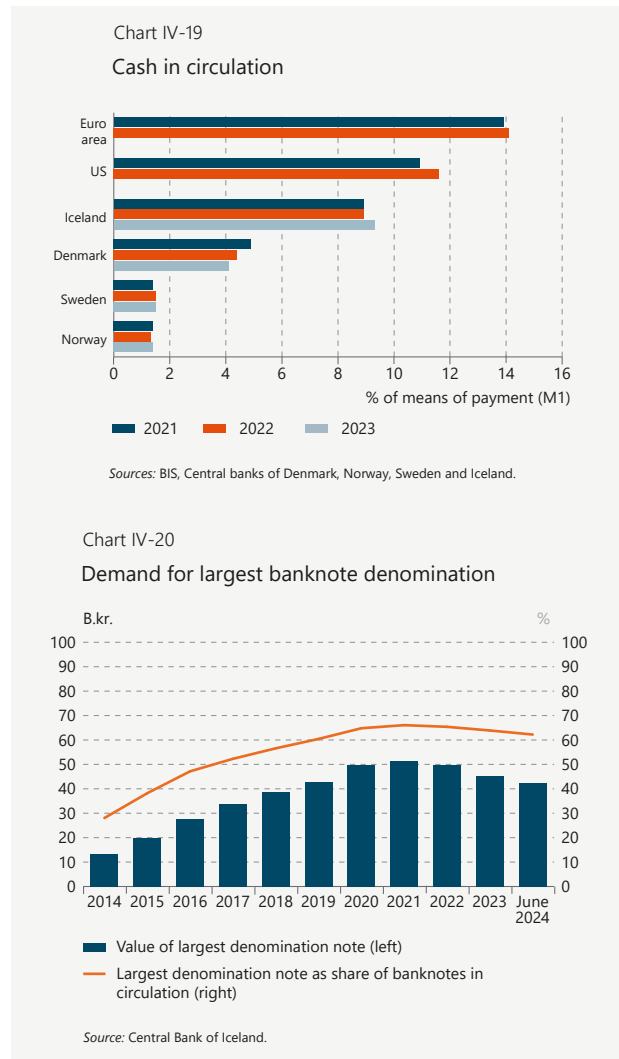
Households' cash position

Iceland is among the countries where cash is used very little at physical outlets. Cash is more commonly used

17. Fraud in connection with payment card use can take place when a customer does not receive the goods they thought they were buying, when a person's card number is accessed while the cardholder is using an ATM, or when a cardholder is tricked into approving a transaction by entering their PIN number.

18. Danmarks Nationalbank and Sveriges Riksbank.

19. RB cash vault, Gallup, and Central Bank of Iceland calculations.

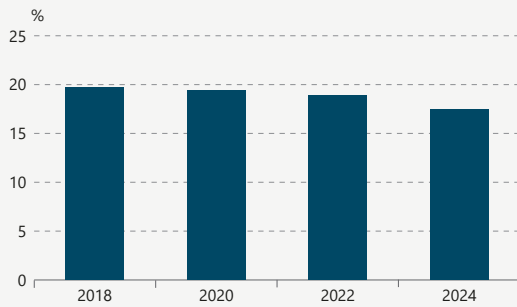


for gifts and for peer-to-peer payments. The aforementioned Gallup survey indicated that cash was used to pay for goods and services at physical outlets in 8% of cases, and only in 2.1% of cases was it used on at least a weekly basis. In the previous survey, from 2022, cash use measured 7.5% and regular use at physical outlets measured 1.8%. The difference between the two sets of survey results is not statistically significant, and it should not necessarily be concluded that use of cash is on the rise again after having declined since the Bank began measuring it in 2018. It is possible that use of cash is reaching equilibrium and will hold steady at around 2% in coming years. The average amount per cash transaction was unchanged between surveys, at roughly 3,900 kr.

About a third of respondents said they were carrying no cash at the time the survey was conducted. This share was virtually unchanged from the previous survey. There was no significant difference across age groups. Furthermore, many respondents carried only small amounts of cash, or an average of 2,500 kr. or less. Of those who did carry cash, the average amount

Chart IV-21

Share of households that hold savings elsewhere than in banks or securities



Sources: Gallup (2024), Central Bank of Iceland.

was 12,500 kr., up from 12,300 kr. in the 2022 survey; therefore, the amount carried had declined in real terms. Moreover, households were asked whether they stored savings in a secure location other than at a bank or securities, and 17.5% said they did so. This share has fallen between surveys, although the change is small.

Responses to an interruption in retail payment intermediation under current conditions

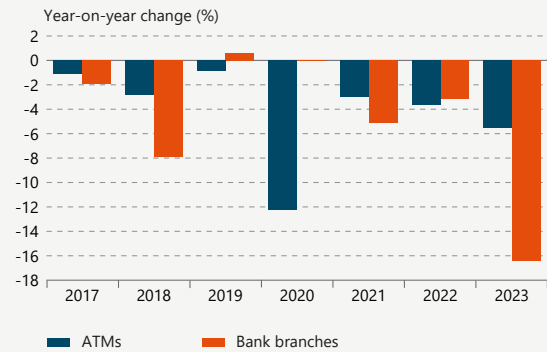
If payment intermediation were interrupted for a period of time – due to a cyberattack, for instance – cash could end up being the only payment instrument that can be used to purchase necessary goods and services. As is noted above, domestic retail payment intermediation is overwhelmingly digital, few consumers use cash to pay for goods and services, and the majority of households carry no cash or carry such a small amount that it would not cover the purchase of necessities. Most households would therefore be forced to withdraw cash, with the associated chaos at bank branches and ATMs, if retail payment intermediation were interrupted.

