



# FINANCIAL STABILITY

2018 • 1

## Contents

- 3 *Foreword by the Governor*  
Financial system risk modest but growing
- 5 *I Key risks*
- 13 *II Financial institutions' operating environment*
  - Boxes: Airbnb's impact on the housing market 14
  - Foreign exchange market 16
  - Repricing of risk premia 18
  - The effects of resident entities' investment in aircraft on the current account balance and the foreign exchange market 21
  - Payday loans 23
  - Changes in composition of residential mortgages 24
- 27 *III Financial institutions and other lenders*
  - IIIa Systemically important banks 27
  - IIIb Other lenders 39
  - Boxes: Financial market infrastructure 30
  - IFRS 9: a new financial reporting standard for financial instruments 32
  - Change in ownership of Arion Bank 34
  - New Rules on Foreign Exchange Balance 36
  - Financial technology 41
- 43 *Appendices*
  - Appendix I: Charts 43
  - Appendix II: Tables 63
  - Appendix III: Glossary 68

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

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

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

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Icelandic letters:

ð/Ð (pronounced like th in English this)

þ/Þ (pronounced like th in English think)

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

## Foreword by the Governor

### Financial system risk modest but growing

In this issue of *Financial Stability*, it is stated that risk in the financial system is within moderate limits. Borrowers' position is stronger than it has been in a long time. The quality of the banks' assets has improved in recent years, and default rates are relatively low in historical terms. The banks are resilient, although their capital ratios have fallen significantly in the recent term as a result of large dividend payments. That said, their capital ratios remain relatively high in both historical and international context. Their liquidity position is good, particularly in foreign currencies.

In the recent past there have been signs of increased risk appetite in the general economy and among some financial institutions. In addition, private sector debt began growing again just over a year ago and has now overtaken growth in nominal GDP — corporate debt in particular. This indicates that the financial cycle upswing is firming; until now it has been driven mainly by rising asset prices.

When *Financial Stability 2017/1* was published a year ago, demand pressures in the economy were considered a risk to financial stability, as they could cause the economy to overheat and then interact negatively with widening financial system imbalances. This risk has receded as the output gap has narrowed as a result of weaker output growth and increased supply of production factors, and house price inflation has eased with an increase in supply. According to currently available forecasts, this trend will continue in the coming term. Real house prices are historically high, however, and are identified in this report as one of the main risks facing the financial system, together with developments in the commercial real estate market and a possible turnaround in the tourism industry. Furthermore, financial market infrastructure is undergoing a comprehensive renewal, which brings with it temporary operational risk that could cause disturbances in payment intermediation. Contingency measures in this area have been strengthened, as will be discussed further in the Bank's *Financial Market Infrastructure* report, due for publication in June.

Commercial real estate prices have risen steeply in the recent term, and there are signs of emerging imbalances in that market. Analysing risk in the market is more complicated than in the residential market, as the commercial real estate market is more heterogeneous and less reliable data are available on its evolution. The report contains a separate chapter on the commercial real estate market. The Central Bank intends to continue developing its analysis of this market, as historical and international experience indicate that it is important in terms of financial stability and can be a source of systemic risk.

The high price of residential and commercial real estate, in combination with low interest rates and ample collateral capacity, could lead to a strong increase in indebtedness, with the associated risk of future setbacks and increased loan losses. This risk has already been partly addressed. Last year, the Financial Supervisory Authority (FME) imposed a ceiling on loan-to-value ratios for residential housing loans, following discussion in the Systemic Risk Committee and an opinion from the Financial Stability Council. Developments in the real estate market will continue to be monitored closely by these bodies, and the possibility of applying additional macroprudential tools will be considered.

Growth has slowed in the tourism industry. A setback in the sector would have an impact on the position of the banking system. At the end of 2017, loans to tourism companies accounted for 9% of the large banks' total lending. The Central Bank of Iceland conducts an annual stress test in consultation with the FME, in which it examines the impact of macroeconomic scenarios on the commercial banks' resilience. The results are

published in the autumn issue of *Financial Stability*. The last stress test, which was based on the banks' end-2016 accounts, used the scenario of a recession in trading partner countries, plus a drop in major export prices and a steep decline in the number of tourists visiting Iceland. The results of the stress test indicated that the banks' capital ratios would fall by an average of 3½ percentage points, bringing them close to the FME's current capital adequacy requirements (CAD).

Risks relating to tourism and high house prices could interact. According to a new working paper by two Central Bank staff members, growth in private property rentals to tourists via Airbnb has increased real house prices by 2% per year in the past three years; furthermore, it explains about 15% of the rise in real prices over this period.<sup>1</sup> A contraction in tourism could therefore exacerbate a drop in house prices stemming from other causes. If such a drop proved larger than included in the last published stress test, the impact on the banks would be accordingly greater. It is unlikely, however, that the banks would be unable to withstand this, but they could be forced to tap their capital buffers, which are intended for this purpose.

This gives rise to the question of how high the banks' capital ratios should be. The three domestic systemically important banks' combined capital, including subordinated loans, totalled 25% of their risk-weighted assets as of end-2017. Their leverage ratio, a measure of equity relative to total non-risk-adjusted assets, was just under 17%. Approved dividend payments will lower the capital ratio to 23½% and the leverage ratio to just under 16%. Additional dividend payments this year would lower their capital ratios, and changes in the composition of capital could cause a decline in the leverage ratio. The ratios are certainly comfortably above the Financial Supervisory Authority's capital adequacy requirements, which are just over 20% for the three commercial banks combined. They are also well above the levels generally seen in neighbouring countries. European banks of a size similar to Iceland's banks have capital ratios of just over 18% and leverage ratios of about 8%. Elsewhere in the world, capital ratios are higher than those in Europe in some cases. But it is not a given that banks in Europe, which have more powerful backing than those in Iceland, are the most appropriate reference for Icelandic banks. Nonetheless, there could still be some scope to lower the banks' capital ratios — and leverage ratios in particular — with dividend payments and changes in the composition of capital. On the other hand, the banks are being cautious in imposing a so-called "management premium" over and above the Financial Supervisory Authority's CADs, as it could erode confidence in the banks if their capital ratios fall below them as soon as they face the slightest headwinds. Moreover, the banks must bear in mind that the countercyclical capital buffer is currently 1.25%, but the Financial Stability Council has signalled that it might be increased in stages to 2.5% as the upswing in the financial cycle gathers more momentum.



1. Lúdvík Eliasson and Öundur Páll Ragnarsson: *Short-term renting of residential apartments: Effects of Airbnb in the Icelandic housing market*.

## I Key risks

Risk in the financial system is within moderate limits, as external conditions have been favourable to financial institutions in the recent past. There have been signs, however, that risk appetite is on the rise and that financial system risk may be building up. The effects of one of the longest GDP growth episodes in Iceland are now showing in increased credit growth, which nevertheless is still modest, particularly among households. Corporate lending has grown somewhat more rapidly, however. House prices have continued to rise, although the pace of the increase has eased in the recent term. Increased scope for households to take on debt coupled with historically low mortgage lending rates and high house prices could stimulate further credit growth and push house prices still higher. Such a combination of events could exacerbate risks and imbalances in the financial system. Rapid growth in tourism has also caused house prices to rise. Risks attached to developments in tourism could therefore disrupt the housing market. Commercial property prices have also risen steeply in recent years, and real prices are close to a two-decade high. Prices have risen by over 10% annually for four years running. High property prices are now accompanied by more rapid credit growth, and when the two go hand-in-hand, risk in the financial system can accumulate.

There has been discernible unrest in foreign credit markets in 2018 to date. Market agents have demonstrated increased risk appetite in the recent past, and risk premia are historically low. Expectations of rising inflation and interest rates have affected foreign asset markets this year. Possible repricing of risk premia could also affect asset prices. In a more open environment, Iceland is more vulnerable to changes in external conditions that could exacerbate risk.

Icelandic households' and businesses' financial position is still strong, and the banks are resilient. The banks' capital and liquidity ratios have been well above regulatory minima in the recent term, which gives them some scope for dividend payments. Sizeable dividends paid out recently and plans for further dividends later this year have brought the banks' capital ratios much closer to the Financial Supervisory Authority's required minimum, however. The banks must maintain their resilience after the financial cycle has peaked so that shocks do not jeopardise the stability of the financial system, with the associated repercussions for the domestic economy. As a result, it is important that dividend payments and changes in the banks' funding structure take account of increased risk appetite and of the financial cycle position.

### Tourism

#### Surge in tourist arrivals eases

The increase in foreign nationals' arrivals and departures has lost considerable momentum in recent months. Growth in the number of departures over the period from November 2017 through February 2018 measured 8.5%, the lowest in several years. In 2017, the

Table 1 Key risks

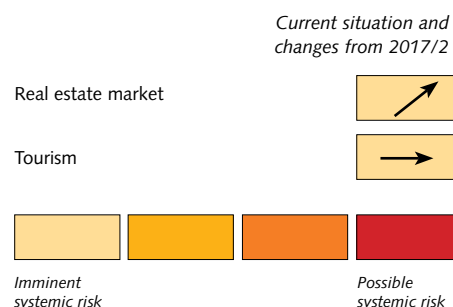
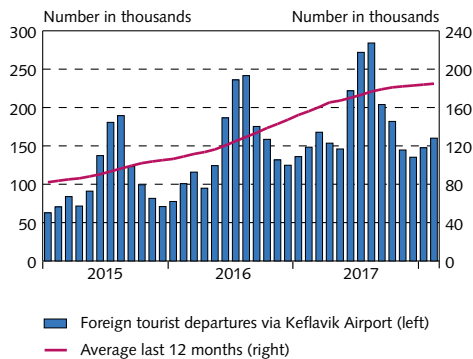
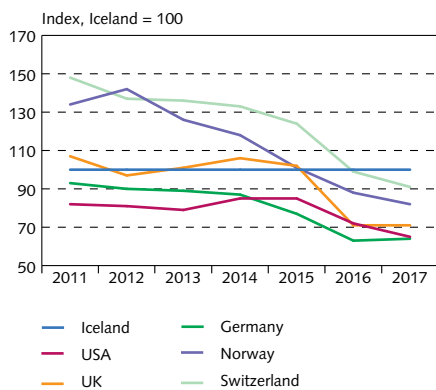


Chart I-1  
Number of foreign nationals' departures  
via Keflavik Airport



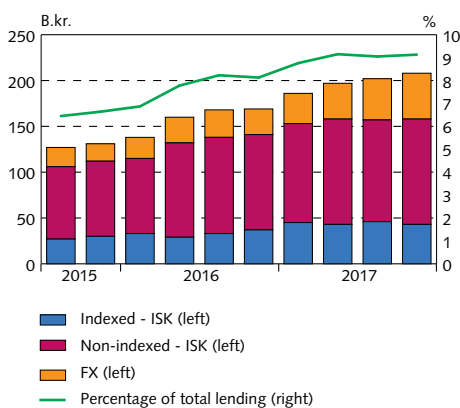
Source: Icelandic Tourist Board.

Chart I-2  
Relative price level<sup>1</sup>



1. Comparative Price Levels (CPL). CPLs are defined as the ratios of PPPs for private final consumption expenditure to exchange rates.  
Source: Macrobond.

Chart I-3  
D-SIB lending to tourism industry



Source: Central Bank of Iceland.

number of peak summer season departures eased significantly, but now off-peak growth is losing pace as well. This could be due to several interdependent factors, including limited infrastructural capacity to absorb further growth.

There are signs that the frequency of direct flights from Europe is on the wane. In recent months, Icelandic airlines have discontinued direct flights to five destinations in the UK and Ireland and two in Norway. Icelandair will not offer night flights to Europe this summer, AirBerlin ceased operations last autumn, Eurowings is reducing the number of flights from Germany to Keflavik this summer, and direct flights from Prague will be discontinued, at least temporarily. On the other hand, Lufthansa is adding additional flights to Iceland, and domestic airlines have begun to offer more frequent flights to Berlin since AirBerlin went out of business. Furthermore, Icelandair and WOW Air have begun flying to six new destinations in the US this year. Russian airline S7 will also fly direct between Keflavik and Moscow this summer. Moreover, Icelandic airlines have expressed an interest in offering direct flights to Asia from Keflavik.

### Iceland: a pricey destination

The appreciation of the króna in recent years — in part a result of the tourism boom — and domestic cost increases have pushed the price level in Iceland above that in neighbouring countries. By some measures, prices in Iceland have overtaken those in Norway and Switzerland, two of the most expensive destinations in Europe.

Foreign guests' overnight stays at hotels in Iceland have increased slowly in recent months. The growth rate now lags far behind the increase in the number of available rooms, causing occupancy rates to fall, particularly in the capital area and the Suðurnes peninsula. This is due both to slower growth in the number of tourist visits to Iceland and to an increased supply of non-hotel accommodation (see Box II-1).

Weaker growth, high prices, rising operating expense, and substantial pressure on infrastructure could erode the long-term sustainability of the sector and make it more vulnerable to shocks. A recent appraisal by KPMG indicates that the sector needs to seek out all possible ways to streamline in coming years so as to maintain acceptable operating performance. If fluctuations are extreme, the rebalancing could put a strain on profits and test tourism operators' ability to service their debt.

### Marked slowdown in lending to tourism companies

Lending to the tourism sector accounts for just over 9% of the large commercial banks' loans to customers. The distribution in the banks' loan books has therefore begun to reflect tourism's status as the economy's leading source of foreign exchange revenue. Because tourism has grown so rapidly in recent years, the associated credit risk could exceed the weight of the sector in the banks' loan books. Growth in lending to tourism operators has slowed significantly in the recent term, and the sector's share in the banks' total lending has been virtually unchanged for the past three quarters.

As tourism growth eases and the sector seeks a sustainable growth path, the chance that credit risk will materialise increases. In the coming term, the banks may need to expense more costs due to tourism lending than they have to date.

## Housing market

### Real prices still rising ...

At present, real house prices are at their highest since measurements began. However, prices are rising slower than they did for quite a long period, and capital area house prices have virtually stood still for half a year. Even so, prices are up year-on-year, by 8.2% in greater Reykjavík and 12.8% in regional Iceland as of February.

In general, real house prices trend upwards in areas with population growth and economic growth. Real prices in both greater Reykjavík and regional Iceland are well above their long-term trend level.<sup>1</sup> A comparison with the last upward cycle is also useful, as a relatively short time has passed since then, and it is clear that the previous cycle entailed a real estate bubble followed by a difficult correction.

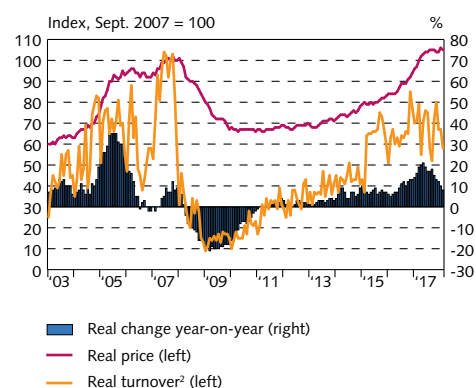
### ... and imbalances remain

It is also possible to assess the sustainability of developments in house prices by comparing them to other economic variables. The ratio of house prices to the wage index was stable for a long period, but after mid-2016 house price inflation began to overtake wages, and the ratio rose by 17% over the following twelve months. Capital area house prices have risen steeply relative to the building cost index since 2013. The index only measures the cost of building a specific reference flat, however, and does not cover all residential housing. Nevertheless, it gives an indication of whether developments are such that buying a flat is less advantageous than building from scratch. The ratio of house prices to the building cost index appears to have peaked in September 2017 and has tapered off slightly since then. It is also possible to rent a home instead of buying or building. Soon after mid-2014, house prices began to rise faster than rent; however, the ratio between the two has been relatively stable over the past half-year. It seems, then, that some imbalance formed in the housing market in 2016 and 2017. That imbalance, however, has not accumulated further in recent months but has remained more or less constant.

### High prices becoming a constraint on homebuyers

In spite of high prices, the capital area housing market remains active, and turnover is strong in historical terms. Turnover grew steadily from 2009-2017, and by 2017 it was similar in real terms to the level seen in 2005. Since then, the population in the greater Reykjavík area has grown by some 21%, so comparisons must take account of that. In 2017, over 5,700 house purchase transactions were made, and turnover for the year was just under 300 b.kr. at year-end prices. Turnover began to shrink slightly in the second half of the year,

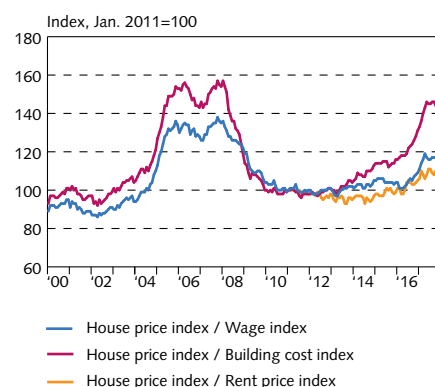
Chart I-4  
Real house prices and turnover  
in the capital area<sup>1</sup>



1. Prices and turnover in the capital area, deflated by the consumer price index. Both variables are set at 100 in September 2007. 2. The period encompassing the strike at the capital area commissioners' office in 2015 is linearly interpolated.

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

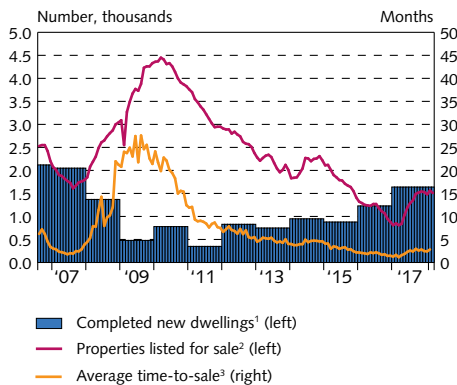
Chart I-5  
Capital area house prices and  
their determinants



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

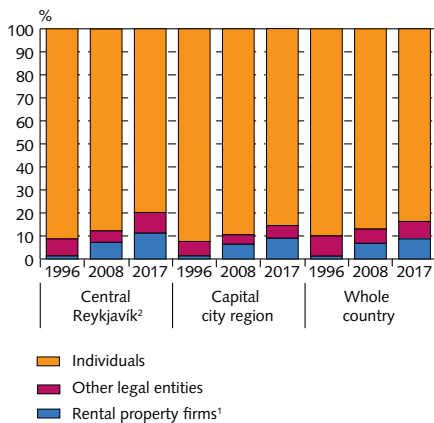
1. This applies irrespective of which of several different methods of calculating long-term trend are used.

Chart I-6  
Listed properties, average time-to-sale  
and new construction



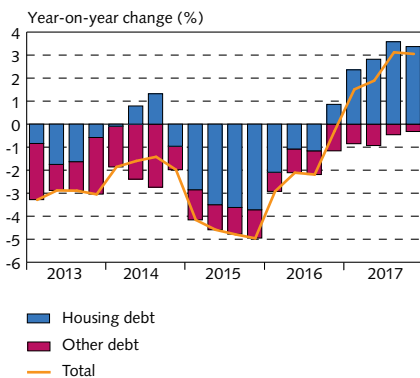
1. Number of newly constructed apartments for 2017 is an estimate.  
2. Number of properties listed for sale on the mbl.is real estate website, monthly average. 3. Average time-to-sale is the time length it takes to sell property divided by turnover for the month in question.  
Sources: mbl.is real estate website, Statistics Iceland, Central Bank of Iceland.

Chart I-7  
Ownership of residential real estate



1. Rental property firms are firms engaged in apartment rentals according to the ISAT2008 standard. 2. The Reykjavik city centrum includes postal codes 101, 105 and 107.  
Source: Registers Iceland.

Chart I-8  
Real growth in household debt<sup>1</sup>  
Contribution of residential mortgage debt



1. Year-on-year change, after deflation with the consumer price index. The chart shows the change in the total due to residential mortgage debt, other debt, and in total.  
Sources: Statistics Iceland, Central Bank of Iceland.

however, and the number of purchase contracts to decline. It appears that high prices have begun to affect buyers' willingness or ability to purchase property in greater Reykjavik.