In recent years, the banks have reduced the number of branches they operate and increased the number of ATMs. However, the number of ATMs per thousand inhabitants has been decreasing over the years. This streamlining is positive from a cost control point of view, but it can be a barrier to the use of cash as an alternate solution and can limit the options available to those who for any reason cannot use digital payment instruments. According to the survey of households' payment behaviour, two of every three respondents said they had ready access to cash, but 15.4% said access was poor, mainly because of the long distance to the next branch or ATM.

Even though households had enough cash to see them through an interruption in payment intermediation, merchants would also need to have enough cash

Chart IV-22

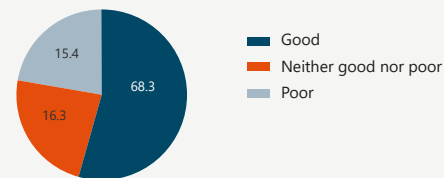
Number of ATMs and bank branches¹



1. Per thousand inhabitants.
Sources: Central Bank of Iceland.

Chart IV-23

Access to ATMs and bank branches



Sources: Gallup (2024), Central Bank of Iceland.

on hand to be able to make change. In the above-mentioned business survey, 71% of companies said they had enough cash to be able to make change in the event of a disruption in digital payment intermediation, while one-third said they did not. There was no significant difference across sectors or company sizes.

Nearly 29% of firms said they did not accept cash, primarily companies in the financial, technology, and information services sectors. A majority of respondents had little or no desire to stop accepting cash, although large companies were noticeably more likely to want to stop accepting it. Just as with households, merchants' access to cash can affect cash inventory at any given time, and having ready access to cash can be important if service is disrupted. Just under half of firms participating in the survey said they were readily able to withdraw or deposit cash, while just over half said their access had deteriorated in recent years.

At a meeting of the Payment Council in December 2022, it was decided to establish a working group on interruptions in digital payment intermediation, with members representing Greiðsluveitan, the Federation of Trade and Services, Finance Iceland, the Consumers' Association of Iceland, the Ministry of Culture and Business Affairs, RB, and other stakeholders. The group's tasks centred on compiling information about

merchants' and service providers' potential responses to an interruption in payment intermediation and determining whether specified infrastructure needed to be strengthened to enhance security and resilience in payment intermediation in Iceland. The group submitted its findings to the Council in 2024. It was considered urgent to prepare a comprehensive emergency plan, and work began on identifying merchants that would be classified as critical infrastructure in the event of an interruption. The group also emphasised how important it is that firms be aware of the risk of interruption, define where their risk boundaries lie, introduce procedures and determine communication channels, and adopt emergency plans. In the wake of this, the Payment Council decided to make the relevant authorities aware of the working group's findings, and certain points were reviewed ahead of time by the Central Bank and Greiðsluveitan.

Cross-border payments increase but are costly

In recent decades, cross-border payments have increased significantly in terms of amount. It is estimated that cross-border payments worldwide totalled roughly 190 trillion US dollars in 2023 and will increase by some 53%, to over 290 trillion dollars, by the end of the 2020s.²⁰ The term cross-border payment refers to funds transferred between a payer and a recipient who are not domiciled in the same country. It covers both wholesale and retail payments. In most instances, wholesale payments are transactions between domestic and foreign banks, as well as final monetary settlement between their customers. The amount of each transaction is generally very high, but the number of transactions is low. The majority of retail payments are due to business-to-business (B2B) transactions, although payments between customers and businesses (C2B) and between two customers (P2P) are also classified as retail payments. Unlike wholesale payments, retail payments are very low in terms of value, while transaction volumes are high.

In spite of this surge in growth, cross-border payments are still exorbitantly expensive, and it can take far too long to route payments from sender to recipient through intermediaries, which are often deposit institutions. The length of time varies by region, however. In Europe, payments are completed within an hour, on average.

Retail cross-border payment flows

The substantial increase in cross-border retail payments is due largely to the advent of e-commerce, which enables small firms that cannot establish branches abroad to conduct overseas business. E-commerce also makes it possible for households to shop online without regard for national borders. Furthermore, labour migration has increased, and a large share of foreign workers send money home to their families.

Cross-border retail payments fall into three categories. The first includes payments to merchants that accept foreign cards either online or at physical outlets. The second includes digital transfers of funds via online bank, banking app in a smart device, and digital wallets such as PayPal. In order to deliver the payment to the recipient, a bank or other payment intermediation service provider usually acts as an intermediary between payer and payee. The third category includes monetary remittances. It is estimated that each cross-border payment costs an average of 1.5% for companies, 2% for households' transactions with businesses, and up to 6.3% for consumers who send remittances.

In November 2020, the G20 launched a project in cooperation with the Financial Stability Board (FSB), the Bank for International Settlements (BIS), and other international institutions, with the objective of developing a roadmap aimed at lowering costs, expediting payments, expanding access, and enhancing the transparency of cross-border payments. The roadmap entails 19 building blocks, and the CPMI is leading the implementation of 11 actions in cooperation with other institutions such as the BIS and the FSB.²¹ In October 2022, the FSB published a set of priority actions for achieving the G20 targets.²² Based on analytical work and consultation among stakeholders, the FSB, CPMI, and other comparable institutions have identified three interconnected themes for orienting and focusing the next phase of the roadmap. These themes centre on payment system interoperability; legal, regulatory, and supervisory frameworks; and data exchange and message standards.

Flows of digital transfers from Iceland

In the first six months of 2024, an average of 6.2 b.kr. per day were transferred electronically from Iceland to points abroad. This is a considerably larger amount than was reported in *Financial Stability 2023/2*, but the

20. FXC Intelligence, 2024, [Cross-border payments market sizing data](#) | FXC Intelligence

21. CPMI stands for Committee on Payment and Market Infrastructure, which is located at the Bank for International Settlements (BIS).

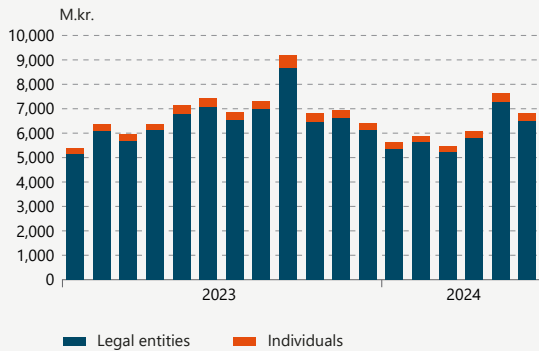
22. G20 Roadmap for [Enhancing Cross-border Payments](#).

Chart IV-24
Cross-border retail payments, global market¹



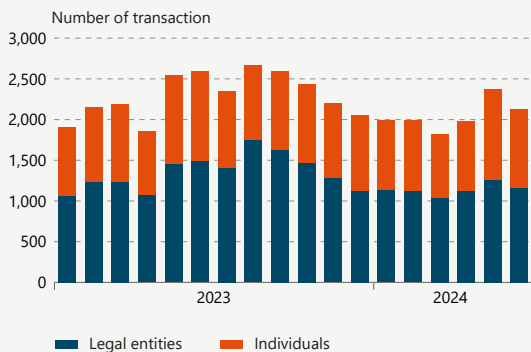
1. B2B: business-to-business; P2P: person-to-person; C2B: consumer-to-business; B2C: business-to-consumer.
Source: FXC Intelligence, 2024, Cross-border payments market sizing data | FXC Intelligence.

Chart IV-25
Cross-border payments, digital¹



1. Turnover, daily average.
Source: Central Bank of Iceland.

Chart IV-26
Cross-border payments, digital¹



1. Number of transactions, daily average.
Source: Central Bank of Iceland.

data have been reviewed and revised since then. After the revision, it is estimated that the amount transferred over the first six months of 2023 was 6.3 b.kr. and not 4.5 b.kr. The total amount therefore declined in nominal terms by 2.8% year-on-year. About 95% of transfers are from companies that do business abroad, and 5% are from individuals making deposits to accounts owned by individuals or companies. The total number

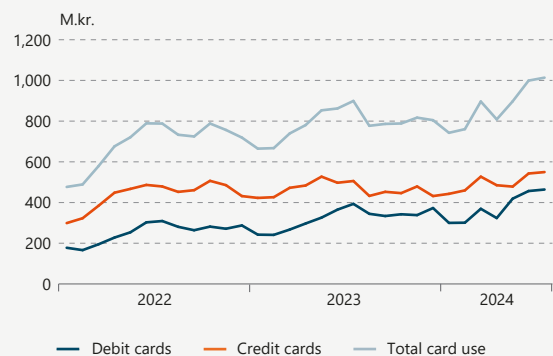
of transactions came to 369,000, a reduction of 7% relative to the same period in 2023. The average amount sent by companies was 5.2 m.kr. per transaction, and the average amount sent by individuals was 328,000 kr.

Payment card use at foreign physical outlets

Households use payment cards at merchants overseas, either via foreign websites or while travelling abroad. In general, cross-border intermediation of card-based payments has been smooth, and no serious disruptions in service have taken place. Nevertheless, payment cards are vulnerable to all types of disruption, such as cyberattacks and phishing from abroad, as they are the payment instrument most commonly used to purchase goods and services.

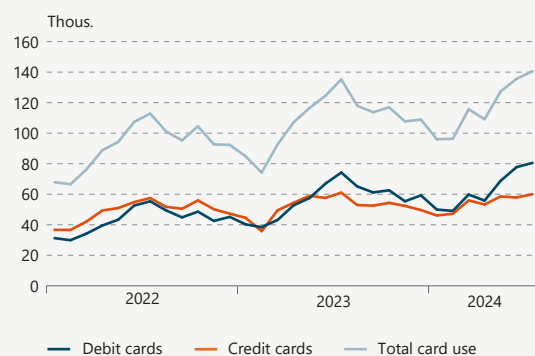
In the first seven months of 2024, card turnover totalled 183 b.kr. in nominal terms in 24.6 million transactions. This means that Icelanders spent an average of roughly 862 m.kr. per day via payment card, either

Chart IV-27
Overseas use of domestic payment cards¹
January 2022 - July 2024



1. Turnover, daily average.
Source: Central Bank of Iceland.

Chart IV-28
Overseas use of domestic payment cards¹
January 2022 - July 2024



1. Number of transactions, daily average.
Source: Central Bank of Iceland.

online or while travelling, in an average of 116,000 transactions. Card turnover grew by 12% in nominal terms relative to the same period in 2023, and the number of transactions increased by the same percentage. Over half of turnover (56%) is due to credit card use, and credit cards account for 46% of all payment card transactions. The Central Bank's last report on the cost of retail payments states that the lion's share of fees for the use of Icelandic payment cards abroad stems from the exchange rate differential. Households paid an estimated 4.4 b.kr. in such fees in 2022, and

each credit card transaction was far more expensive than each debit card transaction.²³

ATM withdrawals abroad using domestic payment cards

In recent years, cash withdrawals from ATMs abroad have contracted relative to the pre-COVID period. This could be because it has grown easier to use payment cards at physical outlets overseas, as many countries were slow to digitise their retail payment intermediation.