The market outside the capital area has also been lively in the recent term. In regional Iceland as a whole, 2017 turnover was similar in real terms to that in 2007, with nearly 3,300 purchase contracts for a total of 93 b.kr. at end-2017 prices. The slight slowdown in greater Reykjavik could also be seen in regional Iceland, as turnover contracted slightly in H2 after several years of steady growth.

### Housing supply has increased but is still limited

A number of factors have worked together to push house prices upwards in the past few years. Households' disposable income has risen, labour importation has been strong, interest rates have fallen, short-term rentals have gained ground, and supply has been inelastic. Preliminary figures from Statistics Iceland indicate that last year's gross capital formation in the form of residential housing was about 2.5% of the previous year's base. According to this, 2017 was the first year after the financial crisis to see relative growth in the housing stock exceed its thirty-year average. Slow growth in the residential housing stock is due in part to the construction industry's focus of much of its activity on hotel construction. On average, just under 800 new flats were completed each year between 2009 and 2016, although last year's total appears likely to have been close to 1,600-1,700. The average time-to-sale and number of properties listed for sale fell to historical lows in early 2017. Both variables had nearly doubled by early 2018, yet they are still very low in historical context.

### Legal entities increasingly active in the housing market

Rental agencies' real estate-backed debt to domestic commercial banks totalled 12 b.kr. at the end of 2017, after contracting slightly between years,<sup>2</sup> and therefore accounts for a very small share of the banking system's real estate-backed assets. Rental companies' total liabilities increased substantially in 2017, however. According to the annual accounts of the three largest companies in this market, their combined liabilities totalled nearly 80 b.kr.

Rental companies and other legal entities have increased their share in residential property ownership in recent decades, primarily in the Reykjavik city centrum. In 1996, legal entities owned about 10% of residential property nationwide, but by 2017 that percentage had nearly doubled, and in the Reykjavik city centrum the share owned by legal entities grew even more strongly. In the last issue of *Financial Stability*, it was noted that, from 2014 to 2016, professional landlords had paid a higher price per square metre than individuals had, mainly in central Reykjavik. At the same time, there are signs that legal entities bought higher-quality properties than individuals did, primarily in that area. Therefore, there are no clear signs that companies are taking more risk than individuals in this regard. On the other hand, their assessment of value and willingness to pay could differ from that

2. Companies that rent out residential property according to their ISAT industry classification.



of individuals when times are hard and real prices are falling. As the rental market grows, it is therefore necessary to continue monitoring developments in ownership and financing of residential property.

### Households' housing debt continues to rise

Households' real estate-backed debt increased by 3.4% in real terms in 2017, the fifth consecutive quarter of growth. As a proportion of both disposable income and GDP, household debt declined steeply from 2010 onwards, but both ratios were relatively stable in 2017. This is a sign that households' debt levels are still moderate. They are rising, however, and because the business cycle appears to have peaked, both of these ratios are likely to rise in the coming term. It should be borne in mind, though, that during this period, the ratio of homeowners to non-homeowners has fallen. As a result, the debt ratios alone do not tell the whole story, and they could paint a brighter picture than is warranted by historical comparison.

These developments should be monitored carefully. When high prices, strong market turnover, and increased mortgage debt go hand-in-hand, as they do now, there is a greater likelihood that systemic risk related to the housing market will accumulate.

## Commercial real estate market

### An opaque but important market

Historical and international experience shows that the market for commercial real estate is important in terms of financial stability and can be a source of systemic risk. In many economies, however, these markets have been studied much less than residential housing markets as regards systemic risk, not least because of a lack of data.<sup>3</sup> In Iceland, some data are available, but the market is much less efficient than the residential housing market. Transactions with commercial real estate are few and far between, and price formation in the market tends to be spotty. In addition, commercial housing encompasses a wide variety of properties, from factory housing to warehouses and from hotels to office buildings.

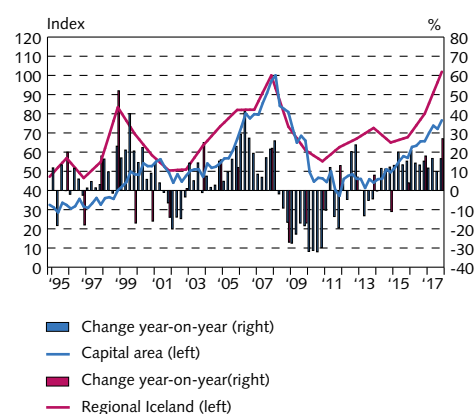
In spite of the imperfections of the market and the data, it is necessary to analyse the systemic risk that could arise from it. Fluctuations in commercial property prices have played an important role in many financial crises worldwide in recent decades, and they have generally manifested themselves in a surge in property-backed lending, easing of borrowing conditions, and rising prices during the upward cycle, followed by a collapse in prices, widespread default, and loan losses in the downward cycle.<sup>4</sup> In recent years, the euro area banks' highest non-performing loan ratios have been on loans backed by commercial property.<sup>5</sup>

3. Furthermore, there is no standardised international definition of what is considered commercial housing for such an analysis, and efforts to create one are still underway in most places.

4. ESRB (2015). Report on commercial real estate and financial stability in the EU. [https://www.esrb.europa.eu/pub/pdf/other/2015-12-28\\_ESRB\\_report\\_on\\_commercial\\_real\\_estate\\_and\\_financial\\_stability.pdf](https://www.esrb.europa.eu/pub/pdf/other/2015-12-28_ESRB_report_on_commercial_real_estate_and_financial_stability.pdf)

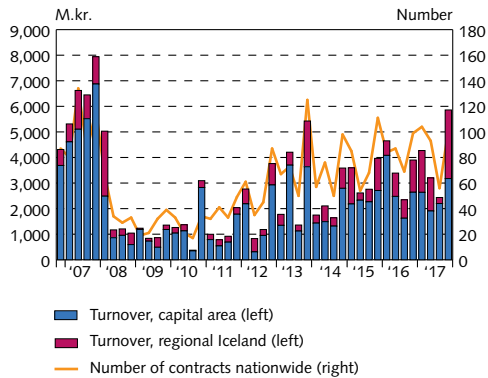
5. ECB. Financial Stability Review, November 2016. <https://www.ecb.europa.eu/pub/pdf/other/financialstabilityreview201611.en.pdf>

Chart I-9  
Real commercial real estate prices<sup>1</sup>



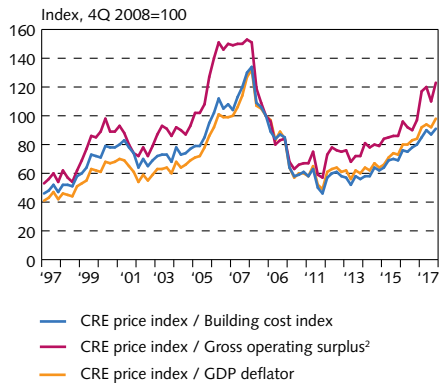
1. Price indices deflated with the consumer price index. Quarterly data for the capital city region, yearly data for regional Iceland. Each index takes the value 100 at its pre-crisis maximum, Q1/2008 for the capital region and the year 2007 for regional Iceland.  
Sources: Registers Iceland, Statistics Iceland, Central Bank of Iceland.

Chart I-10  
Commercial real estate market turnover<sup>1</sup>



1. Turnover within the quarter, in ISK millions at end-2017 prices.  
Sources: Registers Iceland, Statistics Iceland, Central Bank of Iceland.

Chart I-11  
Commercial real estate prices  
and other economic variables<sup>1</sup>



1. All variables take the value 100 at 4Q 2008, before ratios are calculated.  
2. Gross operating surplus per square meter of commercial real estate.  
Annual data for gross operating surplus is non-linearly interpolated.  
Annual data for the commercial housing stock is linearly interpolated.  
Sources: Registers Iceland, Statistics Iceland, Central Bank of Iceland.

## Large and protracted price increases

During the last cycle, real commercial housing prices in greater Reykjavik fell by roughly 60% from peak to trough. Since spring 2014, a period of nearly four years, prices have risen swiftly, by 10-21% per year. In 2017 the increase measured 16.6%. Real prices are now high in historical context. The most striking increase has been in retail space and office property, although warehouses and specialised housing have risen markedly as well. Hotel and guesthouse prices seem to have risen considerably, but spotty price formation makes it difficult to interpret the data. Industrial housing does not appear to have risen very sharply. Price increases outside the capital area have also been significant.

Turnover has grown strongly in real terms since 2013, particularly towards the end of 2017. Capital area retail and office space stands out from the rest, however, as turnover has contracted between years. If high prices for retail and office property deterred commercial housing buyers during the year, it may be a sign that risk awareness among corporate borrowers and lenders is greater than during the last upswing.

## Imbalances could be accumulating

In the long run, commercial real estate prices move in tandem with corporate earnings, construction costs, and other underlying factors. If prices rise in excess of those factors, it could indicate that developments are unsustainable. Commercial housing prices have risen well in excess of the GDP price deflator in recent years, a sign that housing costs could be rising over and above corporate earnings. At the end of 2017, the ratio between the two was 37% above its long-term average. The same trend can be seen in the ratio of property prices to gross operating surplus<sup>6</sup> on each housing unit, as access to housing is in most cases a prerequisite to generating revenues from commercial activities. Finally, commercial housing prices can be compared to the building cost index.<sup>7</sup> Developments in the ratio between them are similar to the other two, although the price-to-building costs ratio is a bit less above the average, at about 27%. Imbalances could be building up, and the situation should be monitored closely.

## Supply has increased little apart from hotels

In recent years, a number of hotels have been built, and various types of property have been converted to guesthouses. At the same time, the supply of other kinds of commercial property has increased only by a small amount. According to figures from the Iceland Property

6. Companies' gross operating surplus is defined as GDP net of taxes and the salaries and related expenses paid by the firms, plus subsidies paid to them.

7. The index measures the cost of building a specific reference flat and therefore does not always apply to commercial property. It describes hotels best, perhaps, but is less appropriate for other types of property. Because the index is set at 100 at a selected point in time and prices are set in relation to it, the index value itself is not of paramount importance. More important is how it changes proportionally over time. Because construction costs for all property, residential as well as commercial, are affected most strongly by developments in wages and the exchange rate of the króna, the building cost index can be quite useful for this purpose.

Registry, the amount of registered hotel and guesthouse space (in square metres) rose by 73% between 2011 and 2017, mostly in the past three years. Over that same period, available commercial housing space increased by only 6%, most of it industrial property. Unlike residential property, much commercial property is built upon request and designed to meet the buyer's needs, and it is not listed on the market as new construction. Figures from the mbl.is real estate website show, however, that the number of properties listed for sale each month declined from mid-2014 through mid-2017 and has not risen much since, indicating that supply has not grown in line with demand over this period.

One method of detecting overinvestment in commercial housing is to examine construction in the periphery of the capital area. In 2005-2008, a large number of properties were built on the outskirts of the city, retail and office space in particular. This could be a sign of unrealistic market expectations concerning short- or medium-term GDP growth and regional development. Data from the Iceland Property Registry do not indicate, however, that such developments had begun in 2017.

### Banks' exposure to the commercial real estate market

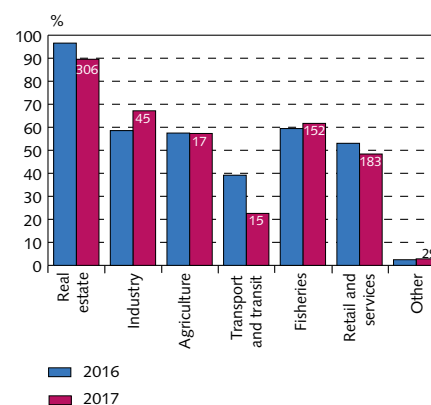
The commercial banks' loans and other claims backed by commercial real estate totalled 834 b.kr. at the end of 2017, or 32% of deposit institutions' total lending. At the same time, such loans amounted to 63% of commercial banks' corporate loans. The total amount of such loans rose by 6.2% in real terms year-on-year. In comparison, the commercial banks' mortgage lending to households totalled 812 b.kr. over the same period, and their CET1 capital amounted to 607 b.kr.

According to the banks' 2017 annual accounts, commercial property represents about a third of all collateral provided as security against the banks' credit risk. The value of the collateral totalled nearly 1,100 b.kr. at the year-end, an increase of 13.7% year-on-year, which is in line with the rise in commercial property prices. The increase in collateral value therefore contributed to the year-on-year decline in loan-to-value (LTV) ratios as a whole. Other factors affect ratios as well, however, because many other assets are accepted as collateral for these same loans, including ships, other equipment, accounts receivable, and so forth.

LTV ratios rose between years in two sectors: loans to financial institutions and loans to construction firms. At the end of 2017, loans with LTV ratios of 90% or more totalled 145 b.kr., including 100 b.kr. with a ratio of over 100%. The risk is distributed somewhat unevenly across sectors. Most overcollateralised loans are to real estate companies, which also are the single largest corporate sector in the banks' loan portfolios. Overcollateralised loans are most common — 32% of loans are backed by commercial real estate — in the services sector, which is dominated by tourism.

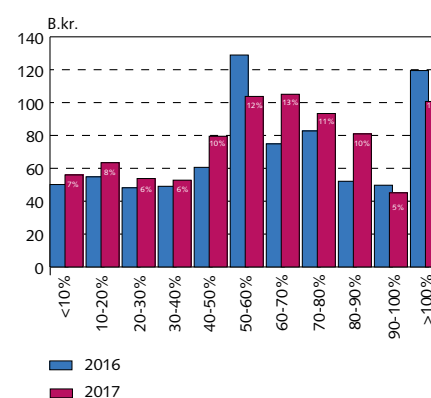
The risk faced by the banks due to loans and claims relating to development, construction, acquisition, or operation of commercial housing without any collateral security in such housing is negligible. The commercial banks' own commercial real estate holdings, both

Chart I-12  
Bank loans backed by commercial real estate<sup>1</sup>  
Share of total bank lending to sector



1. Loans and other claims held by domestic commercial banks. The figure on each red bar indicates total CRE-backed bank credit, in ISK billions, at year-end 2017.  
Source: Central Bank of Iceland.

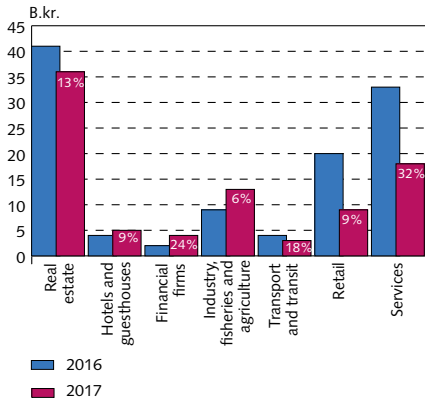
Chart I-13  
LTV ratios on commercial real estate-collateralised bank credit<sup>1</sup>



1. Loans and claims held by domestic commercial banks. The figure on each red bar indicates the share of commercial real estate-backed credit in that LTV-interval out of total commercial real estate-backed lending.  
Source: Central Bank of Iceland.

Chart I-14

Loans with LTV ratios  $\geq 100\%$ <sup>1</sup>  
Backed by commercial real estate, by debtor



1. Loans and other domestic bank credit. The figure on each red bar indicates the share of CRE-collateralised credit to the sector with a loan-to-value ratio of 100% or higher.

Source: Central Bank of Iceland.

appropriated assets and housing for their own use, amounted to 11 b.kr. at the end of 2017. This, too, has a minimal impact on risk.

On the whole, the commercial banks' commercial housing-related exposure to risk is similar to their exposure to risk relating to residential housing. The two markets differ from one another, however. Collateralisation is more complicated in the corporate sector, and the commercial housing market is more volatile than the residential market. By various measures, the variability of real prices in the capital area has been two to five times greater for commercial housing than for residential housing in the past twenty-five years. From the top of the last cycle to the bottom of the housing crisis, real commercial property prices in greater Reykjavik fell by 63%, whereas real house prices fell by nearly 35%. By the same token, the variance of turnover figures is greater for commercial housing than for residential housing, and it is clear that appropriated commercial property could be highly illiquid if the market should run into headwinds.

### Market on the rise

The commercial housing market is on the rise, with credit growth and price increases exceeding corporate earnings, the price of the products stored or manufactured in the properties concerned, and building costs. The outlook is for risks relating to commercial housing to grow even though rising prices temporarily have a positive impact on LTV ratios and the scope of unhedged risk. However, there are signs that, as yet, risk is accumulating more slowly, risk awareness is greater, and price increases are less credit-driven now than in the last upswing.

## II Financial institutions' operating environment

### Domestic demand pressures subside, and the global outlook improves

Economic developments continue to be favourable. GDP growth is strong, the net international investment position is positive, there is a surplus on external trade, and the foreign exchange market has been well balanced in the recent term. Brisk economic activity in the recent past has improved firms' operating performance and strengthened their position. Households' financial position has strengthened as well, with improved equity and increased purchasing power. Credit growth has gained pace in the recent past but is still moderate. Global GDP growth and inflation have risen, and the slack in the economy has narrowed. Both the US Federal Reserve and the Bank of England have raised interest rates, while the European Central Bank has held its policy rate at zero. The global financial markets have been rather turbulent recently. Rising interest rates following a protracted low-interest phase and potential repricing of risk premia could affect asset prices.

### Macroeconomic environment and financial markets

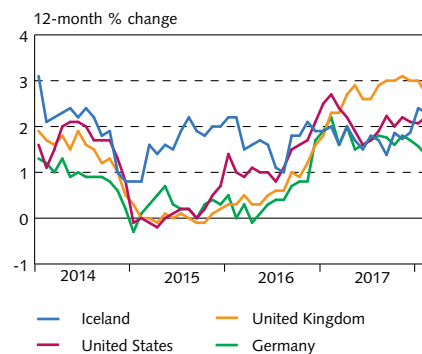
#### Output gap narrowing

Global economic growth has eased in recent months, although output growth is still robust, at 3.6% in 2017. In *Monetary Bulletin* 2018/1, the Central Bank forecast GDP growth at 3% in coming years. Export growth has slowed markedly, and private consumption is now the main driver of output growth. The output gap in the domestic economy has narrowed as GDP growth has lost momentum. In this context, many factors have pulled together, including labour importation, a slowdown in tourism growth, and an increased supply of housing. Labour demand is still strong and growing, and firms planning to recruit staff outnumber those interested in downsizing.

Inflation has been modest but has inched upwards recently, to 2.8% in March, the first time in four years it has overtaken the Bank's inflation target. Improved terms of trade and the appreciation of the Icelandic króna have lowered import prices, and real estate prices have been the main driver of domestic inflation. The situation has changed in the recent past, however: domestic inflationary pressures are mounting and inflation is rising, owing to rising domestic goods prices and reduced imported deflation.

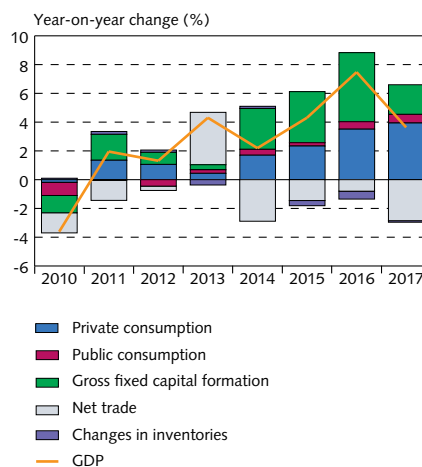
Treasury debt has fallen further relative to GDP in the past year, to 36% by the year-end. The interest rate spread between eurobonds issued by the Icelandic Treasury and comparable German bonds continued to narrow in 2017, as Treasury debt declined and Iceland's credit ratings improved. Both S&P and Fitch upgraded the sovereign credit ratings twice during the year. The ratings on Iceland's long-term obligations are now A3 (from Moody's) and A (from S&P and Fitch), all with a stable outlook.