In the first seven months of 2024, cardholders withdrew 10 b.kr., an average of 47 m.kr. per day from ATMs abroad, of which 6,8 b.kr. by using debit cards, an average of 32 m.kr. per day. Turnover increased by 4%, which can be traced to a rising general price level and increasing number of Icelandic tourists travelling abroad. Underlying this turnover were 307,000 transactions, an average of 1,400 transactions per day.

News titbits 4

Central bank digital currency (CBDC)¹

In recent years, central banks all over the world have been considering issuance of CBDC. The idea behind it is relatively simple. Instead of physical banknotes and coin and conventional payment methods, cash has been converted to a digital payment instrument. The key element of the project therefore centres not on the transactions involved but on what technological solutions are best suited for it. Discussion of CBDC has also become part of the discourse about possible backup solutions for payment intermediation.

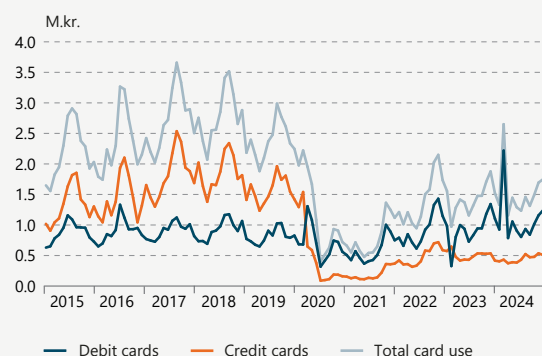
A few countries have developed and begun using such digital currency, including the Bahamas, Nigeria, and China. The European Central Bank has launched a development project on a digital euro. The project is currently in the preparatory phase, which will include the preparation of a draft rulebook on the digital euro, examination of potential solutions for offline functionality, and personal data protection requirements in the execution of payments. This phase is expected to conclude in October 2025.

The Central Bank of Iceland has kept abreast of discourse and developments abroad and, like other European countries, pays close attention to the ECB in this respect. The Central Bank is a participant in the Bank for International Settlements (BIS) Nordic Innovation Hub Centre in Stockholm. In that forum, the Bank has participated in projects centring on offline use of CBDC, use of artificial intelligence in connection with anti-money laundering supervision,² and supervision of operational and cyber risk.

1. CBDC (Central bank digital currency). See further [Central bank's special publication report no. 17.](#)
2. See Project Polaris [here](#), and Project Aurora [here](#).

Chart IV-29

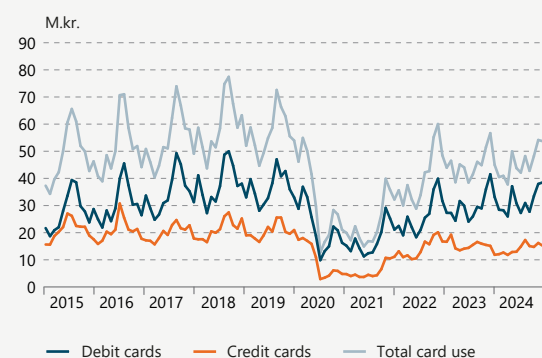
Overseas use of domestic payment cards via ATM¹
January 2015 - July 2024



1. Number of transactions, daily average.
Source: Central Bank of Iceland.

Chart IV-30

Overseas use of domestic payment cards via ATM¹
January 2015 - July 2024



1. Turnover, daily average.
Source: Central Bank of Iceland.

23. The Cost of Retail Payments, February 2024.

Appendix

Tables

Table 1 Financial system assets¹

Assets, b.kr	31.12.2020	31.12.2021	31.12.2022	31.12.2023	30.6.2024	Change from 31.12.2023, %
Central Bank of Iceland	844	964	875	828	923	12.0
Deposit-taking corporations excluding the Central Bank	4,212	4,700	5,103	5,391	5,589	4.0
– Commercial banks	4,183	4,669	5,069	5,341	5,532	4.0
– Savings banks and other deposit-taking corporations	28	31	34	50	57	13.0
Money market funds	145	128	138	128	144	13.0
Non-MMF investment funds ²	846	1,125	1,071	1,058	1,100	4.0
Other financial intermediaries ^{3,4}	258	221	232	255	265	5.0
Treasury	1,064	1,064	1,048	1,014	925	-1.0
– Housing Financing Fund	703	669	646	581	547	-6.0
Financial auxiliaries	54	59	56	73	72	0.0
Insurance corporations	290	320	314	323	335	0.0
Pension funds	5,732	6,747	6,626	7,287	7,722	6.0
Total assets	13,445	15,328	15,464	16,357	17,075	5.0

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, m.kr.	31.12.2020	31.12.2021	31.12.2022	31.12.2023	30.6.2024	Change from 31.12.2023, %
Cash and deposits with Central Bank	213,003	281,653	279,738	289,861	344,851	19
Deposits in domestic deposit-taking corporations	1,736	3,627	3,141	3,851	3,036	-21
Deposits in foreign deposit-taking corporations	85,059	80,358	120,225	69,293	66,431	-4
Domestic credit	3,070,639	3,409,643	3,817,885	4,033,010	4,290,933	6
Foreign credit	168,636	150,557	179,281	214,002	183,995	-14
Domestic marketable bonds and bills	306,068	277,500	269,183	234,232	300,365	28
Foreign marketable bonds and bills	146,996	183,058	170,722	285,808	132,763	-54
Domestic equities and unit shares	123,347	191,208	141,481	116,965	103,145	-12
Foreign equities and unit shares	2,262	4,593	4,639	7,514	16,555	120
Other domestic assets	74,048	108,794	103,730	118,704	137,132	16
Other foreign assets	19,845	9,229	13,221	18,853	9,744	-48
Total	4,211,637	4,700,220	5,103,245	5,392,095	5,588,950	4

Source: Central Bank of Iceland.