Chart II-1  
Inflation<sup>1</sup>



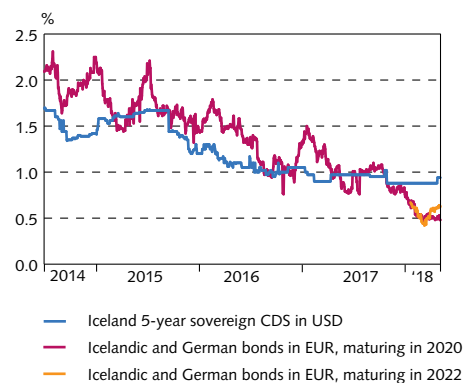
1. Consumer price index.  
Sources: Statistics Iceland, Thomson Reuters.

Chart II-2  
Output growth<sup>1</sup>



1. Contribution of individual components to output growth.  
Sources: Statistic Iceland, Central Bank of Iceland.

Chart II-3  
Government bond spreads

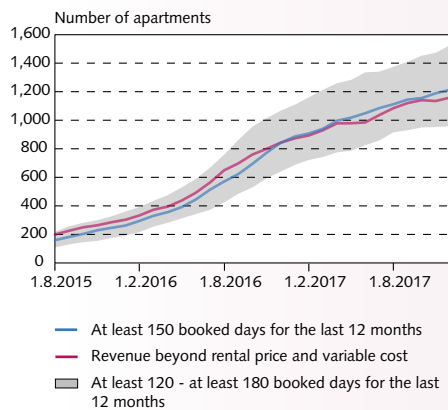


Source: Thomson Reuters.

## Box II-1

Airbnb's impact on the housing market<sup>1</sup>

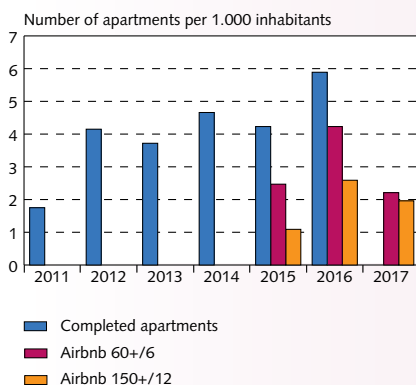
Chart 1  
Airbnb rental apartments in the capital region<sup>1</sup>



1. Whole apartments, floors and houses. Average rent price in the capital region 12 months prior is used for market comparison. Revenues in USD are converted to ISK using the average exchange rate for each month.

Sources: AirDNA, Central Bank of Iceland

Chart 2  
Airbnb rentals and housing construction in the capital region<sup>1</sup>



1. The number of completed apartments located in the capital region per 1,000 inhabitants and apartments per 1,000 inhabitants that have been added to the Airbnb base each year. On one hand, the number of apartments with at least 60 booked nights in the last 6 months. On the other, the number of apartments with at least 150 booked nights in the last 12 months.

Sources: AirDNA, Central Bank of Iceland.

In recent years, an increasing number of privately owned flats, particularly in the greater Reykjavík area, have been used to house tourists. To the extent that such housing would otherwise have stood vacant, such short-term rentals should not affect house prices. But when entire flats are rented out over long periods, they cannot also be used as permanent residences. In such cases, the inhabitants or prospective inhabitants must find themselves somewhere else to live. This can be expected to affect house prices.

Airbnb is the most popular website used for such rentals in Iceland, but it is not the only one. The extent of the accommodation services booked there and the associated impact on house prices can be estimated using real-time data.<sup>2</sup> For Airbnb bookings, the average length of stay in Iceland is four nights, but because it can be difficult to arrange bookings in close chronological succession, it is realistic to assume that a flat booked for 150 nights over a twelve-month period is not used as a permanent residence. Using this figure as a reference, some 1,200 flats in greater Reykjavík were used exclusively for short-term rentals in 2017. For regional Iceland, the figure is about 460. Another way to estimate the number of Airbnb flats not used as permanent residences is to consider revenues. It can be assumed that a flat is used for short-term rental if rent receipts net of a 25% service charge exceed average rent in the area concerned. According to this method, 1,160 flats in the capital area were used as short-term rentals in 2017. This is well in line with the results obtained using the 150 nights per year method.

The house price equation in the Central Bank's quarterly macroeconomic model (QMM), which is based on supply and demand, was used as a baseline to estimate these effects, with variables added for net inward migration to Iceland and short-term rentals. During the period 2014-2017, real house prices in the capital area rose by about 40%. The model estimates that over that period, the increase stemming from short-term rental activity totalled 6% and the increase from net inward migration 12%. In other words, Airbnb rentals account for about 15% of the price rise and population growth 30%.

In recent years, large numbers of people have moved to Iceland to work in the tourism industry, owing largely to the surging growth in the sector. These additions to the house price model can therefore be useful in assessing the potential impact of a sudden turnaround in tourism on the capital area housing market.

1. The discussion that follows is based on a new Central Bank *Working Paper* entitled "Short-term renting of residential apartments: Effects of Airbnb in the Icelandic housing market", by Lúdvík Elíasson and Önnundur Páll Ragnarsson. See <https://www.sedlabanki.is/utgefid-efni/frettir-og-tilkynningar/frettasafn/frett/2018/02/27/Ny-rannsoknarritgerd-um-mat-a-ahrifum-Airbnb-a-ibudamarkad/>
2. The data in question are obtained from the US company AirDNA, which sells access to the Airbnb database. Therefore, the data do not provide a comprehensive estimate of short-term rentals in greater Reykjavík, as Airbnb has competitors.

### Domestic financial market, increased supervision, and stability

The Central Bank's key interest rate, the rate on seven-day term deposits, has been unchanged at 4.25% year-to-date. It was lowered three times last year, by 0.25 percentage points each time. Nominal Treasury bond yields have risen in 2018 to date, while long-term indexed yields have remained virtually unchanged and shorter

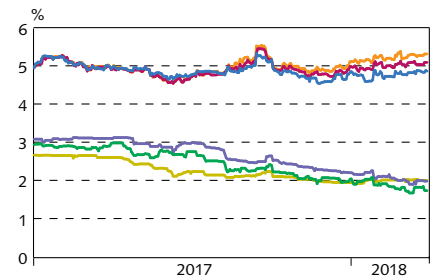
indexed bond yields have fallen slightly.<sup>1</sup> The breakeven inflation rate has therefore risen in the recent past. The rise in nominal bond yields has been greater at the long end of the yield curve, increasing the yield slope. The special reserve requirement on capital inflows has caused market interest rates for sufficiently liquid securities to track movements in the Bank's key interest rate. Foreign investors' demand for Icelandic securities has shifted from Treasury bonds to listed equities, which partially explains the 16% year-on-year contraction in bond market turnover.

Stock market turnover was brisk in 2017 — the strongest since 2008, in fact — and increased by nearly 13% between years. The market value of listed companies declined by 17% year-on-year, to 822 b.kr. at the end of 2017, mainly because of Össur hf.'s delisting from the Icelandic exchange. Össur shares are now listed only on Nasdaq Denmark. As a result of the delisting, the percentage of directly pledged shares in the Icelandic equity market rose from 11% to just over 13%; i.e., the average percentage for all listed companies on both the Main List and the First North market, based on the relative weight of each company. The percentage of shares pledged directly as collateral in the stock market has been broadly unchanged for the past three years.<sup>2</sup> The OMXI8 index fell virtually uninterrupted from mid-2017 onwards, for a total year-on-year decline of 4.4%. It recovered in Q1/2018, however, gaining 8.6%.<sup>3</sup> One company was listed on the First North market in 2017, and in March 2018 Kvika banki hf. shares were also admitted for trading there. Real estate firm Leigufélagið Heimavellir hf. is planning to list its shares on the main market in May 2018, followed by Arion Bank hf. later in the year.

A new regulation on short selling took effect in mid-2017.<sup>4</sup> The aim is to enhance transparency in connection with short sales of specified financial instruments, reduce settlement risk, and reduce other types of risk associated with unhedged short sales. Furthermore, supervisors' authorisations to intervene under extraordinary circumstances and halt short selling temporarily have been clarified. Individuals and companies are now required to notify the Financial Supervisory Authority (FME) of unhedged short positions in sovereign CDS spreads, and they are also required to report to the FME if their short positions in corporate shares and Treasury obligations are above or below specified limits. In the case of equities, the threshold is 0.2% of the company's issued share capital, but reporting is also required each time the short position deviates by 0.1% or more from the aforementioned threshold. Public disclosure is required if the position rises above or falls below 0.5% of share capital. Only one notification has been made public since the regulation on short sales took effect.

1. Indexed bonds are in short supply, which could affect this trend.
2. Only direct pledges are considered; therefore, no account is given to general collateral in shares or indirect collateralisation via derivatives agreements. As a result, the pledge ratio in the Icelandic equity market is probably higher. Further information can be found on the Nasdaq Iceland website: <https://globenewswire.com/news-release/2018/03/07/1417367/0/en/Proportion-of-shares-on-Nasdaq-Iceland-pledged-as-collateral-February-2018.html>.
3. The composition of the index changed at the turn of the year, when real estate firm Reginn hf. was included in the index instead of Eimskipafélag Íslands hf.
4. See: <http://www.althingi.is/alttext/stjt/2017.055.html>.

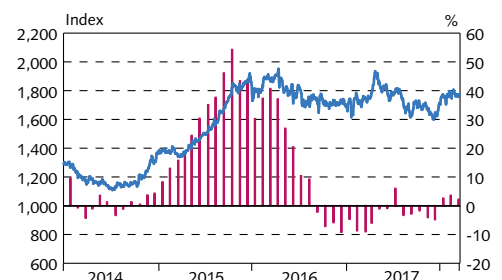
Chart II-4  
Bond yields



Nominal Treasury bond maturing in:  
— 2020 — 2025 — 2031  
Indexed Treasury or HFF bond maturing in:  
— 2021 — 2024 — 2044

Source: Central Bank of Iceland.

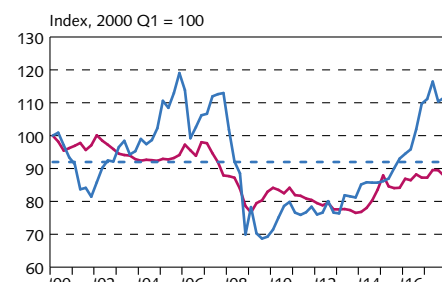
Chart II-5  
OMXI8 share price index



— OMXI8 (left)  
■ Year-on-year change (right)

Source: Nasdaq Iceland.

Chart II-6  
Real exchange rate of the króna  
and terms of trade



— Real exchange rate  
- - - Average<sup>1</sup>  
— Terms of trade

1. Real exchange rate average over the entire period.  
Sources: Statistics Iceland, Central Bank of Iceland.

## Box II-2 Foreign exchange market

The foreign exchange market has been well balanced in the recent term, and short-term fluctuations in the exchange rate of the króna have subsided markedly. As a result, there has been no need for the Central Bank to intervene in the market. In terms of relative consumer prices, the real exchange rate of the króna is now about 21% higher than it was at the turn of the century. Nevertheless, it appears to be fairly well in line with underlying fundamentals, and the equilibrium real exchange rate has risen in recent years.<sup>5</sup>

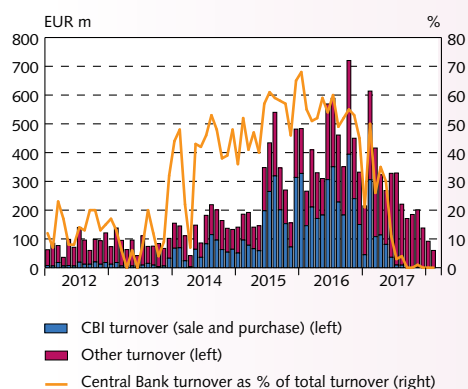
The domestic foreign exchange market has changed radically in the past year. The vast majority of the capital controls were lifted in March 2017, and the Central Bank suspended its regular currency purchase programme in May of that year. The Bank's intervention in the market is now aimed solely at mitigating short-term volatility and preventing spirals from developing. The Bank has conducted little or no trading in the interbank foreign currency market since mid-2017, and the exchange rate of the króna is now determined by other supply and demand in the market.

Table 1 gives a summary of known foreign exchange market activity in 2017.<sup>1</sup> Known inflows totalled just over 270 b.kr., and sales of foreign currency are estimated at 330 b.kr.<sup>2</sup> Last year's inflows stemmed mainly from the current account surplus. The contribution from capital movements (excluding Central Bank foreign exchange market transactions) was negative, however, owing largely to the offsetting effects of net inflows for new investment in Iceland and outflows due to the pension funds' investment abroad. The Central Bank's net foreign exchange transactions were broadly equal to the current account surplus during the year.

New investment by non-residents increased markedly between years, mainly due to the investment in Arion Bank. Offsetting the inflows, resident entities have been diversifying risk by investing abroad in greater measure than before. Chief among them are the pension funds, which stepped up their overseas investment substantially between years, to more than 100 b.kr. in 2017. In addition, borrowers have continued to retire foreign debt. Known capital flows have therefore led to foreign currency outflows.

The current position of the domestic systemically important banks' foreign exchange balance has risen slightly between years, and the banks have bought more currency than they have sold, mainly to cover forward contracts with customers wishing to hedge against a depreciation of the króna. The banks' foreign exchange balance is now close to zero. Foreign-denominated lending to resident borrowers has grown somewhat but is offset by the rise in foreign-denominated deposits. On the whole, the net foreign exchange position of the banks and other resident entities was broadly unchanged during the year.

Chart 1  
Foreign exchange market turnover



Source: Central Bank of Iceland.

1. Net foreign currency flows are only an estimate, as individual items are subject to considerable uncertainty, which has increased markedly since the capital controls were lifted.
2. A difference can develop between purchases and sales, for instance, because of mismatches between exchange rate movements during the period and the time lag between foreign currency flows and offsetting entries, in addition to uncertainty about the flows.

5. More detailed discussion of the real exchange rate can be found in *Monetary Bulletin* 2018/1.



The foreign exchange market has been well balanced in the recent term. The temporary flurry of short-term exchange rate volatility following the liberalisation of the capital controls receded in late summer. Exchange rate volatility in terms of 30-day fluctuations in the króna is historically low at present. It is difficult to say how capital flows will develop in the future, as they depend strongly on economic conditions, the interest rate differential between Iceland and other economies, market uncertainty, residents' interest in foreign investment, and various other factors. Since the capital controls were lifted, there have been moderate outflows for securities investments abroad, but they have stemmed mainly from foreign investment by the pension funds. Demand by the pension funds and other residents for foreign equity securities could change in response to unrest in foreign stock markets.

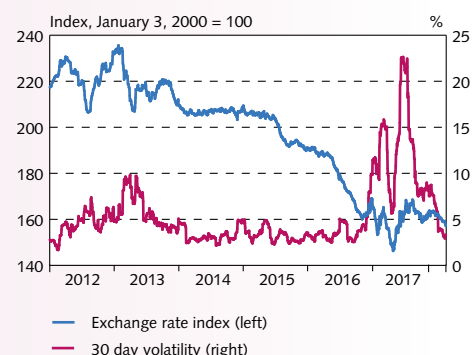
Table 1 Estimated foreign currency flows 2017<sup>1</sup>

	<i>B.kr.</i>
Current account balance <sup>2</sup>	102
Net capital flows	-62
— residents' new foreign borrowings <sup>3</sup>	24
— instalments on foreign loans <sup>4</sup>	-46
— net capital inflows due to registered new investments <sup>5</sup>	103
— pension funds' and third-pillar savings custodians' foreign investments <sup>6</sup>	-119
— miscellaneous one-off items <sup>7</sup>	-29
— increase in payables net of receivables	5
Changes in banks' and other residents' foreign exchange position	-8
— D-SIB: Increase in residents' foreign-denominated deposits <sup>8</sup>	-37
— D-SIB: Reduction in foreign assets	4
— D-SIB: Increase in current position of foreign exchange balance to cover forward contracts with customers	-13
— new foreign-denominated loans to domestic borrowers <sup>9</sup>	38
Central Bank net FX purchases in the market and direct transactions	-99
Difference between purchases and sales in aforementioned transactions	-67

1. Net foreign currency flows are only an estimate, as individual items are subject to considerable uncertainty. 2. Estimated foreign currency flows due to the current account balance; however, it is not a given that all variables cause foreign currency flows. This is particularly the case for factor income. Excluding the effects of the old banks and of transactions with ships and aircraft. 3. Excluding commercial banks, Treasury, and companies in fisheries and transport. Assuming that the loans are used in Iceland. 4. Excluding commercial banks, Treasury, and companies in fisheries and transport. 5. Excluding reinvestment. 6. Preliminary figures. 7. Based on reported foreign exchange transactions, most of them foreign investment by residents other than pension funds. 8. Exchange rate-adjusted, excluding the old banks' holding companies. Assuming that the banks hold foreign assets to cover potential outflows of foreign-denominated deposits. 9. Based on changes in book value of total loans at constant exchange rates and assuming that domestic borrowers use FX loans in Iceland and either convert the proceeds to krónur or purchase goods and services from abroad, which would then show as an increase in net foreign currency sales due to external trade.

Sources: Commercial banks' annual accounts, Statistics Iceland, Central Bank of Iceland.

Chart 2  
Exchange rate of the króna<sup>1</sup>

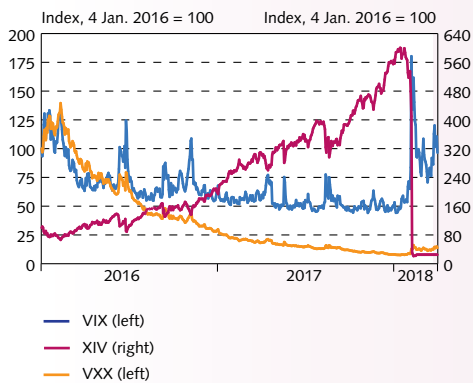


1. Exchange rate index based on average imports and exports, narrow trade basket (1%).  
Source: Central Bank of Iceland.

Box II-3

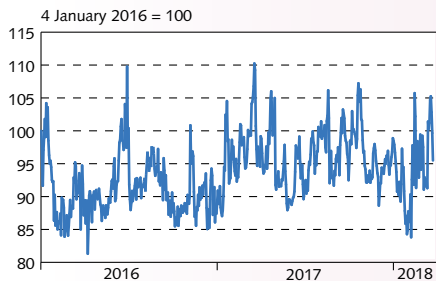
Repricing of risk premia

Chart 1  
XIV, VIX og VXX<sup>1</sup>



1. VXX and XIV derive their value from the performance of underlying VIX future contracts (S&P 500 VIX Short-Term Futures Index). XIV performs according to inverse performance of the VIX index.  
Source: Thomson Reuters.

Chart 2  
SKEW index<sup>1</sup>



1. The SKEW index is a measure of perceived tail risk in financial market and reflects the cost investors face as they hedge against a future fall in asset prices.  
Source: Thomson Reuters.

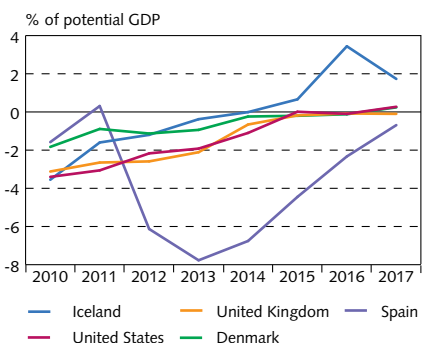
Global stock prices have risen steadily since the 2008 financial crisis, and volatility has been at a historical low. In addition, risk premia have generally fallen. The combination of limited price volatility in the market and increased risk appetite indicates the accumulation of systemic risk and could undermine financial stability. A recent publication from the European Central Bank (ECB) identifies repricing of risk premia as the chief threat to stability in the eurozone. The ECB warns that increased uncertainty and changes in monetary policy could exacerbate volatility and cause an abrupt rise in premia on risky investments.<sup>1</sup>

Over time, limited market volatility and low risk premia can change market players' behaviour. A protracted low-interest-rate environment can encourage investors to seek out riskier investments in their quest for higher returns. Demand for derivatives contracts that derive their value from underlying price volatility has increased, particularly to include demand for forward contracts based on the VIX index. The VIX, which reflects implied volatility in the US equities market, is generally used as a criterion for market risk. Even though price fluctuations have been historically low, uncertainty in the markets has stimulated demand for financial instruments that protect investors against a correction in asset prices. The cost of hedging against large drops in price using options, as reflected in the SKEW index, has risen despite the fact that price volatility has declined.<sup>2</sup>

Uncertainty has increased in global markets, and fluctuations in expectations have begun to affect asset markets. The US stock market fell sharply in early February, owing to expectations of an inflation spike following news reports of a rising wage index. Investors that had gambled on continued stability had to absorb significant losses, as the VIX rose 116% and the SKEW by 15% in a single day. Repricing of market risk can strongly affect asset prices as a result of increased risk appetite and indebtedness among investors. The risk exists of massive capital outflows from assets that are considered overpriced. Increased market volatility also enhances the likelihood that investors will unwind positions in financial instruments whose value is based on underlying stability, which in turn exacerbates volatility still further. Risk appetite and specially designed derivatives contracts can amplify fluctuations and erode financial stability upon repricing of risk premia.

1. European Central Bank (2017). *Financial Stability Review*, November.
2. The SKEW index is calculated from the value of out-of-the-money S&P 500 options. In times of significant uncertainty, demand for such options rises, as investors profit on falling share prices.

Chart II-7  
Output gap<sup>1</sup>



1. Based on IMF estimation (*World Economic Outlook*, October 2017). Data for Iceland is based on estimation published in *Monetary Bulletin* 2018/1.  
Sources: IMF, Central Bank of Iceland.

Changed expectations internationally have affected asset markets

The global economy was more vibrant in 2017 than forecasts had indicated. Investment and world trade have picked up, and the global economic outlook has improved. Rapid growth in emerging market economies, China in particular, has played a leading role in the increased optimism in GDP growth forecasts. Geopolitical uncertainty is still considerable, however, including uncertainty about fiscal policy in both Europe and the US. It is assumed that the tax reform passed by the US Congress late in 2017 will stimulate short-term demand and have a temporary impact on the ongoing GDP growth phase both in the US and globally. At the same time, unrest about a potential trade war has mounted following the US government's decision to impose

protective tariffs on imported aluminium and steel, as well as on goods imported from China.

Inflation has inched upwards but is still below target in most economies around the world. It measured 2% in the US and 3% in the UK at the end of the year but was somewhat lower in the eurozone (Chart II-1). In the US, the policy interest rate has risen, most recently in late March, to the current 1.75%, while in the UK it has been raised by half a percentage point. The European Central Bank has kept its policy rate at zero, however. Unemployment has subsided and the output slack is closing, as the world's largest economies are approaching their potential output levels.<sup>6</sup>

Asset prices have been at historical highs in recent years. The monetary policy pursued by the world's largest central banks has stimulated economic activity around the globe and mitigated short-term risk. The long-term resilience of the financial system is less robust, however. Low risk premia have made riskier assets, including high-yielding bonds, more attractive to investors in search of strong returns. At the same time, debt levels have risen in leading economies. Household and corporate debt have risen sharply relative to GDP. At the beginning of the year, market agents' expectations of looming inflation and interest rate hikes put an end to the protracted episode of rising share prices and limited volatility. Bond yields have risen, and the yield curve on US Treasury bonds is now steeper than before. Tighter monetary policy and revaluation of risk will have a profound impact on asset markets because of increased risk appetite and debt levels (See Box II-3). In addition, rising interest rates will affect debt sustainability, owing to refinancing needs.

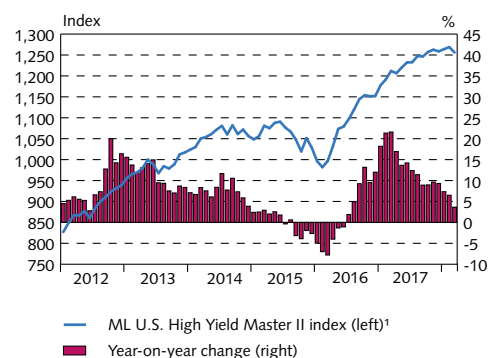
A number of financial institutions in Europe are still struggling. Their profitability has been limited in the recent term, and their non-performing loan ratios are still too high. Their operating expense has risen, partly due to wage drift, and European banks are therefore faced with a tricky situation in their operating environment. Their share prices have fallen in recent months, in line with major stock indices in the US and elsewhere, including Asia and Europe. On the other hand, the banks' asset portfolios have strengthened, and their capital ratios have risen.<sup>7</sup>

## Iceland's international investment position

### Major changes in external assets and liabilities

Iceland's net international investment position (NIIP) was positive by 7.5% of GDP at the end of 2017 and had improved by 3.5 percentage points between years. Not only has the NIIP improved markedly in recent years, but there have been major changes in external assets and liabilities. Movements in 2016 were affected significantly by the winding-up of the failed financial institutions. In 2017, external assets shrank by 850 b.kr. and external liabilities by 950 b.kr., a decline of nearly a fourth. These movements are attributable in large part to changes in foreign direct investment, primarily changes within

Chart II-8  
High-yield bonds



Mynd II-9  
Share price indices

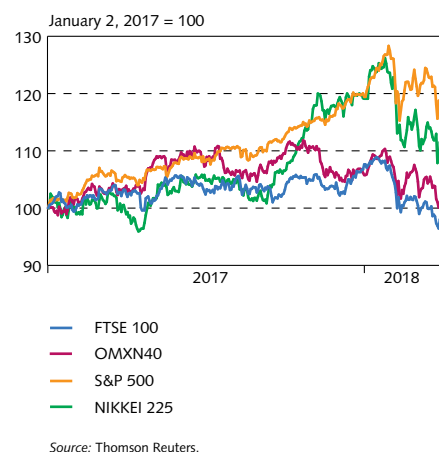
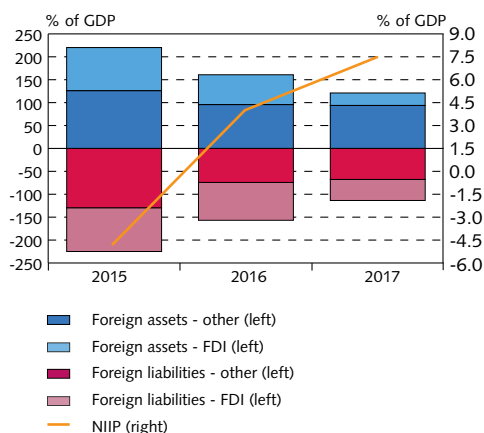


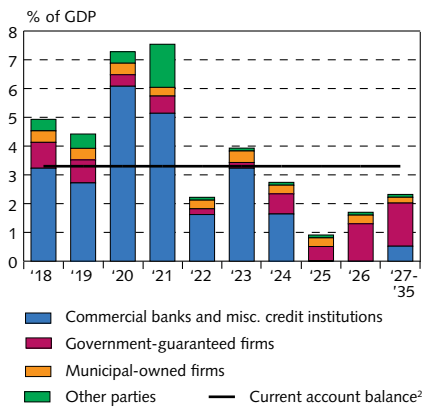
Chart II-10  
International investment position



6. International Monetary Fund (2017 and 2018). *World Economic Outlook*, October 2017 and *World Economic Outlook: Update*, January 2018.

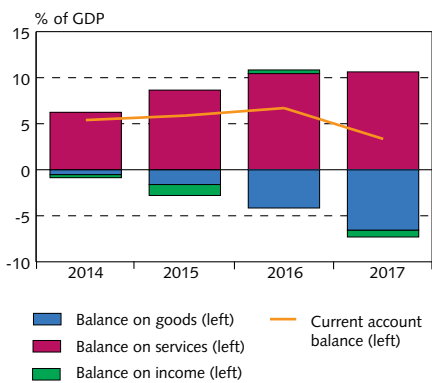
7. European Central Bank (2018). *Supervisory Banking Statistics*, January.

Chart II-11  
Repayment profile of long-term foreign loans, excluding the Treasury<sup>1</sup>



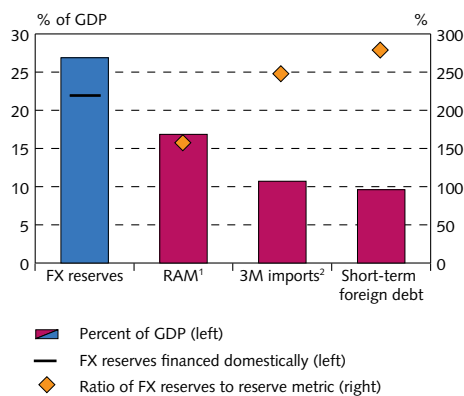
1. Foreign long-term loans based on position at year-end 2017 and exchange rate of 28 February 2018, plus commercial banks' foreign issuance in Q1/2018, adjusted for refinancing. 2. The effects of the old banks' holding companies and transactions with ships and aircraft are ignored. Sources: Financial information from DMBs, Statistics Iceland, Central Bank of Iceland.

Chart II-12  
Current account balance<sup>1</sup>



1. Ignoring the effects of the old banks on factor income and the balance on services. Secondary income is included in factor income. Sources: Statistics Iceland, Central Bank of Iceland.

Chart II-13  
Central Bank FX reserve adequacy  
Position as of end-2017



1. IMF Reserve Adequacy Metric. 2. Average of three months of imports in the last four quarters. Sources: Statistics Iceland, Central Bank of Iceland.

consolidated entities in the pharmaceuticals sector and the winding-up of special purpose entities established before the financial crisis, perhaps for tax purposes.<sup>8</sup> It is possible that a recent amendment to the Income Tax Act led to the winding-up of the companies, as the amendment caps deductions of interest expense and discounts due to loan transactions with related parties at 30% of profits for the purpose of calculating corporate income tax.<sup>9</sup> As the number of special purpose entities falls, the external position grows clearer.

Furthermore, exchange rate and price movements improved the external position slightly, in part because foreign stock prices rose particularly strongly in Q4/2017.

External liabilities totalled 82% of GDP at the end of 2017, a decline of 20 percentage points between years.<sup>10</sup> Systemically important banks' foreign marketable bonds constitute about a fourth of Iceland's external liabilities and a large share of the repayment profile of foreign long-term loans. The average duration of the banks' foreign liabilities is about three years, as the banks have refinanced nearly half of their outstanding foreign debt maturing in 2018.

### Current account surplus shrinks by half between years

The current account surplus measured 3.7% of GDP in 2017. If the effects of the old banks' holding companies and transactions with ships and aircraft are excluded, it was 0.2 percentage points larger. The current account surplus thus measured was about half as large as the 2016 surplus. To a large extent, the contraction was caused by the goods account deficit, which was at its largest since 2007. Factor income excluding the effects of the old banks was negative in 2017, after being slightly positive in 2016. The year-on-year change in factor income is due in part to the above-mentioned changes in the NIIP.

### Foreign exchange reserves large in historical context

The Central Bank's foreign exchange reserves totalled 652 b.kr. at the end of March, nearly 80% financed in Icelandic krónur. The reserves shrank by 130 b.kr. last year, mainly because of retirement of Treasury foreign debt and the purchase of offshore króna assets. The State also refinanced part of its foreign debt, which totalled 113 b.kr. at the end of March. Debt declined by 86 b.kr. in 2017.

Even though the foreign exchange reserves contracted, they remain large in historical context. They are sufficiently large in terms of widely accepted reserve adequacy criteria; for example, at the end of 2017 they equalled 159% of the International Monetary Fund's (IMF) reserve adequacy metric (RAM).<sup>11</sup> The reserves equalled 280%

8. Special purpose entities like these are generally owned by non-residents and are themselves owners of holdings or claims against other foreign companies. Their operations are limited or non-existent, and they actually function only as shells for capital that flows through Iceland. These are primarily accounting entries.

9. The statutory amendment was passed by Parliament in October 2016; see <https://www.althingi.is/altext/stjt/2016.112.html>.

10. Foreign liabilities excluding equities, unit shares, and derivatives. Also excluded are the liabilities of the old banks' holding companies.

11. The RAM is a measure of foreign exchange reserve adequacy that takes account of various factors that affect a country's balance of payments and could give an indication of potential capital outflows. Further explanation can be found in the glossary at the end of this report.

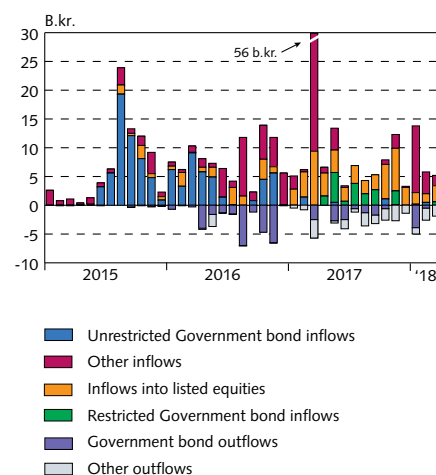
of short-term liabilities and were large enough to cover eight months of imports.

### Special reserve requirement on capital inflows

In 2017, net new investment using foreign capital totalled 103 b.kr. net of reinvestments, about 90% of it due to investment in equity securities. In the first three months of the year, net outflows from Treasury securities totalled 4 b.kr. Capital inflows subject to the special reserve requirement (SRR) totalled 30 b.kr., including 18 b.kr. invested in Treasury bonds and 12 b.kr. deposited to special reserve accounts. After a commitment period of one year, owners of these deposits are free to invest them in the domestic economy. The commitment period is the same for all investments covered by the reserve base; therefore, in terms of returns over the lifetime of the investment, the cost associated with the SRR declines as the horizon of the investment grows longer. In this way, the SRR affects the composition of capital inflows and acts as a disincentive to carry trade. There are signs that investors have begun to circumvent the SRR by buying bonds that are not electronically registered.

Chart II-14

Registered new investment for foreign capital<sup>1</sup>



1. Outflows from Government bonds before September 2015 are unknown. Total outflows before that time are therefore classified as other outflows.

Source: Central Bank of Iceland.

Domestic airlines have increased their international flight offerings in recent years, necessitating an expansion of their fleet of aircraft. They have accomplished this through two means: by purchasing imported aircraft with operational or leveraged financing, and by leasing. In the recent past, Icelandic airlines have increasingly bought aircraft from manufacturers and financed the purchases by entering into sale-and-leaseback agreements with specialised leasing companies. The choice then involves either operational or financial leasing, which are treated in different ways for the purpose of the national accounts. In the case of operational leasing, the lessor is registered as the owner of the aircraft, and the agreement makes no impact on goods imports and exports; instead, lease payments are entered as services imports. If the aircraft is financed with a financial leasing agreement, it is entered under goods imports, and the airline is registered as the economic owner of the aircraft. The lessor is considered the legal owner until the lease-purchase agreement has been paid in full. Financial leasing agreements are entered as external liabilities in statistics on the international investment position.

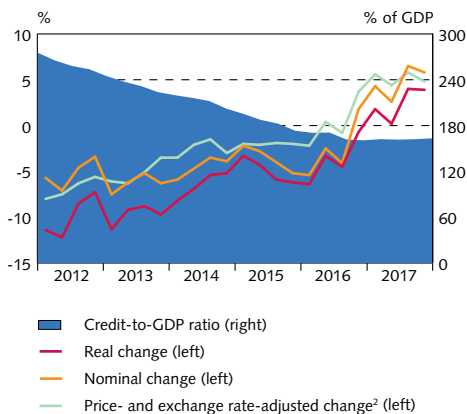
If domestic airlines' plans materialise, they will import eight aircraft in 2018 and another six in 2019 and will finance a portion of them via financial lease.<sup>1</sup> The value of imported aircraft could therefore run to tens of billions of krónur. Because of their size, the transactions could affect Iceland's measured current account balance in the next few years. The effects on foreign currency flows are very different, however. When the aircraft are financed via financial lease, it can be assumed that the net impact on the foreign exchange market will be more back-loaded; i.e., it will be spread over the term of the lease. It is also likely that the airlines will finance part, or even most, of the purchases with foreign currency from operations, which would mitigate the effects on the foreign exchange market.

1. There are also plans to bring an additional seven aircraft into use in 2020-2021.

### Box II-4

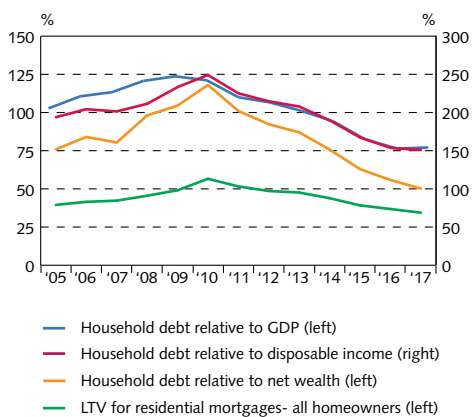
The effects of resident entities' investment in aircraft on the current account balance and the foreign exchange market

Chart II-15  
Private sector credit growth<sup>1</sup>



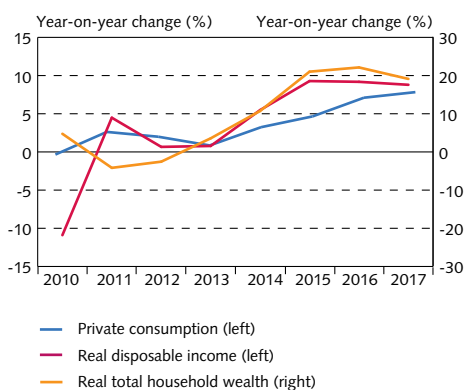
1. Lines show yearly growth rates. 2. CPI-indexed credit at end-December 2017 prices and foreign-denominated credit at end-December 2017 exchange rate.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart II-16  
Household debt and LTV ratio for residential mortgages<sup>1</sup>



1. Household debt relative to GDP, net wealth excluding pension savings and disposable income.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart II-17  
Private consumption, disposable income and household wealth<sup>1</sup>



1. Central Bank baseline forecast for 2017, published in *Monetary Bulletin* 2017/4. Total household wealth is net financial wealth, excluding pension savings, including housing wealth and net of household debt.  
Sources: Statistics Iceland, Central Bank of Iceland.

## Households' and businesses' debt and position

### Private sector debt ratio on the rise

Private sector debt grew by 3.9% in real terms in 2017. Corporate debt grew more than household debt. The debt-to-GDP ratio rose by 2.6 percentage points, and now, after a long, robust output growth phase, credit growth has overtaken GDP growth. Both household and corporate debt levels are still low in historical terms, but the outlook is for a continuing rise in the next year.

Exchange rate movements had less impact on growth in private sector debt in 2017 than in previous years, owing to greater exchange rate stability, and the gap between measurements of the real change and the price- and exchange rate-adjusted change in the credit stock narrowed as a result. Price- and exchange rate-adjusted credit growth measured 4.8% at the year-end.

### Household debt on the rise ...

Household debt amounted to 77% of GDP at the end of 2017, after increasing by 0.7 percentage points between years. It had been declining steadily since 2009 but began growing again late in 2016. On average, the debt-to-GDP ratio fell by nearly 7 percentage points per year during the period 2010-2016, with the largest decline (nearly 12 percentage points) in 2015.<sup>12</sup> Growth in debt is still moderate and has developed broadly in line with GDP growth since mid-2016. The rise in household debt is due to an increase in new mortgage loans, as other consumer loans contracted slightly year-on-year in real terms. At the same time as households have been taking on more debt, homeowners' loan-to-value ratios have continued to fall, partly as a result of the surge in house prices during the year. Debt is growing in line with the rise in disposable income, with household debt measuring about 150% of disposable income at the end of 2017, the lowest percentage since before the turn of the century.

Household mortgages increased by 116 b.kr. in real terms in 2017, about half of them non-indexed loans. As a share of the total credit stock, non-indexed mortgages grew more rapidly than indexed mortgages. The outstanding stock of non-indexed mortgages rose by nearly 24% in real terms, whereas the indexed stock grew by 5.5%.

### ... but households' financial position continues to improve

Private consumption has grown strongly, and the Central Bank's most recent forecast indicates that this will continue for some time. Last year, however, real disposable income growth outpaced private consumption growth, which resulted in an increase in household saving. For instance, household deposits grew by 11.4% in 2017.