Table 3 Other credit institutions' assets¹

Assets, m.kr.	31.12.2020	31.12.2021	31.12.2022	31.12.2023	30.6.2024	Change from 31.12.2023, %
Cash and deposits with Central Bank	0	0	0	0	0	0
Deposits in domestic deposit-taking corporations	16,822	9,734	10,881	5,928	5,504	-7
Deposits in foreign deposit-taking corporations	24,927	15,945	3,887	1,520	2,882	90
Domestic credit	178,680	162,245	176,866	193,763	200,265	3
Foreign credit	17,847	15,559	14,820	12,086	11,429	-5
Domestic marketable bonds and bills	5,037	9,818	12,373	16,113	18,639	16
Foreign marketable bonds and bills	350	268	335	363	861	137
Domestic equities and unit shares	521	1,145	2,385	4,259	4,714	11
Foreign equities and unit shares	1,451	76	135	3,093	3,093	0
Other domestic assets	8,849	3,599	4,155	5,229	6,378	22
Other foreign assets	2,650	2,771	5,743	9,735	11,475	18
Total	257,136	221,159	231,580	252,089	265,241	5

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

Assets, m.kr.	31.12.2020	31.12.2021	31.12.2022	31.12.2023	30.6.2024	Change from 31.12.2023, %
Deposits in domestic deposit-taking corporations	164,821	170,092	164,592	145,072	175,733	21
Deposits in foreign deposit-taking corporations	34,230	22,717	13,418	12,300	6,699	-46
Domestic credit	511,516	491,083	553,909	638,739	660,138	3
Foreign credit	495	423	629	719	624	-13
Domestic marketable bonds and bills	2,105,645	2,305,830	2,324,959	2,466,848	2,561,013	4
Foreign marketable bonds and bills	8,568	7,578	20,226	24,730	26,176	6
Domestic equities and unit shares	987,843	1,336,313	1,234,146	1,261,739	1,226,418	-3
Foreign equities and unit shares	1,887,539	2,384,949	2,287,003	2,704,104	3,027,916	12
Domestic insurance and pension assets	20,989	21,651	24,357	29,101	27,344	-6
Foreign insurance and pension assets	50	30	62	31	32	3
Other domestic assets	5,690	5,987	4,848	12,925	9,895	-23
Other foreign assets	46	334	1,352	374	125	-67
Total	5,727,434	6,746,988	6,629,499	7,296,682	7,722,112	6

Source: Central Bank of Iceland.

Table 5 Insurance company assets

Assets, m.kr.	31.12.2020	31.12.2021	31.12.2022	31.12.2023	30.6.2024	Change from 31.12.2023, %
Cash and deposits with Central Bank	2,574	3,097	4,175	780	754	-3
Deposits in domestic deposit-taking corporations	6,985	6,441	8,823	11,687	14,206	22
Deposits in foreign deposit-taking corporations	28	0	0	0	0	0
Domestic credit	1,819	1,454	3,739	2,779	3,140	13
Foreign credit	0	0	0	0	0	0
Domestic marketable bonds and bills	137,759	151,058	145,202	161,329	160,570	0
Foreign marketable bonds and bills	24,601	25,815	26,287	28,604	27,500	-4
Domestic equities and unit shares	74,850	72,283	67,784	75,768	72,218	-5
Foreign equities and unit shares	12,168	14,590	13,652	16,173	15,681	-3
Domestic insurance and pension assets	25,786	27,550	29,181	7,511	8,105	8
Foreign insurance and pension assets	6,311	6,614	5,673	20,918	22,147	6
Other domestic assets	7,721	10,411	9,580	10,203	10,788	6
Other foreign assets	319	200	134	91	76	-16
Total	300,922	319,512	314,230	335,843	335,186	0

Source: Central Bank of Iceland.

Table 6 D-SIB: Income and expenses

Income and expenses, m.kr.	30.6.2020	30.6.2021	30.6.2022	30.6.2023	30.6.2024	Change from 30.06.2023, %
Arion Bank hf.						
Operating income	23,039	28,101	27,774	32,883	31,059	-6
Net interest income	15,110	15,358	19,332	22,420	23,193	3
Net fee and commission income	5,764	6,839	8,091	8,638	7,344	-15
Other operating income	2,165	5,904	351	1,825	522	-71
Operating expenses	12,602	12,420	12,850	12,479	13,706	10
Change in loan values	3,778	-1,892	309	620	1,090	76
Income tax	2,983	3,959	6,000	6,419	6,311	-2
Net after-tax gain from discontinued operations	-934	241	6,915	17	-20	-218
Profit	2,742	13,855	15,530	13,382	9,932	-26
Íslandsbanki hf.						
Operating income	20,040	23,717	26,639	32,431	32,106	-1
Net interest income	16,808	16,607	19,463	25,035	24,613	-2
Net fee and commission income	4,798	5,769	6,498	7,061	6,715	-5
Other operating income	-1,566	1,341	678	335	778	132
Operating expenses	12,038	12,684	11,992	14,593	15,122	4
Change in loan values	5,929	-622	-1,058	-570	567	-199
Income tax	1,646	2,666	4,636	6,074	5,823	-4
Net after-tax gain from discontinued operations	-558	57	-2	16	89	456
Profit	-131	9,046	11,067	12,350	10,683	-13
Landsbankinn hf.						
Operating income	22,710	27,485	22,789	36,068	40,847	13
Net interest income	18,939	18,958	21,418	27,535	29,135	6
Net fee and commission income	3,598	4,368	5,422	5,751	5,378	-6
Other operating income	173	4,159	-4,051	2,782	6,334	128
Operating expenses	12,282	12,010	11,856	13,038	13,500	4
Change in loan values	13,435	-2,782	-43	1,591	3,460	117
Income tax	280	4,152	5,419	6,966	7,766	11
Net after-tax gain from discontinued operations	0	0	0	0	0	0
Profit	-3,287	14,105	5,557	14,473	16,121	11
D-SIB						
Operating income	65,789	79,303	77,202	101,382	104,012	3
Net interest income	50,857	50,923	60,213	74,990	76,941	3
Net fee and commission income	14,160	16,976	20,011	21,450	19,437	-9
Other operating income	772	11,404	-3,022	4,942	7,634	54
Operating expenses	36,922	37,114	36,698	40,110	42,328	6
Change in loan values	23,142	-5,296	-792	1,641	5,117	212
Income tax	4,909	10,777	16,055	19,459	19,900	2
Net after-tax gain from discontinued operations	-1,492	298	6,913	33	69	109
Profit	-676	37,006	32,154	40,205	36,736	-9

Source: Commercial banks' financial statements.

Table 7 D-SIB: Key ratios

%	31.12.2020	31.12.2021	31.12.2022	31.12.2023	30.6.2024
Return on equity	4.8	12.4	10.1	12.1	10.3
Return on assets	0.7	1.9	1.5	1.7	1.4
Expenses as a share of net interest and commission income	54.1	51.8	43.8	41.1	43.9
Expenses as a share of total assets	1.8	1.7	1.6	1.6	1.6
Net interest and commission income as a share of total income	91.8	86.8	103.3	93.8	92.7
Net interest income as a share of total assets	2.6	2.4	2.8	3.0	3.0
Capital ratio	24.9	25.4	23.7	24.3	23.5
Foreign exchange as a share of the capital base	0.3	0.1	0.7	1.8	0.4
Liquidity coverage ratio (LCR), total	179.7	176.1	163.0	187.0	171.0
Liquidity coverage ratio (LCR), FX	481.3	514.3	519.0	741	395
Net stable funding ratio (NSFR), total	118.7	121	117.0	122	122
Net stable funding ratio (NSFR), FX	147	118.4	165.0	187	181

Source: Central Bank of Iceland.

Table 8 Commercial banks' foreign bond issues, last 12 months (20 September 2023 - 20 September 2024)

Issuer	Date	Currency	Amount (b.kr.)	Maturity (years)	Premium on interbank rate ¹ %
Arion bank	mar.24	EUR	45.1	4.5	1.75
	mar.24	USD	3.0	3.6	
	sept.24	USD	17.1		
Total			48.1		
Islandsbanki	nov. 23	SEK	6.6	3.0	2.7
	jan.24	SEK	6.7	3.0	2.35
	jan.24	NOK	6.7	3.0	2.35
	mar.24	EUR	44.7	4.0	1.85
	jun.24	SEK	4.0	3.0	1.20
	jun.24	NOK	2.6	3.0	1.20
Total			71.3		
Landsbankinn	mar.24	EUR	44.7	4.2	2.25
	sep.24	SEK	13.5	4.0	1.8
	sep.24	NOK	3.3	4.0	1.83
Total			61.5		

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

Source: Nasdaq Iceland.

Table 9 Capital buffers

Capital buffer	FME decision/ announcement ¹	Value %	Effective date
Systemic risk buffer, O-SII banks	8.4.2020	3	8.4.2020
Systemic risk buffer, other DMBs	8.4.2020	3	8.4.2020
Other Systemically Important Institutions buffer	8.4.2020	2	8.4.2020
Countercyclical capital buffer	14.3.2023	2.5	16.3.2024
Capital conservation buffer		2.5	1.1.2017

1. Effective 1 January 2020, the Central Bank of Iceland sets rules on capital buffers, other than capital conservation buffer, 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

	Unit	Frequency	2019	2020	2021	2022	2023	1H 2024 or M8
Net IIP	% of GDP	Q	20.0	34.2	43.3	23.1	36.0	38.8
External debt ¹	% of GDP	Q	78.0	85.4	86.9	79.6	72.9	75.0
Net external debt ²	% of GDP	Q	21.4	22.4	30.0	30.3	25.9	30.3
Short-term debt based on remaining maturity ³	% of GDP	Q	13.9	11.3	15.3	13.0	13.3	14.4
Treasury FX debt as a share of total debt	%	M	21.1	20.1	23.9	20.0	14.2	17.1
Commercial banks' foreign-denominated bonds	% of GDP	Q	19.3	22.0	22.2	20.7	18.8	18.2
Current account balance ⁴	% of GDP	Q	6.6	1.1	-2.6	-2.1	1.2	-3.6
International reserves	% of GDP	M	27.2	27.9	28.2	21.5	18.3	20.8
International reserves financed in krónur	% of GDP	M	20.2	18.4	14.9	12.6	11.3	11.7
International reserves/IMF RAM	%	Q	153.4	151.9	144.9	123.9	113.6	118.9
Terms of trade ⁵	Value	Q	90.8	89.5	93.0	95.3	89.9	90.7
Nominal exchange rate ⁶	Value	M	179.7	200.5	195.6	199.8	196.9	195.2
Real exchange rate ⁷	Value	M	91.4	84.9	87.0	85.8	90.9	92.4
Treasury's highest credit rating	Rating	-	A2/A	A2/A	A2/A	A2/A	A1/A+	A1/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. Based on available current account data for relevant year relative to GDP for the same period.