Households' net wealth continued to grow as a share of disposable income in 2017, in spite of increased private consumption and debt levels. This is attributable in large part to the rise in house prices, particularly in H1/2017. At the end of the year, households' net wealth, including pension rights, amounted to 520% of their disposable income, an increase of 32 percentage points over the

12. Due in part to the Government's debt relief measures.

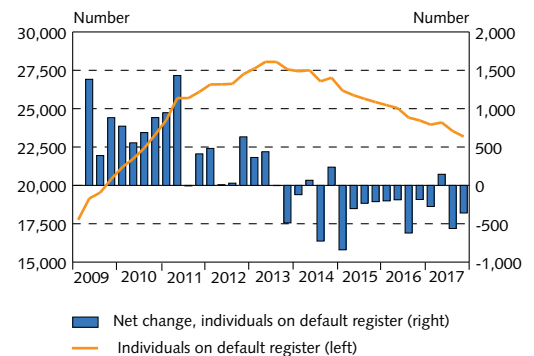
course of 2017. Households' financial position is therefore continuing to strengthen. Increased collateral capacity and purchasing power, together with more favourable borrowing terms, have given them the scope to take on more debt.

### Household bankruptcy and arrears on the wane

The improvement in households' position can also be seen in figures on personal bankruptcies, default register listings, and non-performing loans. The number of bankruptcy rulings fell 26% year-on-year, and the number on the default register is declining steadily. Individuals on the default register fell by about the same number in 2017 as in 2016, after peaking in 2013. The number of parties reporting individuals in arrears has risen, making the default register more extensive and more accurate than it was around the time of the financial crisis. Non-performing household loans from the commercial banks and the Housing Financing Fund contracted markedly, from 4.7% at the end of 2016 to 2.9% a year later.

Even though households' position has improved overall, some renters and individuals living with their parents are in greater difficulties than homeowners are, as is suggested by figures from the Debtors' Ombudsman, which indicate increasing arrears among non-homeowners. Increased access to short-term financing is discussed further in Box II-5.

Chart II-18  
Individuals: Number on default register



Source: Creditinfo.

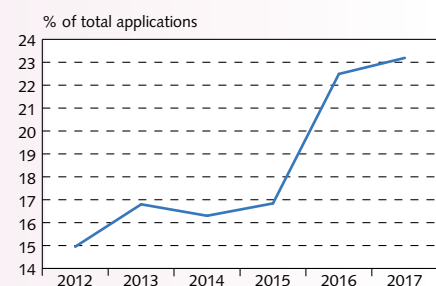
Individuals' access to short-term loans has grown substantially in recent years. So-called payday lenders have been conspicuous in this market, but others, including the banks, have been focusing increasingly on this same market. Payday lenders' business model involves granting short-term loans at high cost without requiring that the borrower undergo a credit assessment. These lenders have been harshly criticised, both in Iceland and elsewhere. Their chief target market is young people without significant means who have limited access to loans from conventional credit institutions. The share of people aged 18-29 who have applied to the Debtors' Ombudsman for debt mitigation has soared in recent years, and payday loans account for a dramatically increased proportion of these borrowers' total obligations. In 2017, 70% of debt mitigation applicants aged 18-29 owed payday loans. The average payday loan amount per application in this group rose by more than 40% between 2016 and 2017.<sup>1</sup>

Until 2013, payday lenders' activities were unrestricted in Iceland. Because they are not classified as financial institutions, supervision of their activities is limited, and they are not required to obtain a special operating licence. A new Act on Consumer Loans, no. 33/2013, entered into force in November 2013.<sup>2</sup> According to Article 26 of the Act, the annual percentage rate (APR) on consumer loans may not exceed 50 percentage points, plus the Central Bank of Iceland's key interest rate.<sup>3</sup> The Act appears to have achieved the intended results only to a limited degree, however. Companies have

### Box II-5

## Payday loans

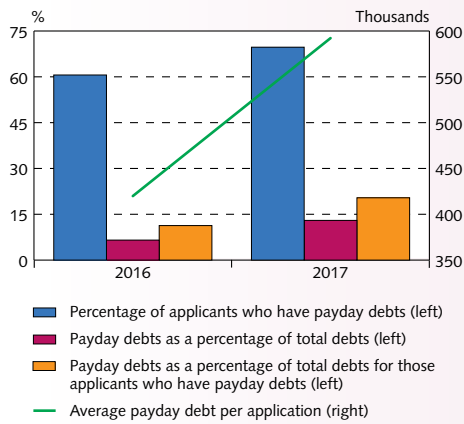
Chart 1  
Applications for debt mitigation  
Percentage of 18-29 year old individuals



Source: Debtors Ombudsman.

1. Based on data from the Office of the Debtors' Ombudsman.
2. According to the Act, the lender must conduct a credit assessment for loans of 2 m.kr. or more.
3. The APR is the annual percentage of the total amount paid by the consumer.

Chart 2  
Payday debts<sup>1</sup>



1. Individuals aged 18-29 who apply for debt mitigation with the Debtors Ombudsman.

Source: Debtors Ombudsman.

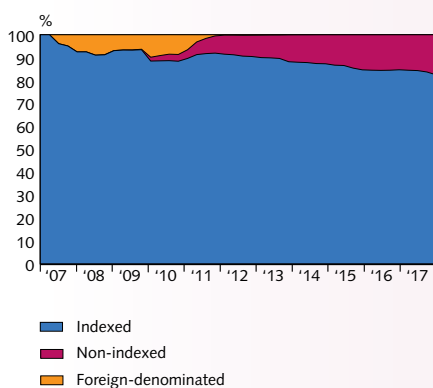
used various methods to circumvent the Act and, in some instances, dodged it entirely.<sup>4</sup>

Information on the scope of payday lending activity in Iceland is limited, making it difficult to monitor payday lenders' activities and gain an overview of the size of the market.<sup>5</sup> It is unlikely that the activity as such jeopardises financial system stability directly; however, it does erode applicants' ability to pay their obligations. It could be dubious if larger financial institutions compete more aggressively with payday lenders by providing the public with increased access to comparable short-term loans. Such a development would tend to increase defaults system-wide.

4. One payday loan operator in Iceland began selling e-books in exchange for a so-called expedited processing fee/borrowing fee. The value of the sale was not included in the calculation of the APR.
5. In some instances, payday lenders have moved their legal addresses abroad.

## Box II-6 Changes in composition of residential mortgages

Chart 1  
Composition of mortgage debt<sup>1</sup>



1. Distribution of mortgage loan from pension funds, credit institutions and the HFF.

Source: Central Bank of Iceland.

In recent years, the composition of residential mortgages has changed as regards both lenders and loan types. A decade ago, foreign currency-linked loans were gaining ground in a market that had previously been limited to CPI-indexed lending. During that decade, banks and other deposit-taking institutions stepped up their participation in the mortgage lending market, where the Housing Financing Fund and its predecessors had held a virtual monopoly, apart from pension funds, whose market share was about one-tenth. In recent years, the market has been changing yet again. The share of non-indexed loans has grown markedly, whereas foreign currency-linked loans have all but vanished. In the past two years, the pension funds have significantly increased their share of the residential mortgage market. Most of them have increased the ceiling on loans available to fund members, and interest rates on new loans are generally lower than those offered by other lenders. Some of the pension funds have also offered non-indexed loans at competitive interest rates since late 2013.

The composition of the loans has changed somewhat. CPI-indexed loans still account for an overwhelming majority of mortgage loans, although they have declined as a share of the total housing loan stock. Exchange rate-linked mortgages were offered from 2007 onwards, peaking at nearly 10% of all loans by H2/2008. Four years later, foreign currency-linked loans have virtually disappeared from the market, as most types of loans incorporating exchange rate linkage were deemed illegal. A large proportion of them were converted to non-indexed loans, causing the share of the latter to rise. By the end of 2012, non-indexed loans accounted for about 9% of all mortgages. Since then, indexed loans have constituted about 65-80% of all new residential mortgages. The total ratio of non-indexed loans therefore continues to rise, and by late 2017 it had climbed to 18% of the total residential housing loan stock.

### Credit system mortgage lending to households on the rise again

From 2009 through 2014, the combined value of residential mortgages lay in the 70-80% range relative to GDP, peaking at 77% in



2011. In nominal terms, residential mortgages contracted in 2014 and 2015, and then grew again in 2016 and 2017, by 3% and over 6%, respectively. They have hovered close to 58% of GDP for the past year and a half, and have contracted by about 20 percentage points of GDP since 2011.

There have been major changes in mortgage lenders' market share in the past eight years. The share held by the Housing Financing Fund (HFF) has shrunk significantly in recent years, and the Fund's loans have contracted markedly relative to GDP.

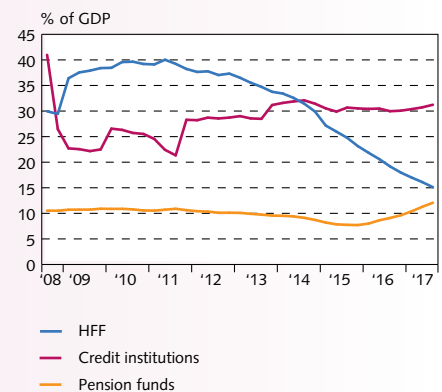
Pension funds' loans to members held steady at around 10% of GDP from 1997 through 2013 and then declined slightly between 2013 and 2015, but in the past two years the situation has reversed; pension fund lending has increased rapidly, to about 13% of GDP by end-2017. Loans to fund members accounted for just under 10% of the pension funds' asset portfolios in 2009 and then declined to 5.2% by the end of 2015. They have risen since then, however, to 8.4% by year-end 2017.

### The housing loan stock

Developments in the credit stock are not determined solely by new lending and retirement of loans, as contractual instalments, foreclosures, and price changes make an impact as well. Because of this, it is useful to examine mortgage lending growth at constant prices. In 2017, the stock of mortgage loans from pension funds grew strongly, and lending by credit institutions increased markedly as well. The HFF's loan stock shrank, however. Examining the period from 2012 through 2017 shows that the expansion of the pension funds' loan stock did not begin in earnest until 2016. In fact, before that time, it had been contracting. The HFF has granted few new residential mortgages in the past several years, and its loan stock has been contracting over the entire period.

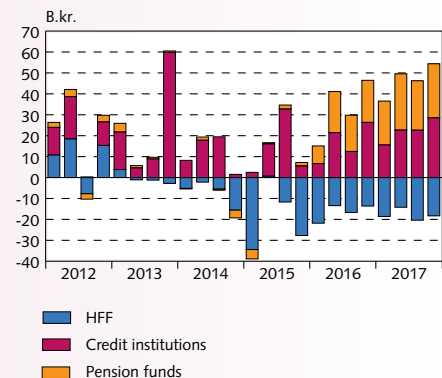
In 2017, the total housing loan stock grew by 90 b.kr. in nominal terms. The increase for the pension funds was also about 90 b.kr., and for deposit institutions it totalled 75 b.kr., whereas the contraction in the HFF loan stock amounted to 80 b.kr. This trend has continued in the early months of 2018: banks and pension funds are stepping up mortgage lending, while the HFF continues its retreat.

Chart 2  
Residential mortgage lenders<sup>1</sup>



1. Debt relative to GDP.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart 3  
Change in the mortgage debt stock



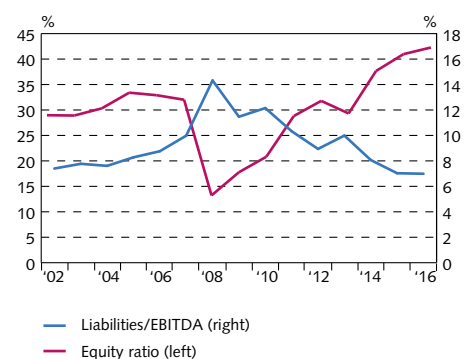
Source: Central Bank of Iceland.

## Companies

### Companies' financial position is strong

Statistics Iceland has published figures on companies' performance in 2016, which are prepared using tax returns for that year.<sup>13</sup> As expected, the figures indicate that firms' financial position improved overall in 2016. Their equity grew stronger, profits were up, and debt ratios declined. This positive trend slowed slightly in comparison with previous years, however, and the outlook is for a further slowdown in 2017. The combined profits of companies on the Nasdaq Iceland Main List contracted between 2016 and 2017, for example. GDP growth has eased and appears set to remain weaker than in the past few years. The outlook is for developments in firms' operating environment to be less positive than in recent years. The corporate

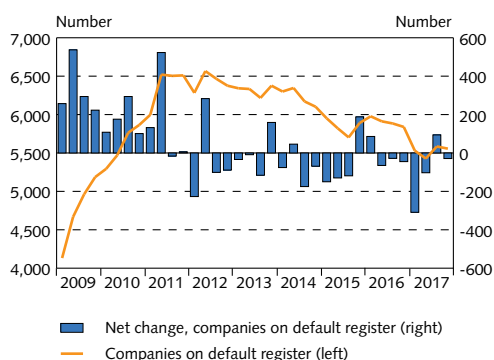
Chart II-19  
Companies' financial position<sup>1</sup>



1. Commercial economy excluding pharmaceuticals, financial, and insurance companies (ISAT no. 03-20, 22-63, 68-82, 95-96).  
Sources: Statistics Iceland, Central Bank of Iceland.

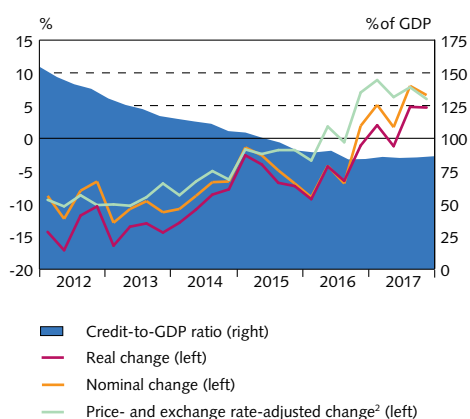
13. The figures cover the commercial economy excluding pharmaceuticals production and financial and insurance activities (ISAT no. 03-20, 22-63, 68-82, and 95-96). Only companies that filed tax returns are included.

Chart II-20  
Companies in default



Source: CreditInfo.

Chart II-21  
Corporate sector: Credit growth<sup>1</sup>



1. Lines show annual changes. 2. CPI-indexed credit at end-December 2017 prices and foreign-denominated credit at end-December 2017 exchange rate.

Sources: Statistics Iceland, Central Bank of Iceland.

expectations survey carried out by Deloitte among Iceland's 300 largest firms indicates that executives are less optimistic than they have been in the recent past. Fewer respondents expect EBITDA margins to increase this year, and a larger number consider growth opportunities poorer and the financial outlook less favourable.

Figures from Statistics Iceland indicate that companies' wage costs have risen. The number of employees increased by 20% between 2012 and 2016, whereas wage costs rose by more than 38% in real terms over the same period. Wage costs per employee rose by 15% during the period. Given wage developments in 2017, it can be expected that the weight of wage costs in firms' profit and loss accounts has risen still further. Yet in spite of this cost increase, firms' profits rose during the period in question, mainly due to increased revenues but also due to reduced costs elsewhere, including imported input prices and financial items, as corporate debt declined sharply over the period and borrowing terms improved.

The number of firms on the default register declined somewhat in 2017, and as the number of operating companies rose during the year, the share of firms in default fell as well. At the end of February, 11% of firms listed by CreditInfo were listed as being in default, a reduction of nearly 2 percentage points in a single year. Corporate insolvencies also declined in number during the year, and the frequency of company failures is historically low. On the other hand, there was an uptick in unsuccessful distraint measures, owing partly to a targeted effort undertaken by commissioners' offices last July to reduce the backlog of unprocessed cases. This distorts the comparison.

### Debt on the rise

Corporate debt rose by 4.7% in real terms in 2017, after declining each year since 2009. The corporate debt-to-GDP ratio rose by 2 percentage points, and price- and exchange rate-adjusted growth in the credit stock measured 5.9%. Therefore, exchange rate effects still mask a portion of companies' increased demand for credit. The Central Bank's investment survey, carried out in October 2017, shows that firms' investment plans for 2018 are broadly in line with those for 2017, and it is assumed that the percentage of credit-financed investment will also be similar. It can therefore be assumed that corporate debt will continue to rise this year. Firms' equity position is strong, and rising asset prices provide increased collateral capacity. Revenue growth and more favourable borrowing terms also make it easier for companies to take on debt.

Table II-1

	2002	2004	2007	2008	2012	2015	2016
Equity ratio	29.0	30.3	32.0	13.2	31.8	41.0	42.3
Total debt/EBITDA	7.4	7.6	10.0	14.3	8.9	7.0	7.0
Long-term debt/EBITDA	4.3	4.6	6.7	10.1	6.6	5.1	5.0
Current ratio	1.2	1.3	1.5	1.3	1.6	1.8	1.8
Liquidity ratio	0.9	1.0	1.3	1.1	1.3	1.5	1.5
EBITDA/Equity	33.1	30.2	21.3	-	24.0	20.5	19.5
Profit per annual accounts/Equity	13.4	19.1	15.5	-	11.8	13.7	13.8

Sources: Statistics Iceland, Central Bank of Iceland.

## III Financial institutions and other lenders

In recent years, the main change in the relative size of the financial market entities balance sheets is that pension funds have increased their share, while the Housing Financing Fund's (HFF) has declined markedly. At the end of 2017, some 40% of financial system assets were held by the pension funds — a percentage that is unlikely to fall in the near future, as employers' contributions to the funds have increased.<sup>1</sup> The size of deposit-taking institutions relative to GDP has stopped declining and even rose slightly in 2017, to a year-end level of 133%. Deposit institutions' assets account for just under a third of total financial system assets, with some 97% of them held by systemically important banks. The HFF holds about 8% of total financial system assets, and the remainder, about 17% of the total, is held by other financial market entities.

### III a Systemically important banks

In recent years, loans increased as a share of the domestic systemically important banks' (D-SIB) assets, and credit growth was moderately strong in 2017. The banks' liquidity position remained strong, and their efforts to secure market funding in Iceland and abroad have been successful.

The D-SIBs' earnings and profitability declined year-on-year in 2017, owing to a reduction in irregular income and estimated items. On the whole, net interest income and operating expenses were broadly similar between years, although developments vary from one bank to another. The D-SIBs' capital increased marginally between years in spite of sizeable dividend payments in 2017, but because of an increase in risk-weighted assets, their capital ratios declined year-on-year. The banks' capital ratios are likely to fall further as a result of additional dividend payments. Credit rating upgrades and improved access to market funding gives them greater scope to change their funding structure as regards the composition and size of their capital base. However, reductions in capital and changes in the composition of the capital base must always take place in accordance with capital requirements, with full capital buffers, and the liquidity position.

### Operations and equity<sup>2</sup>

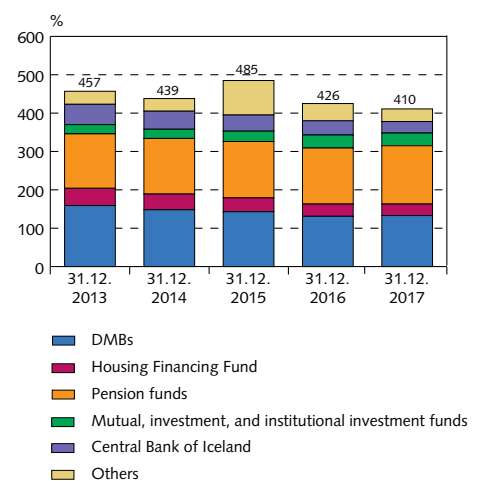
#### Regular income has gained ground

The D-SIBs' combined profits totalled just over 47 b.kr. in 2017, after declining by about a fifth from the previous year. Their combined calculated return on equity was 7.4% in 2017 and the return on total assets about 1.4%, as their returns contracted roughly in line with

1. Excluding Central Bank assets.

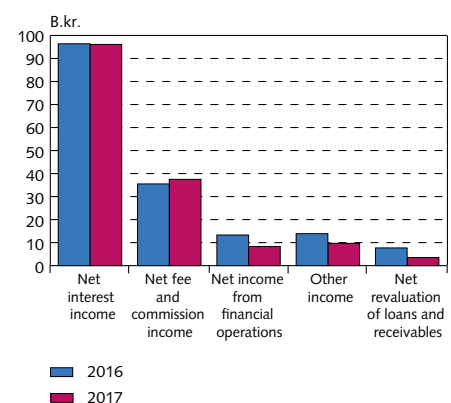
2. In 2015, the Financial Stability Council designated the three largest commercial banks — Arion Bank hf., Íslandsbanki hf., and Landsbankinn hf. — as systemically important financial institutions. The discussion in this chapter is based on the 2017 consolidated accounts of these domestic systemically important banks (D-SIB) and comparison figures for 2016. Figures are consolidated unless otherwise stated.

Chart III-1  
Financial system: Assets as % of GDP<sup>1</sup>



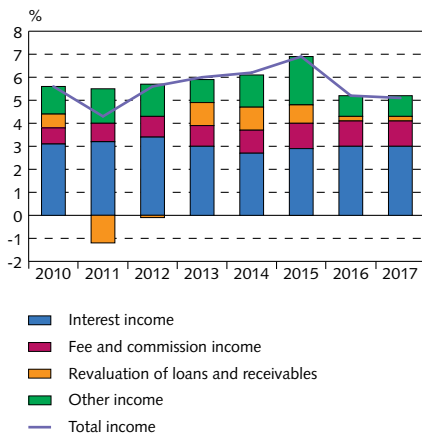
1. Parent companies.  
Source: Central Bank of Iceland.

Chart III-2  
D-SIB: Operating income<sup>1</sup>



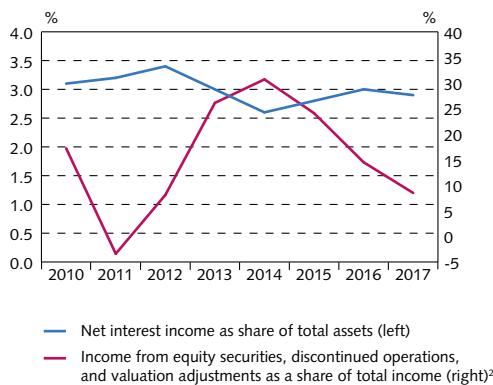
1. Domestic systemically important banks, consolidated figures.  
Sources: Commercial banks' financial statements.

Chart III-3

D-SIB: Ratio of income to total assets<sup>1</sup>

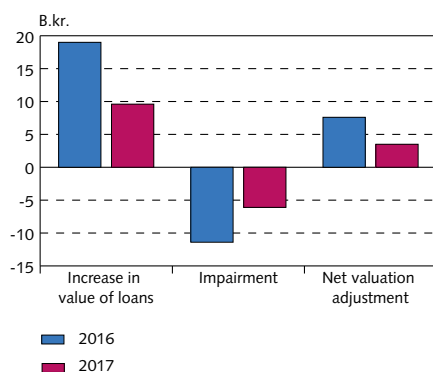
1. Domestic systemically important banks, consolidated figures.  
Sources: Commercial banks' financial statements.

Chart III-4

D-SIB: Net interest income and irregular income<sup>1</sup>

1. Domestic systemically important banks, consolidated figures. 2. Income from equity securities in 2014-2017 includes income from sale and valuation adjustments of the largest affiliates.  
Sources: Commercial banks' financial statements.

Chart III-5

D-SIB: Income and expenses due to revaluation of loans and receivables<sup>1</sup>

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

their profits. The D-SIBs' net interest income was virtually unchanged between years, with an increase in interest-bearing assets offsetting falling interest rates, although developments differ from one bank to another. The interest rate spread based on the average balance of total assets declined marginally, as the banks' assets increased between years. Over the year as a whole, the interest rate spread was 2.9%. Net fee and commission income increased year-on-year, owing to growth in lending, asset management, market trading, and payment card turnover. Arion Bank had the largest increase in net fee and commission income, owing in part to Valitor's acquisition of two foreign payment card companies.

The banks' income from financial activities declined by just over a third year-on-year, although this, too differed from bank to bank. It declined for Arion Bank and Íslandsbanki, mainly because in 2016 they capitalised a sizeable profit on the sale of their subsidiaries' holdings in Visa Europe Ltd. to Visa Inc. Landsbankinn's income from financial activities rose markedly, however, owing mainly to upward valuation increases in shares held by the bank. The banks' other income declined somewhat between years, including miscellaneous income from associated companies. On the whole, irregular and estimated income items accounted for just under 9% of total income in 2017, as opposed to nearly 15% in 2016 and 24% in 2015.<sup>3</sup> Because of the steep drop in irregular and estimated income in the recent term, interest income and fees and commissions now account for a much larger share of total income.

### Loan valuation changes remain positive

All of the D-SIBs recorded positive valuation adjustments on their loans, although some banks recognised considerable impairment because of customers' operational difficulties. Their combined net loan valuation increase totalled 3.5 b.kr. in 2017 but declined markedly between years. The increase in loan values is due mainly to a favourable economic environment, increased loan prepayments, and reversals of previously charged impairment of exchange rate-linked loans.

A new financial reporting standard on financial instruments, IFRS 9, took effect in Iceland on 1 January 2018. The main changes in financial institutions' financial reporting are changes in methodology and calculation of impairment, which will be based on expected losses in the future instead of incurred losses. The banks explain the impact of implementing IFRS 9 in their annual accounts, and the change in the method for estimating impairment will reduce their capital by 3.4 b.kr. This should be a one-off effect that will show in the banks' earnings reports for Q1/2018. The implementation of IFRS 9 is discussed in greater detail in Box III-2.

In recent years, loan valuation adjustments have had a significantly positive effect on the D-SIBs' operating results. It can be said that debt restructuring is now complete, and because the

3. Included with irregular and estimated income items are income from equity securities holdings, income from discontinued operations (sold companies and real estate, etc.), and income from write-ups of loans.

business cycle has probably peaked, the banks must anticipate having to make impairment charges in their profit and loss accounts. Other things being equal, this will affect their banks' operating results.

### Developments in operating expenses

The D-SIBs' combined operating expenses totalled just under 82 b.kr. in 2017, a slight reduction from the previous year. Organisational changes and investment in infrastructure, including the renewal of the banks' deposit and internal payment intermediation systems, has affected their earnings reports in recent quarters. Financial market infrastructure is discussed in greater detail in Box III-1. After adjusting for one-off expense and Arion Bank's reversal of a 2.7 b.kr. debt to the Depositors' and Investors' Guarantee Fund, which the Fund had confirmed would not be collected, operating expenses rose by just over 4% between years. Of that amount, wage costs rose by 2% and other operating expense by just over 7%. Arion Bank and Íslandsbanki's expense ratios rose year-on-year, while Landsbankinn's declined. Reducing expense ratios is important, and cost control is one of the biggest operational challenges facing the banks. Staffing levels fell during the year, although developments differed from one bank to another. The banks are of the opinion that they still have scope for reorganisation that will lower their expenses.

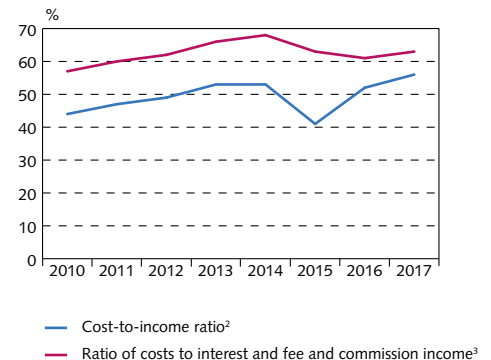
### D-SIBs' capital position is strong

The D-SIBs' capital amounted to 652 b.kr. at the end of 2017, after increasing marginally between years. Their combined capital ratio was 25% at the turn of the year, a decline of 2.4 percentage points since year-end 2016, owing to dividend payments and an increase in their risk-weighted assets.<sup>4</sup> By the same token, their average leverage ratio fell by 1½ percentage points in 2017, and ranged between 15.4% and 18.2% at the year-end. The Icelandic banks' leverage ratios are very high in international comparison, however. Nordic banks of similar size have leverage ratios of about 8%, and larger foreign banks' ratios are even lower.<sup>5</sup>

Credit risk is the biggest risk facing the banks. In 2017, the D-SIBs' risk-weighted assets increased by 7.5%, due almost entirely to an increase in lending. Their loans increased by 8.5% in 2017, well in excess of GDP growth. Credit growth is expected to remain strong this year, and credit risk is therefore expected to increase still further in the coming term.

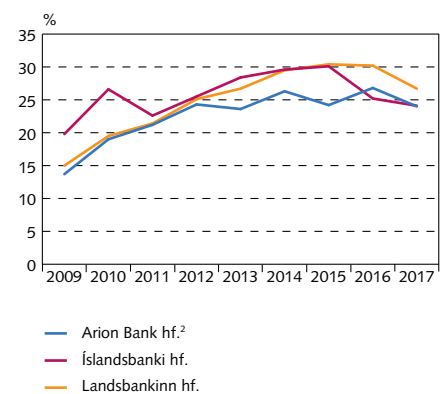
In 2017, the banks paid a combined 35 b.kr. in dividends, which corresponded to just under 60% of their 2016 profits. According to announcements from the banks, dividends payable in 2018 will total at least 63 b.kr., or 133% of last year's profit. The D-SIBs' capital position is well above the level stipulated by the Financial Supervisory Authority (FME). The total SREP-based capital requirement for the D-SIBs, assuming full implementation of capital

Chart III-6  
D-SIB: Cost-to-income ratios<sup>1</sup>



1. Domestic systemically important banks, consolidated figures. 2. Operating expenses, adjusted for major irregular items, as a share of operating income, excluding loan revaluation changes and discontinued operations. 3. Operating expenses, adjusted for major irregular items, as a share of net interest income and net fee and commission income. Sources: Commercial banks' financial statements.

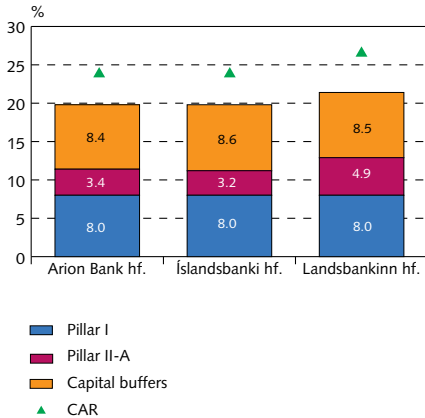
Chart III-7  
D-SIB: Capital adequacy ratios<sup>1</sup>



1. Domestic systemically important banks, consolidated figures. Capital base as % of risk-weighted assets. 2. A dividend of 25 b.kr. that was paid in 2018 has been taken into account for Arion Bank's end-2017 capital ratio. Sources: Commercial banks' financial statements.

- Adjustments have been made for the reduction in capital due to Arion Bank's 25 b.kr. dividend, payable in 2018, but the bank's 2017 annual accounts are presented in this way.
- Leverage ratios are calculated in accordance with the Act on Financial Undertakings, no. 161/2002, and are subject to a minimum of 3%.

Chart III-8

D-SIB: Capital requirements and capital adequacy ratios<sup>1</sup>

1. Domestic systemically important banks, consolidated figures. Consolidated figures. Pillars I and II according to SREP at year-end 2016. Capital buffers assuming full implementation. Adjusted for reductions in systemic risk and countercyclical capital buffers for foreign exposures. Capital ratio at year-end 2017.  
Sources: Commercial banks' financial statements and other published materials.

buffers, is in the range of 19.8-21.4%. The Icelandic banks' ratios are some 4-5 percentage points above the FME's requirements. Their capital base consisted almost entirely of common equity Tier 1 capital (CET1); therefore, there is some scope for dividend payments. Furthermore, the composition of the capital base offers the possibility of issuing subordinated loans, and rising credit ratings make this a realistic option. In Q4/2017, Íslandsbanki became the first Icelandic financial institution to issue a subordinated bond abroad since 2008. The D-SIBs are planning further subordinated issues for this year, opening up the possibility of additional dividend payments. The D-SIBs' funding structure could change in the coming term, which would, among other things, increase their return on equity, as their capital would decline. However, reductions in capital and changes in the composition of the capital base must take place in accordance with capital requirements, with full capital buffers, and the liquidity position. The banks must also be prepared for the possibility of an increase in required capital buffers such as the countercyclical capital buffer as the upward phase of the financial cycle gains strength.

Earlier in 2018, the Icelandic Government sold its 13% stake in Arion Bank, which is now almost wholly owned by non-residents. It is planned to list the bank on the stock market in 2018, in Iceland and perhaps abroad as well. It is likely that the bank's ownership structure will change somewhat thereafter.

## Box III-1

## Financial market infrastructure

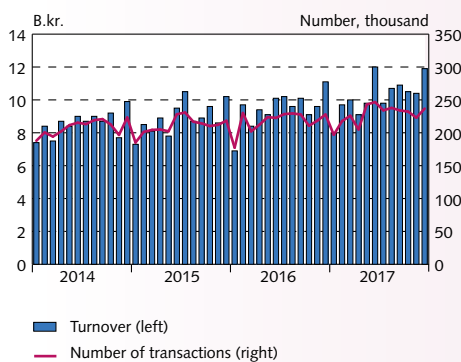
Financial market infrastructure is one of the three pillars of the financial system, the other two being financial institutions and financial markets. Financial market infrastructure connects customers with financial institutions and connects financial institutions with one another, both directly and through the market, via the systems used for payment intermediation, listing, and settlement. Market infrastructure can therefore be viewed as the plumbing system in the financial system. As a result, it is important for the economy and for financial system stability that financial market infrastructure be secure, including the ability to defend against cyberattacks, and that it function smoothly and cost-effectively.

## Renewal of core infrastructure

The renewal of the most important core infrastructure elements used in the Icelandic financial system has begun. Landsbankinn led the way in November 2017, when it replaced its deposit and internal payment intermediation systems by implementing the standardised Sopra system from the software development firm of the same name, Sopra Banking Software. The new system was launched following testing and contingency exercises. In the main, the launch went well, in spite of a number of unforeseeable incidents that affected systemically important payment and settlement systems. The banks, the Icelandic Banks' Data Centre (RB), and financial supervisory entities prepared thoroughly for the launch of the Sopra system. In the near future, Íslandsbanki is planning to renew its deposit and internal payment intermediation systems as well. It is likely that other financial institutions will follow their lead and implement the same systems or comparable ones. The Central Bank of Iceland's new interbank payment system will be

Chart 1

Payments (outflows) in the retail settlement system (netting) between participants (average daily value and volume)



Source: Greiðsluveitan ehf.

launched soon. The new system is a standardised solution already in use by other Nordic central banks, apart from the retail netting portion (the current JK system), which will be new. In this respect, the implementation will be riskier than it would be otherwise, as there is no foreign experience to draw on. In the coming term, the Nasdaq CSD Iceland securities depository intends to swap its securities settlement system for a standardised software solution already in use in the Baltics.

The above-mentioned infrastructure renewal projects will result in major changes in the technological structure of the financial system's core infrastructure. Standardised solutions will supplant legacy systems, and technological boundaries between different infrastructure elements will be clearer, as responsibility will be more explicit. Furthermore, it is expected that the technological environment will be more flexible and more secure and that it will lead to increased operational efficiency.

### **If risks materialise, contagion is quite possible**

Launching new financial market infrastructure entails strain and the possibility of contagion if risks materialise. As a result, it is vital that all preparation, testing, and risk management be carried out with care. It is impossible, however, to prevent all types of incidents from occurring. For a long time, there has been significant strain on RB employees and others involved in implementing the new infrastructure, and this entails some operational risk, among other things. In this context, it is important to avoid scheduling high-stress implementation periods too close together. If risks materialise during the launch of new infrastructure elements, it is quite possible that problems will spread to important payment intermediation systems, interbank payment systems, and securities settlement systems, with the associated impact on households and businesses. Because of this, supervisory institutions must closely monitor the comprehensive implementation projects currently underway and forthcoming and be prepared. In this context, the Central Bank and the Financial Supervisory Authority have reviewed their procedures and communication channels for incidents relating to payment intermediation, with the aim of ensuring the best possible coordination, particularly during the changes currently ongoing. In addition, a new coordination plan for payment intermediation has been prepared, and the Central Bank has reviewed its contingency plans and operational continuity plans.

## IFRS 9: a new financial reporting standard for financial instruments

### Box III-2

On 1 January 2018, a new accounting standard for the classification and measurement of financial instruments, IFRS 9, took effect in Iceland, supplanting the IAS 39 standard adopted in the mid-2000s.<sup>1</sup> IFRS 9 was issued in its final form in July 2014, after over a decade of preparatory work. Improvements in financial reporting relating to financial instruments were assigned greater importance following the financial crisis of 2008, and the design of IFRS 9 took account of the criticisms that came to the fore during the crisis, including inadequate and delayed impairment of loan losses, and reliance solely on incurred losses and not expected losses.

#### Principal amendments

The main changes to financial institutions' reporting practices with the implementation of IFRS 9 centre on three areas: a) impairment; b) recognition and measurement; and c) hedge accounting.

a) *Impairment*: The methodology for and calculation of impairment changes markedly with IFRS 9. Instead of basing impairment on incurred losses on the settlement date, it is to be based on expected future losses, and various different economic scenarios must be considered. The impairment model for expected credit losses is based on three stages:

*Stage 1*: performing assets; i.e., no significant increase in credit risk compared with the initial position. Impairment shall be based on expected credit losses in the next twelve months.

*Stage 2*: underperforming assets; risk has increased markedly relative to the initial position. Impairment shall be based on expected credit losses over the lifetime of the loan.

*Stage 3*: non-performing assets; i.e., loans in serious default. Impairment shall be based on expected credit losses over the lifetime of the loan.

b) *Recognition and measurement*: In recognising and measuring financial assets according to IFRS 9, attention must be given to cash flows and the business model rather than to the purpose of individual purchases. Financial assets shall be measured in one of three ways: i) at amortised cost; ii) at fair value through other comprehensive income; and iii) at fair value through profit and loss. These three categories replace the older IAS 39 classifications.

c) *Hedge accounting*: The new hedge accounting requirements better reflect risk management practices. It is permissible to postpone implementation of the hedge accounting requirements, and the Icelandic banks have exercised this authorisation.

#### Effects

The main effects of implementing IFRS 9 are increased transparency and more timely assessment of credit risk, both of which are conducive to greater financial stability. A forward-looking assessment of loans according to IFRS 9 should also enhance credit institutions' awareness of credit risk and probability of loss, and thereby increase loan quality.<sup>2</sup> Many financial supervisors are of the opinion that if IFRS 9 is implemented soundly and the most stringent requirements in the standards are applied, IFRS 9 can mitigate cyclical fluctuations, as credit risk and potential losses are identified sooner, thereby enabling the relevant parties to take timely action so as to strengthen the loan portfolio.<sup>3</sup>

1. See <http://www.ifrs.org/issued-standards/list-of-standards/ifrs-9-financial-instruments/>.

2. See, for instance, [https://www.esrb.europa.eu/pub/pdf/reports/20170717\\_fin\\_stab\\_imp\\_IFRS\\_9.en.pdf](https://www.esrb.europa.eu/pub/pdf/reports/20170717_fin_stab_imp_IFRS_9.en.pdf)

3. See, for instance, <https://www.riksbank.se/en-gb/press-and-published/notices-and-press-releases/notices/2018/impact-of-the-new-accounting-standard-ifrs-9-on-major-swedish-banks/>



IFRS 9 has also been criticised, mainly on the grounds that it could have a procyclical effect on financial institutions and on the business cycle, as impairment would increase more and could even be overestimated during a downward cycle and, by the same token, underestimated during an upward cycle. As a result, financial institutions' capital could decline more than necessary in a downward phase, prompting credit institutions to reduce lending activity more than they would otherwise. Furthermore, the standard only gives a rough idea of how to estimate expected lifetime losses, giving financial institutions discretion in developing their own models.<sup>4</sup> In addition, data vary in terms of reliability, and data problems could exist, particularly because assessing credit risk in accordance with the standard requires access to historical data.<sup>5</sup> This could give rise to significant inconsistency in financial institutions' assessment of expected credit losses over the lifetime of the loan concerned.