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. the Payment Services Act, no. 114/2021.

Account-to account (A2A):

A retail payment solution based on electronic payments transferred from the buyer's bank account to the seller's bank account.

Acquirer:

A provider of payment services that offers acquiring service; cf. the Payment Services Act, no. 114/2021.

Acquiring service:

One type of payment service described in the Payment Services Act, no. 114/2021.

Authorisation:

Approval for payment granted by an entity, usually a deposit institution or a third party acting on the institution's behalf. Even though a request for authorisation is approved, it does not necessarily confirm the legitimacy of the transfer.

Balance on goods:

The balance on goods (goods account balance) is the difference between the value of exported and imported goods.

Balance on income:

The balance on income (income account balance) is the difference between revenues and expenses due to primary income and secondary income.

Balance on services:

The balance on services (services account balance) is 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.

Block chain:

Technology that administers digital accounting or distributed ledgers.

Blockchain technology:

A type of distributed ledger technology that records all changes in a ledger in so-called blocks, in chronological order.

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.

Buy-now-pay-later (BNPL):

A payment method allowing the buyer to pay at a later date, usually through a payment system that administers all claims for creditors.

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 according to the CRR; cf. the Act on Financial Undertakings, no. 161/2002.

Capital buffers:

Additional capital requirements that financial undertakings must satisfy in accordance with the Act on Financial Undertakings, no. 161/2002. The countercyclical capital buffer, the buffer for domestic systemically important banks (D-SIB buffer), and the systemic risk buffer are determined through Central Bank rules upon prior approval by the Financial Stability Committee. The capital conservation buffer applies to certain financial undertakings according to Act no. 161/2002.

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 according to the Act on Central Securities Depositories and Settlement and Electronic Registration of Financial Instruments, 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.

Clearing:

Intermediation, netting and, in some instances, confirmation of payment orders before settlement takes place.

Commercial bank:

A credit institution that has been granted a licence to operate as a commercial bank according to the Act on Financial Undertakings, no. 161/2002.

Commercial bank money:

A claim against a commercial bank or 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:

A financial undertaking (commercial bank, savings bank, or credit undertaking) that accepts deposits or other repayable funds from the public and grants loans on its own account.

Cross-default non-performing loans:

This refers to non-performing loans according to the cross-default method, according to which all of a borrower's loans are considered non-performing if one loan is frozen or in arrears by 90 days or more, or if the borrower is deemed unlikely to pay their obligations when due.

Cryptocurrencies:

Electronic or digital currencies have not been defined in a harmonised manner, but the terms *virtual currency(-ies)* and *virtual asset(s)* have been used in Icelandic law.

CSDR:

Regulation (EU) no. 909/2014 on improving securities settlement in the European Union and on central securities depositories; cf. the Act on Central Securities Depositories and Settlement and Electronic Registration of Financial Instruments, no. 7/2020.

Current account balance:

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

Debt service-to-income (DSTI) ratio:

The ratio of all mortgage loans carried by a given consumer or consumers in accordance with credit scores and credit assessments to the same party's disposable monthly income; cf. Rules no. 216/2024.

Debt multiplier:

Debt as a percentage of the book value of capital.

Deposit institution:

A financial undertaking (commercial bank or savings bank) authorised 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. the Act on Measures against Money Laundering and Terrorist Financing, no. 140/2018.

Disposable income:

Expected permanent income net of direct taxes and levies in accordance with the Act on Mortgage Lending to Consumers, no. 118/2016.

Distributed ledger technology (DLT):

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. It has been used, among other things, to develop cryptocurrencies such as Bitcoin. The blockchain does not include information on owners, and despite its traceability properties, there are certain restrictions on access.

Block chain:

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 Central Bank of Iceland Financial Stability Committee. Currently, Arion Bank hf., Íslandsbanki hf., and Landsbankinn hf. are classified as D-SIBs in Iceland.

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. the Act on the Issuance and Treatment of Electronic Money, no. 17/2013.

Encumbrance ratio:

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

Equity:

Assets net of liabilities.

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. the Act on the European System of Financial Supervision, no. 24/2017.

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 non-performing loans:

According to the facility-level non-performing loan ratio, a customer's loan is classified as non-performing if it is in arrears 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 undertakings (including the ÍL Fund); investment firms; pension funds; insurance companies; mutual, investment, and institutional investment funds; alternative 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 has set the Rules on Foreign Exchange Balance, no. 784/2018. 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 10% of a systemically important bank's capital base. For other credit institution, the ratio is set at 15% of the capital base.

Foreign exchange imbalance:

A foreign exchange imbalance (or mismatch) is the difference between assets and liabilities in foreign currencies.

FSB:

Financial Stability Board.

Funding rules:

Funding rules according to the CRR (cf. the Act on Financial Undertakings, no. 161/2002) stipulate that credit institutions shall maintain a minimum net stable funding ratio (NSFR) of 100% in all currencies combined. The rules are based on international criteria developed by the BCBS. The rules on funding ratios are intended to restrict the degree to which the credit institutions can rely on unstable short-term funding to finance long-term foreign-denominated lending.

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, albeit with reservations concerning their rights as shareholders.

Indexation imbalance:

An indexation imbalance or mismatch is the 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 undertakings) in interbank systems that are generally operated by central banks.

Internal payment system / In-house payment intermediation:

Payments between customers of a single payment service provider.

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.

International reserves:

Foreign assets that are managed by monetary authorities and considered accessible if necessary.

Interest burden:

Interest payments as a percentage of disposable income.

Interest premium:

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

Intraday liquidity:

According to the BCBS definition, intraday liquidity refers to liquid assets that can be accessed during the business day, usually to enable banks to make payments in real time.

Key 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 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.

Large exposure:

A financial institution's exposure to a given customer or group of related customers is considered a large exposure if it equals or exceeds 10% of the Tier 1 capital.

Legal tender:

Banknotes and coin that are issued by the Central Bank and must be accepted for all payments at full nominal value; cf.

the Act on the Central Bank of Iceland, no. 92/2019, and the Act on Iceland's Currency, no. 22/1968.

Liquidity ratio (liquidity coverage ratio):

The ratio of high-quality liquid assets to potential outflows over a 30-day period under stressed conditions according to the Rules on Credit Institutions' Liquidity Ratios, no. 1520/2022; cf. Commission Delegated Regulation (EU) 2015/61.

Liquidity rules:

Rules no. 1520/2022 implement Commission Delegated Regulation (EU) 2015/61 on liquidity coverage requirements for credit institutions, which is based on international criteria developed by the BCBS. Credit institutions must maintain a 100% liquidity coverage ratio (LCR) in all currencies combined and must monitor ratios in significant currencies; i.e., individual currencies in which total obligations equal or exceed 5% of the institution's total liabilities. Furthermore, credit institutions shall satisfy a minimum 50% liquidity ratio in Icelandic krónur. They must also satisfy at least 80% of their liquidity ratio in euros if euro-denominated liabilities constitute 10% or more of their total liabilities.

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); cf. Rules no. 217/2024.

Net stable funding ratio (NSFR):

The ratio of available stable funding to required stable funding according to the CRR; cf. the Act on Financial Undertakings, no. 161/2002.

Netting:

The process of forwarding, harmonising, and sometimes confirming payment instructions before settlement takes place, often by netting out obligations between parties without transferring funds between them.

Network interface:

A network termination point that is a physical connection point where a user is granted access to the network interface owner's computer system; for instance, a payment service provider's network interface.

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. the Payment Services Act, no. 114/2021.

Payment institution:

A legal entity licensed to operate payment services in Iceland or another member state of the European Economic Area (EEA); cf. the Payment Services Act, no. 114/2021.

Payment instrument:

Equipment and/or procedures restricted to a named person on which a provider and user of payment services agree and which the user uses to give payment instructions; cf. the Payment Services Act, no. 114/2021.

Payment services:

Payment services are defined in Point 22 of Article 3 of the Payment Services Act, no. 114/2021. They include deposits of cash to a payment account, electronic transfers of funds between payment accounts, issuance of a payment instrument, or execution of a money transfer. Also included is payment initiation, a new type of payment service.

Payment service provider:

A licensed and supervised entity that provides payment services according to the Payment Services Act, no. 114/2021.

PFMI:

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

PSD/PSD2:

The EU Payment Services Directive, implemented in Iceland with the Payment Services Act, no. 114/2021.

RB claim system:

The name given to a centralised database operated by RB hf. and administering all claims for creditors.

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 general wage index to the consumer price index (CPI).

Reserve adequacy metric (RAM):

The reserve adequacy metric (RAM) was developed by the International Monetary Fund (IMF) as a criterion for desirable size of international 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 components: i. Export revenues: Reflect the risk of contraction in foreign currency accumulation. ii. Money holdings (broad money): Reflect potential capital flight in connection with liquid assets. iii. Foreign current (short-term) liabilities: Reflect the economy's refinancing risk. iv. Other foreign liabilities: Reflects outflows of portfolio assets. The RAM is the sum of 30% of foreign current liabilities, 15% of other foreign liabilities (20% for fixed exchange rate regimes), 5% of money holdings (10% for fixed exchange rate regimes), and 5% of export revenues (10% for fixed exchange rate regimes).

Risk-weighted assets:

Assets adjusted using risk weights according to the CRR; cf. the Act on Financial Undertakings, no. 161/2002.

Risk-weighted assets (risk base):

The sum of the weighted risks of financial undertakings (e.g., credit risk, market risk, operational risk, etc.), according to Regulation (EU) no. 575/2013 (the Capital Requirements Regulation, CRR); cf. the Act on Financial Undertakings, no. 161/2002.

Shadow bank:

Shadow banking is defined as credit intermediation involving entities and activities outside the regular banking system. Shadow banks include money market funds, bond and equity funds, investment funds, specialised investment companies, investment firms, brokers, specialised funds, and miscellaneous creditors. They do not include public financial institutions, pension funds, insurance companies, and financial auxiliaries.

Stablecoin:

A type of virtual asset 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 Central Bank 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.

Trade-weighted exchange rate index (TWI):

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

Virtual assets (crypto-assets):

Any type of value held in digital form that can be used for payment or investment and can be transferred, but is not classified either as electronic money in the sense of Act no. 17/2013 or as currency issued by a central bank or other authority; cf. the Act on Measures to Prevent Money Laundering and Terrorist Financing, no. 140/2018. A virtual asset 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 asset 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 risk aversion.

Yield:

The annualised return that an investor requires on funds invested.

Yield curve:

A curve that plots financial market yields at set points in time.