### The impact of IFRS 9 on the banks' balance sheets in 2018

In 2016, the European Banking Authority (EBA) requested that credit institutions assess the impact of IFRS 9 on their impairment and capital ratios. The conclusion was that impairment would increase by 18% and capital ratios would decline by half a percentage point. Following a review of this assessment in 2017, it was determined that impairment would increase by 13% and capital ratios would fall by 0.43 percentage points.

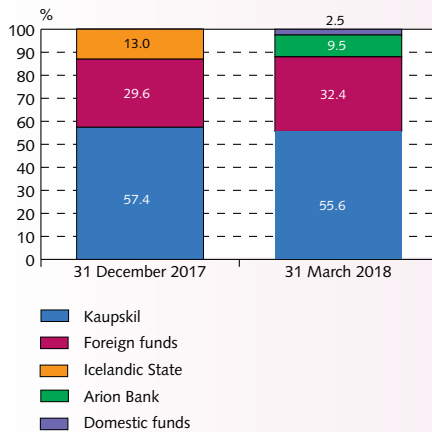
The Financial Supervisory Authority (FME) has monitored the implementation of IFRS 9 by Icelandic credit institutions and has made its own assessment of the impact on impairment and capital. The first public information on the effects of IFRS 9 on domestic credit institutions can be found in their annual accounts for 2017. Among the domestic systemically important banks, the greatest effect is on Íslandsbanki, where capital is estimated to decline by 4 b.kr. and CET1 equity by 0.25 percentage points. The decline in equity will stem from a 2.5 b.kr. increase in impairment, and the reclassification of issued bonds will cause a 1.5 b.kr. reduction in assets. Landsbankinn estimates that its capital will decline by 1-1.5 b.kr., that CET1 capital will fall by 0.1 percentage points, and that its overall capital ratio will be reduced by 0.5 percentage points. The effects of IFRS 9 on Arion Bank differ from the effects on the other banks, as Arion estimates that its capital will increase by 1 b.kr. after adjusting for tax effects; i.e., 0.6 b.kr. due to impairment and 0.4 b.kr. due to reclassification of assets. In spite of the increase in capital, Arion estimates that its capital ratio will fall by 0.3 percentage points, as the FME decided concurrent with the implementation of IFRS 9 that general impairment due to credit risk may no longer be included with Tier 2 capital. The Housing Financing Fund estimates that implementing IFRS 9 will reduce its capital by 1.25-2.25 b.kr., including 1-2 b.kr. due to increased impairment and 250 m.kr. due to changes in recognition and classification of assets. The Fund estimates that its capital ratio will decline by 0.4-0.7 percentage points.

4. See, for instance, <https://www.eba.europa.eu/documents/10180/1720738/EBA+Repo+on+results+from+the+2nd+EBA+IFRS9+IA.pdf>

5. See, for instance, [https://www.esrb.europa.eu/pub/pdf/reports/20170717\\_fin\\_stab\\_imp\\_IFRS\\_9.en.pdf](https://www.esrb.europa.eu/pub/pdf/reports/20170717_fin_stab_imp_IFRS_9.en.pdf)

## Box III-3

## Change in ownership of Arion Bank

Chart 1  
Shareholders of Arion Bank

Source: Arion Bank.

In March 2017, it was announced that foreign hedge funds and asset management firms intended to acquire a 29% holding in Arion Bank from Kaupskil, a Kaupping subsidiary. The foreign entities are also Kaupping shareholders. Following the sale, Kaupskil owned a 58% stake in the bank. Furthermore, when the sale was executed, it was announced that the new owners had an option to purchase the equivalent of 22% of issued share capital. One owner exercised that option to a small extent and acquired an additional holding of 0.44%.

In February 2018, it was announced that Kaupskil had sold another 5% in the bank to domestic UCITS funds and two foreign owners. Kaupskil also exercised an option to buy the Treasury's 13% holding in the bank, in accordance with a shareholder agreement concluded when the initial capital contribution was made to Arion Bank in September 2009. Alongside the above-mentioned transactions, Arion Bank bought 9.5% of its own share from Kaupskil.

Through its subsidiary Kaupskil, Kaupping remains Arion's largest single shareholder, with a holding of nearly 56%. The non-resident entities own just over 32%, Arion Bank itself owns 9.5%, and the domestic UCITS funds own a combined holding of 2.5%. Kaupping aims to reduce its holding in the bank further through an initial public offering in Iceland and abroad later this year. A portion of the sale price will revert to the Treasury, in accordance with the 2015 stability agreement, both for the bond issued by Kaupping to the Treasury and through the profit-sharing agreement concerning Kaupping's stake in Arion Bank.

## Liquidity and funding

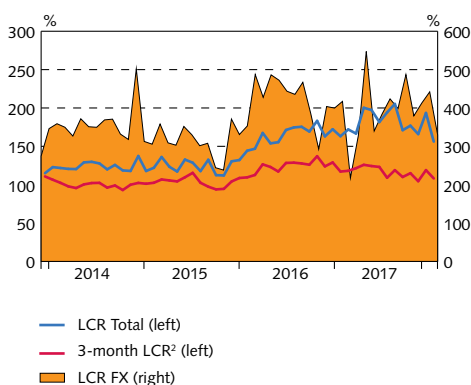
## The banks' liquidity remains strong

The commercial banks' liquidity remained strong in 2017 in spite of a slight weakening in the latter half of the year. The banks are all well in excess of the minimum levels provided for in the Central Bank's liquidity rules, both as a whole and in foreign currencies. The liquidity ratio for Icelandic krónur fell slightly during the year, however.

The banks' foreign liquid assets increased during the year, in line with their increased issuance of foreign bonds. Offsetting this was a decline in their króna-denominated liquid assets, in part because of dividend payments. As before, term deposits with the Central Bank constitute the majority of their liquid assets. Abundant liquidity enables the banks to withstand unexpected outflows, and the stress tests carried out by the Central Bank have showed that they can withstand significant outflows of deposits.

## Individuals' deposits on the rise

Deposits increased during the year and are the mainstay of the domestic systemically important banks' (D-SIB) funding. Deposits held by individuals increased by 11.7%, somewhat more than in the prior year. Corporate deposits also increased marginally. Domestic financial institutions' deposits contracted by 19%, however. In addition, deposits held by the failed commercial banks' estates contracted sharply during the year, and now they account for only a negligible portion of the banks' total liabilities. The only remaining deposits held by the

Chart III-9  
D-SIB: Liquidity coverage ratio<sup>1</sup>

1. Domestic systemically important banks, consolidated figures 2. In accordance with older liquidity rules. New LCR rules were implemented in March 2017.

Source: Central Bank of Iceland.

banks' estates are those relating to their day-to-day operations. In all, deposits increased by 2%, and at the end of 2017 they accounted for 53% of the banks' funding. Loans totalled 153% of deposits held by individuals and firms in 2017, a slight increase from 2016.

### Foreign market funding terms continue to improve

The banks have continued to issue bonds abroad in recent months, and the terms offered to them are steadily improving. This is due both to good foreign market conditions for banks' funding and to the strength of the Icelandic economy, which is reflected in credit rating upgrades, among other things. In October 2017, rating agency Standard & Poor's upgraded all of the banks from BBB to BBB+ ratings, with a stable outlook. With higher credit ratings, the banks' access to foreign credit markets will improve, as will the terms offered to them.

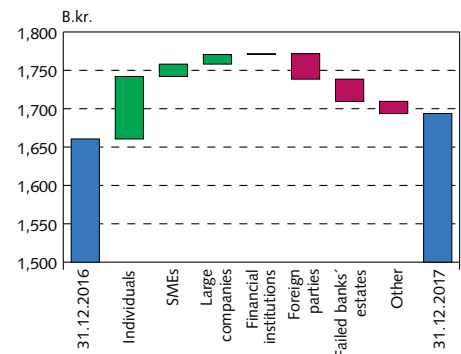
In the past twelve months, the banks have issued bonds in the amount of 177 b.kr. in 17 separate issues with maturities ranging up to 10 years as part of their medium-term note (MTN) programme. The terms of Arion Bank's eurobond issue in June 2017 were equivalent to a 0.88 percentage point premium on interbank rates, but in March 2018 the bank issued another bond at 0.65 percentage points above interbank rates. The issues were for three and five years, respectively. In January, Íslandsbanki issued a six-year eurobond at 0.75 percentage points above interbank rates, and in November 2017, Landsbankinn issued a eurobond with a five-and-a-half-year maturity at 0.85 percentage points above interbank rates.

Also in November, Íslandsbanki issued a subordinated bond, the first Icelandic financial institution to do so since 2008. The 10-year, SEK 750 million issue bears floating interest of 2 percentage points over and above three-month interbank rates in Swedish kronor. The issue is an element in changing the bank's funding structure. All of the banks are planning to increase the share of subordinated issues in their capital base.

### Foreign refinancing risk has subsided in recent months

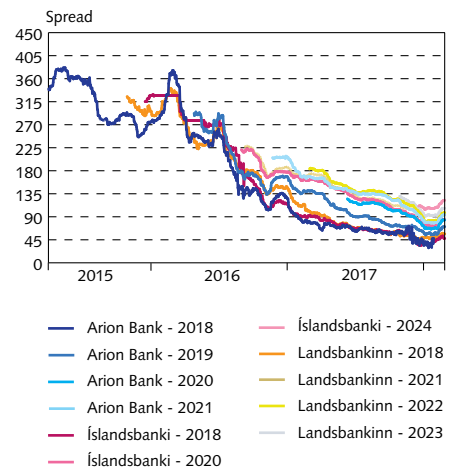
With increased foreign debt, the banks are now more dependent on conditions in foreign credit markets than they were before. Foreign funding terms have been steadily improving, as is pointed out above, but the situation could reverse suddenly. A setback in the global markets, with rising risk premia or reduced access to credit, would affect the three largest commercial banks. The banks have issued their foreign bonds mainly to refinance other loans taken on less favourable terms. In 2017, the banks bought back their own bonds in the amount of 77 b.kr., in addition to retiring debt at maturity. The net increase in their foreign-denominated funding in 2017 therefore totalled about 71 b.kr. This has not as yet resulted in an equally large increase in foreign-denominated lending, but the banks' foreign liquidity has strengthened, and the commercial banks have kept their foreign exchange position in balance.

Chart III-10  
D-SIB: Changes in deposits in 2017



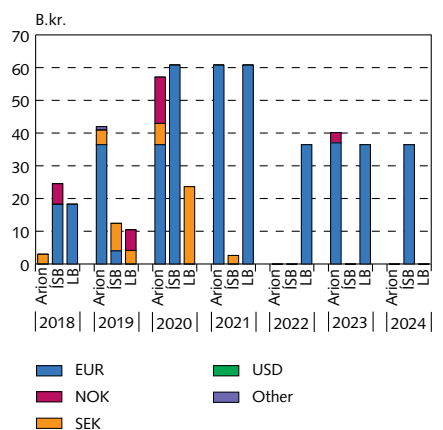
Source: Central Bank of Iceland.

Chart III-11  
D-SIB: Spread on listed foreign bonds, EUR<sup>1</sup>



1. Spread on Euro benchmark curve.  
Source: Bloomberg.

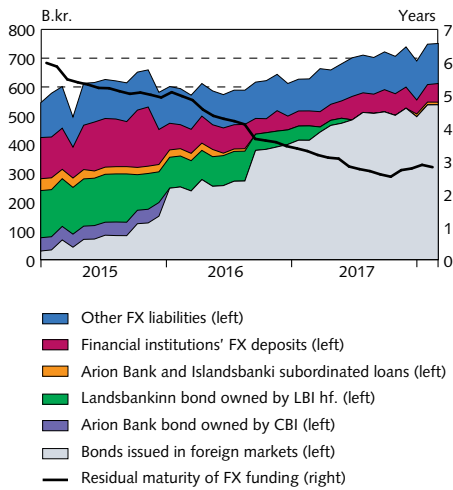
Chart III-12  
D-SIB: Bonds issued in foreign currencies, by maturity and currency<sup>1</sup>



1. At 31 March 2018 exchange rate. Not included in the chart is Arion Bank's NOK issue maturing in 2027, in the total amount of 3.3 b.kr., and a Tier 2 issue from Íslandsbanki, in the total amount of 9.3 b.kr., maturing in 2027.  
Source: Nasdaq Iceland.

6. According to the Central Bank Rules on Foreign Exchange Balance, no. 950/2010.

Chart III-13  
D-SIB: Funding in foreign currency<sup>1</sup>  
and average residual maturity<sup>2</sup>



1. D-SIB: Domestic systemically important banks. At variable prices.  
2. Residual maturity of listed foreign bonds, Arion Bank and Islandsbanki's subordinated loans, Arion Bank bond, and LBI bond.  
Source: Central Bank of Iceland.

The commercial banks' foreign-denominated loans relative to their total foreign funding fell by 10 percentage points in 2017, to 69%. Instalments and interest payments on their foreign-denominated loans will average 76 b.kr. per year over the next five years, or 22% of their foreign loan portfolio, after a slight rise in 2017.

The equivalent of 109 b.kr., about 20% of the banks' foreign funding and just over 3% of their balance sheet, matures next year. Refinancing risk has receded since last year, as the banks bought back a portion of their eurobonds maturing in 2018. Their funding ratios<sup>7</sup> in foreign currencies are strong in terms of funding for both one year or more and three years or more. The ratios rose in 2017, in the wake of the banks' foreign bond issues.

**Domestic market issuance successful**

Covered bond issuance was successful during the year. The balance of outstanding covered bonds increased by 84 b.kr., although Arion Bank paid off a portion of contractual covered bonds issued by Kaupping on less favourable terms than are available today. The ratio of covered bonds to residential mortgages rose by 1 percentage point during the year, to 43% by the year-end. In all, the stock of outstanding bills decreased by 5.5 b.kr. in 2017, but interest rates on the issues have fallen further than the Bank's key rate has.

**Box III-4  
New Rules on Foreign  
Exchange Balance**

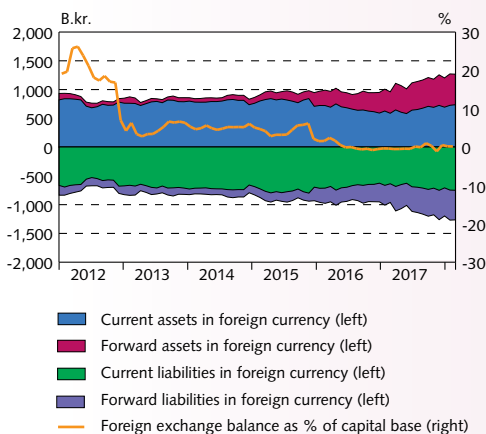
Rules on foreign exchange balance are among the most common prudential tool used to address foreign exchange risk. They are often used in economies that are sensitive to the effects of capital flows. The role of foreign exchange balance rules is both microprudential and macroprudential. The fundamental objective of such rules is to limit individual credit institutions' foreign exchange risk and foreign currency mismatches, thereby reducing foreign exchange risk in the economy as a whole and contributing to financial stability. The Central Bank is authorised to define which assets and liabilities shall be considered part of the foreign exchange balance, as well as their breakdown and their weight. The current Rules on Foreign Exchange Balance were introduced in late 2010, and a review has been underway for some time.<sup>1</sup>

Since the Rules were first introduced, there have generally been limits on foreign exchange balance for individual currencies and as a whole. The Rules are based mainly on limiting foreign exchange balances as a proportion of a given variable, although the variable chosen has changed over the years. Since 2010, the capital base has been used, with the following ratio:

$$\frac{\text{Net present position} + \text{net forward position}}{\text{Capital base}}$$

Rules on foreign exchange balance are not part of a harmonised international regulatory framework, and the variable used to place limits on the ratio differs across economies that impose such

Chart 1  
D-SIB: Foreign exchange balance  
January 2012 - February 2018



Source: Central Bank of Iceland.

1. The Central Bank of Iceland sets Rules on Foreign Exchange Balance for credit institutions on the basis of an authorisation in Act no. 36/2001.

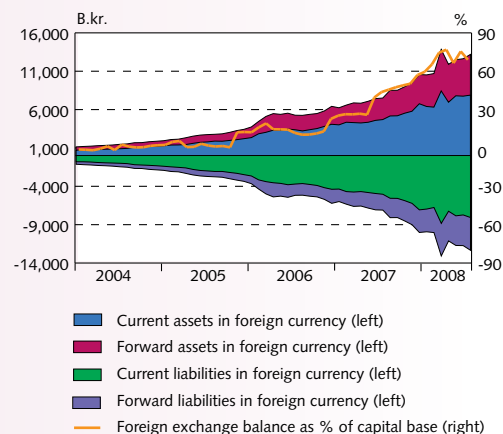
7. According to Central Bank Rules on Funding Ratios in Foreign Currencies, no. 1032/2014.

rules; however, it is most common to use the capital base, capital, or Tier 1 common equity (CET1).

The Rules are currently undergoing a comprehensive review, as is the information submitted by credit institutions on the basis of the Rules. The aim is to introduce new Rules and reporting requirements in mid-2018. The review aims to limit possible mismatches still further, both relative to each bank's capital base and across the system, with macroprudential provisions on the maximum systemic mismatch in Icelandic krónur. The suggested changes include making commercial banks' permissible limits more stringent than those of other credit institutions and expanding the scope of the Rules to include consolidated credit undertakings. In addition, it is proposed that provisions authorising the Central Bank to grant special exemptions to credit institutions, thus enabling them to maintain a positive balance so as to hedge against the impact of exchange rate movements on their capital ratios, be deleted in an attempt to prevent the balance from growing excessively, as it did in 2005-2008. The capital base will continue to be used to calculate the maximum ratio, but the foreign exchange balance as a proportion of CET1 will also be monitored, owing in particular to the commercial banks' plans to issue subordinated bonds. Furthermore, reporting related to the foreign exchange balance will be more detailed and more conducive to identifying possible risks.

Chart 2

D-SIB: Foreign exchange balance<sup>1</sup>  
January 2004 - July 2008



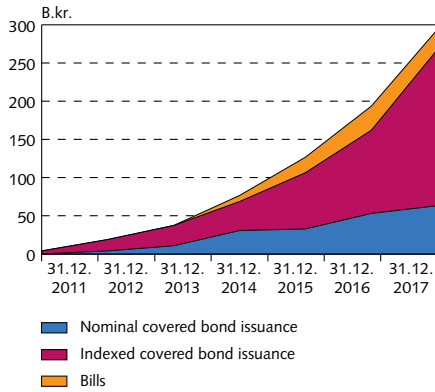
1. In 2006, the D-SIBs requested permission to maintain a separate positive foreign exchange balance in order to hedge against exchange rate risks to their capital ratios.

Source: Central Bank of Iceland.

### Amendments to the Rules on Foreign Exchange Balance

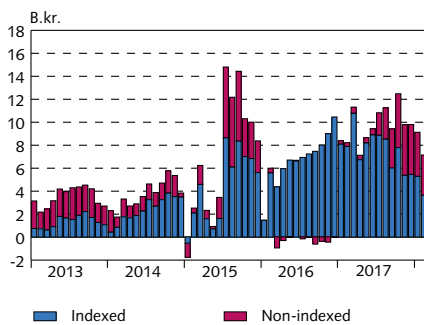
1989	Provisions on foreign exchange balance added to the Central Bank Act, no. 36/1986, with Article 1 of Act no. 11/1989.
1997	<ol style="list-style-type: none"> <li>Open foreign exchange position in individual currencies: Maximum <math>\pm 15\%</math> of capital (<math>\pm 20\%</math> for USD and EUR).</li> <li>Total foreign exchange balance: Maximum <math>\pm 30\%</math> of capital.</li> </ol>
2002	<ol style="list-style-type: none"> <li>Open foreign exchange position in individual currencies: Maximum <math>\pm 20\%</math> of capital.</li> <li>Total foreign exchange balance: Maximum <math>\pm 30\%</math> of capital.</li> <li>Provision allowing banks to request permission to maintain a separate positive foreign exchange balance in order to hedge against exchange rate risks to capital ratios.</li> </ol>
2008	<ol style="list-style-type: none"> <li>Total foreign exchange balance: Maximum <math>\pm 10\%</math> the capital base.</li> <li>Provision allowing banks to request permission to maintain a separate positive foreign exchange balance in order to hedge against exchange rate risks to capital ratios.</li> <li>Open foreign exchange position in individual currencies: Firms shall follow their own procedures.</li> </ol>
2009	<ol style="list-style-type: none"> <li>Open foreign exchange position in individual currencies: Maximum <math>\pm 20\%</math> of capital.</li> <li>Total foreign exchange balance: Maximum <math>\pm 30\%</math> of capital.</li> <li>Provision allowing banks to request permission to maintain a separate positive foreign exchange balance in order to hedge against exchange rate risks to capital ratios.</li> <li>Provision allowing banks to request permission to maintain a separate positive foreign exchange balance under extraordinary circumstances.</li> </ol>
2010	<ol style="list-style-type: none"> <li>Open foreign exchange position in individual currencies: Maximum <math>\pm 15\%</math> the capital base.</li> <li>Total foreign exchange balance: Maximum <math>\pm 15\%</math> the capital base.</li> <li>Temporary provision allowing the banks to request permission to maintain a separate positive or negative foreign exchange balance in response to conditions developing in the wake of the collapse of the banking system in autumn 2008. Expiry 1.1.2013.</li> </ol>
2013	<ol style="list-style-type: none"> <li>Temporary provision allowing the banks to request permission to maintain a separate positive or negative foreign exchange balance for three months at a time, in response to conditions developing in the wake of the collapse of the banking system in autumn 2008. Expiry 1.1.2015.</li> </ol>

Chart III-14

D-SIB: Total outstanding domestic issuance from 2008<sup>1</sup>

1. D-SIB: Domestic systemically important banks.  
Source: Nasdaq Iceland.

Chart III-15

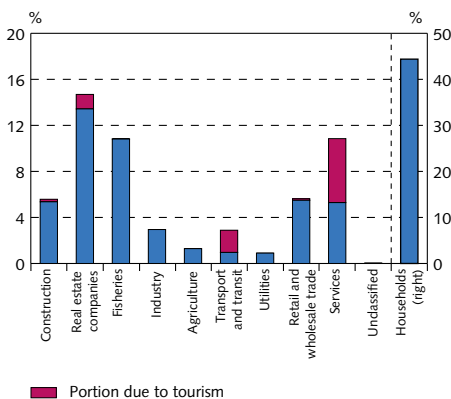
D-SIB: Net new mortgage loans<sup>1</sup>

1. New loans net of prepayments. Prepayments are payments in excess of contractual payments.  
Source: Central Bank of Iceland.

Chart III-16

D-SIB: Sectoral classification of commercial bank lending<sup>1</sup>

At year-end 2017



1. Loans to each sector as a share of total lending to households and operating companies as well as the portion in each sector due to tourism.  
Source: Central Bank of Iceland.

## Encumbrance ratios

The D-SIBs' encumbrance ratios — i.e., the share of assets that are collateralised for funding purposes — were broadly unchanged in 2017. Landsbankinn's encumbrance ratio has fallen markedly in recent years, to 8.5% at the end of 2017, a decline of 2.5 percentage points from the previous year. The decline in the ratio is due in part to refinancing of collateralised bonds issued to LBI hf. Íslandsbanki's encumbrance ratio was 14.1% in 2017, slightly higher than in the previous year. It has risen somewhat in the past two years, in line with increased covered bond issuance. Arion Bank's ratio was 18.8% in 2017, after declining by nearly 2 percentage points, in part because Arion paid off collateralised debt in the amount of 20 b.kr. during the year. The banks' encumbrance ratios are well below the European average of 27%, but it is likely that they will rise again, as nearly all of their króna-denominated market funding is in covered bonds.

## D-SIB lending: developments and loan quality

### Lending growth gains pace

D-SIB lending to the private sector increased by 7.5% in real terms in 2017, with loans to individuals rising by 5.4% and corporate loans by 9.2%. Growth in D-SIB lending to the private sector is now more visible than before. Loans are now the largest asset class in the banks' balance sheets, accounting for 73.6% of total assets at year-end 2017. Nominal lending to the private sector increased by 9.5% year-on-year. New residential mortgages issued to individuals net of non-contractual payments and retirement of such loans, referred to hereinafter as net new lending, totalled 117 b.kr. in 2017, an increase of more than 70% year-on-year.<sup>8</sup> In the latter half of the year, net new nominal mortgage lending increased after a period of just over a year with new lending equal to or less than prepayments. Last year there was also a steep increase in new residential mortgages issued by pension funds, which generally offer better terms but more stringent lending conditions, such as a lower maximum loan-to-value ratio. It is therefore worth noting that more affluent individuals may be turning to the pension funds rather than the banks for loans. Over time, this could erode the quality of household loans in the banks' loan portfolios and result in increased default and impairment during times of economic hardship.

Net new corporate loans totalled 190 b.kr. in 2017, after a slight increase year-on-year, and the distribution by type of loan changed somewhat. Indexed loans increased most as a share of new lending, while foreign-denominated loans contracted. In terms of sectoral distribution, loans to construction firms, real estate companies, and tourism-related companies dominated net new lending. At the end of February, loans to construction companies accounted for 6% of the banks' private sector lending, a slight increase in the past few years. The real estate sector remains the largest sector in the banks' loan

8. The Government's debt relief measures entailed a direct write-down of the banks' residential mortgages in the amount of just over 7 b.kr. in 2016. As a result, it can be assumed that prepayments during that year were unusually large, which affects the figures.

books and is still growing as a share of total lending. On the other hand, growth in tourism has slowed markedly, and the share of lending to the sector contracted slightly between Q2/2017 and Q4/2017.

### Uptick in corporate default

The D-SIBs' combined non-performing loan ratio was 2.2% at year-end 2017, a slight increase from the prior year. It declined early in the year, to 1.7% at the end of Q2, but then rose in Q3.

In February, about 5.1% of the D-SIBs' loans were in arrears, about the same proportion as in February 2017. The share of non-performing corporate loans has risen, while the share of non-performing household loans has fallen. The increase in corporate arrears is due primarily to a trend towards fewer, larger companies with facilities valued at over 1 b.kr., as arrears among smaller firms have declined.<sup>9</sup> Examining the type of arrears shows that the increase was due primarily to loans that have been frozen, which is considered a milder form of default. On the other hand, there was also an increase in loans in the collections process, which is considered more serious. Arrears increased most among fishing and fish processing firms, although there was also a noticeable increase among holding companies and manufacturing firms. Default in the agriculture sector also increased markedly relative to the size of the sector.

Rising asset prices, particularly in the real estate market, have had a positive impact on the banks' loan quality. In general, the collateral used to secure loans rose more in value last year than the credit stock did. This applies to both households and businesses, and the improved collateral position is due primarily to rising property values.

### III b Other lenders

The Housing Financing Fund (HFF) is still beset by large-scale retirement of loans, although the Fund has attempted to mitigate the negative effects of the prepayments on its interest rate spread by investing in asset-backed indexed bonds. The pension funds' foreign assets increased markedly between years, as the funds continued to invest abroad in 2017, primarily in equities and unit shares.

### Large-scale retirement of HFF loans causes mismatches between assets and liabilities

The HFF recorded a profit in 2017, for the fourth year in a row. Net interest income declined by just over 10% between years, even though income due to loan retirement — which is included with interest income — rose in 2017. This was offset by a decline of nearly 2% in operating expenses. Loan quality continued to improve in 2017, owing to a favourable economic environment, as the collateral position strengthened and default ratios declined. The HFF's capital ratio has continued to rise, to 8.5% by end-2017, the highest since the Fund was established. The Fund's long-term goal is to maintain a capital ratio over 5.0%.

9. Relatively few companies have loan facilities exceeding 1 b.kr.; furthermore, the default estimates are based on the cross-default method (defined in the glossary at the end of this report). Therefore, figures on default can rise very easily.

Chart III-17  
D-SIB: Non-performing loans<sup>1</sup>

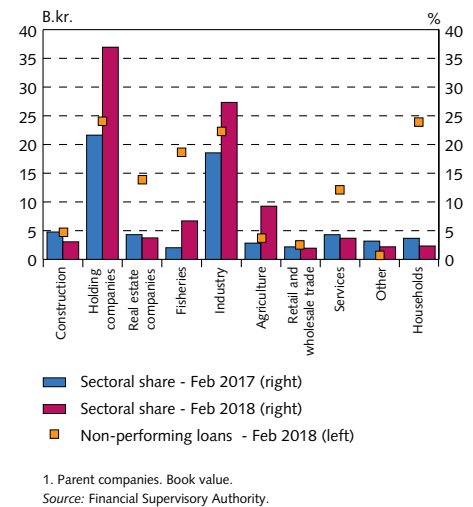


Chart III-18  
HFF: Customer prepayments and new loans

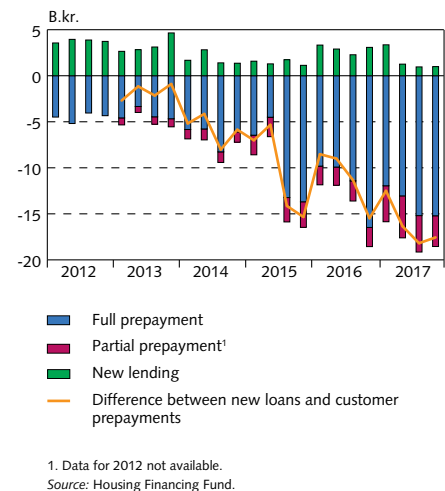


Chart III-19  
Pension funds: Domestic equity securities holdings held at the Nasdaq CSD Iceland<sup>1</sup>

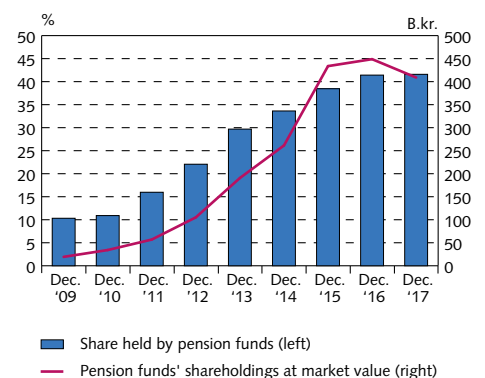
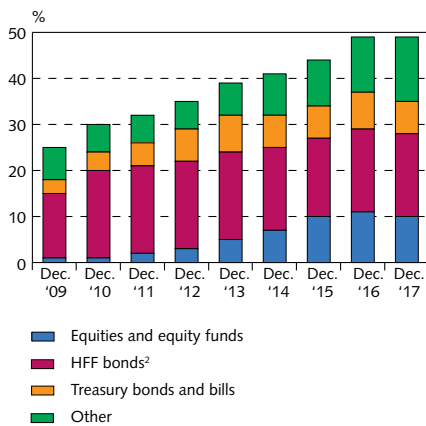


Chart III-20

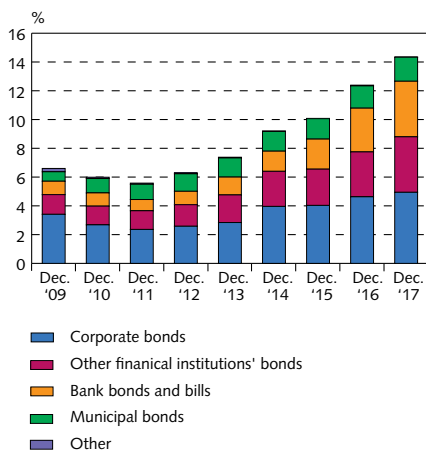
Pension funds: Domestic securities holdings held at the Nasdaq CSD Iceland<sup>1</sup>



1. Share of securities held at the Icelandic Securities Depository.  
2. Including Housing Bonds and Housing Authority Bonds.  
Source: Nasdaq Iceland.

Chart III-21

Pension funds: Other listed domestic securities holdings held at Nasdaq CSD Iceland<sup>1</sup>



1. Share of listed securities held at the Icelandic Securities Depository.  
Itemisation of the category "other" in Chart III-20.  
Source: Nasdaq Iceland.

Limited new lending, continued retirement of loans, and allocation of third-party pension savings to mortgage payments are the main causes of the continued contraction in the HFF's loan portfolio. The Fund's assets outside the loan portfolio, including liquid assets, continued to grow. The loan portfolio was valued at 500 b.kr. at the end of 2017, including 365 b.kr. in loans to individuals. The value of the loan portfolio declined by 78 b.kr. in 2017, due mainly to a contraction in lending to individuals, as the reduction stemming from retirement, prepayment, and prepayment via allocation of third-pillar pension savings totalled just over 71 b.kr. This large-scale retirement of loans has exacerbated the mismatch between HFF assets and liabilities. The Fund is prohibited from paying its debts before maturity and must therefore reinvest its receipts from early payments at lower interest rates. In order to reduce the losses caused by this mismatch, the Fund has invested assets outside the loan portfolio in asset-backed indexed bonds with a prepayment profile similar to its funding structure. If these substantial retirements of loans continue, the HFF could be forced to use its accumulated liquid assets to cover payment flows on outstanding debt in the foreseeable future.

Appropriated assets owned by the HFF continued to decline in 2017, albeit less rapidly than in previous years, as the Fund sold 297 properties during the year and appropriated 53. The majority of HFF-owned properties were being rented out as of end-2017. The Fund has not issued bonds in the market since 2012.

### Pension funds step up foreign investment

Assets held by pension funds and pension savings custodians rose above 4,000 b.kr. at the end of 2017. Pension fund assets totalled just over 1.5 times GDP at the year-end, after increasing by nearly 7% in real terms during the year.

Indexed marketable bonds accounted for some 40% of pension funds' total assets at the end of the year. In recent years, the proportion of HFF bonds in their asset portfolios has fallen, as the Fund has not issued any bonds in several years. On the other hand, the weight of indexed bonds has increased, particularly investments in the banks' covered bonds and in real estate company issues. Furthermore, the pension funds have increased their holdings in other real estate-related assets, such as assets backed by real estate via direct lending, as loans to fund members accounted for almost 8.5% of their total assets at the year-end.

The pension funds' foreign assets increased by over 190 b.kr. in 2017 and can be expected to grow still further in coming years, as the only restrictions on foreign investment are those provided for in the Act on Mandatory Insurance of Pension Rights and on Activities of Pension Funds. Last year the pension funds made direct investments abroad for at least 119 b.kr. Nearly all of their foreign assets are in equities or unit shares, some 80% in US dollars and just under a fifth in euros. Foreign assets currently account for about one-fourth of total pension fund assets. Investing abroad enables the funds to diversify risk more effectively in the long run, although their short-term returns could be more susceptible to exchange rate movements than before.

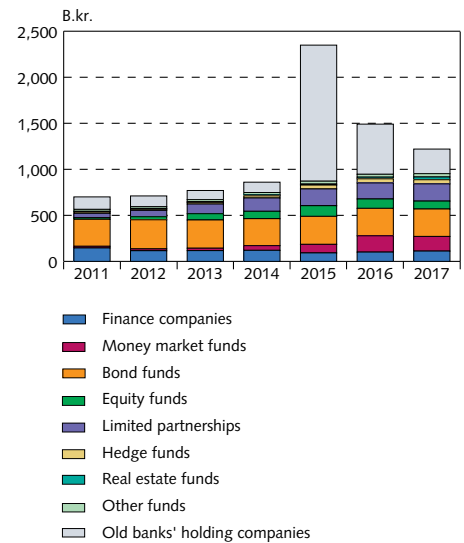


The share of pension fund-owned securities listed at the Nasdaq CSD Iceland securities depository has risen steeply in recent years but was virtually unchanged in 2017, mainly because the removal of restrictions on foreign investment has broadened the range of investment options available to them.

### Shadow banking system broadly unchanged if the effects of the old banks are ignored

The Icelandic shadow banking system is shrinking as the old banks' holding companies divest themselves of assets and pay their creditors' claims. Excluding these holding companies, the size of the shadow banking system was unchanged year-on-year after several years of steady growth. At year-end 2017 it accounted for about 9% of the financial system, nearly a percentage point less than at the end of 2016. This may well be due to increased options for risk diversification via foreign investment. The main change in individual shadow banking categories was a slight contraction in the size of mutual funds and money market funds. On the other hand, real estate funds grew by nearly 69%, but they still account for only a small share of the system as a whole. The shadow banking system's financial assets in the conventional banking system are also on the decline, owing mainly to reduced activity among the holding companies of the old banks, but also to a reduction in money market funds' bank deposits.

Chart III-22  
Size of the shadow banking system



Source: Central Bank of Iceland.

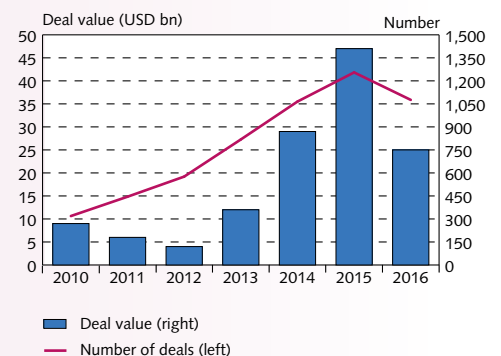
Financial technology, or fintech, is a term covering technological innovation in the financial services sector. It applies both to conventional banking services, which have become more accessible with new technologies, and to a new type of service based solely on technological advancements. Fintech companies have already affected the ways in which financial services are rendered, and they will probably usher in major changes in the banking market in the years to come. The key drivers of these changes are technological advances, changes in the regulatory environment, and increased demands from consumers. With financial technology, transactions become quicker, cheaper, and more efficient. Yet at the same time it can create risks that could even jeopardise financial stability, including operational risks such as network and information security risks that could develop when third parties are given access to financial information. Googlepay, Venmo, and Ant Financia are examples of foreign fintech companies, and Meniga and Aur are examples of Icelandic ones.

In 2011, the EU Payment Services Directive (PSD1) was incorporated into Icelandic law. An amended version, PSD2, entered into force in Europe in January and is to be implemented by statute in Iceland in the near future. As before, the Directive aims to stimulate competition by enabling new providers, other than financial institutions, to enter the payment services market. PSD2 introduces two new types of service providers: *payment initiation service providers* (PISP), which can initiate a payment order at the request of the payment service user with respect to a payment account held at another payment service provider, and *account information service providers* (AISP), which can gather financial information upon receiving the customer's consent.

### Box III-5

## Financial technology

Chart 1  
Total global investment in fintech companies<sup>1</sup>



1. The Pulse of Fintech: Global Analysis of Investment in Fintech, Q4/2016.  
Source: KPMG.

Increased investment in fintech in recent years is reflected in the expectation that new technology will have a profound impact on the financial system. With increased competition, it can be expected that fintech companies will attract a share of conventional banks' revenues — in the field of payment services, for instance, where market entities also collaborate frequently. Rapid developments in fintech companies can make it difficult to predict how much impact they will have on the banks' business models in the future.

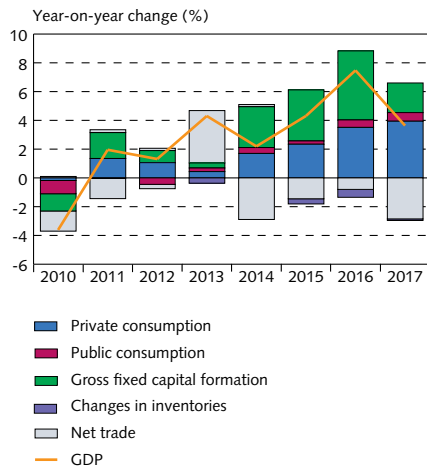
The Financial Supervisory Authority operates a service desk for those that provide fintech services or are planning to do so. The service desk's role is to explain to the companies how fintech supervision is handled.

# Appendix I

## Charts

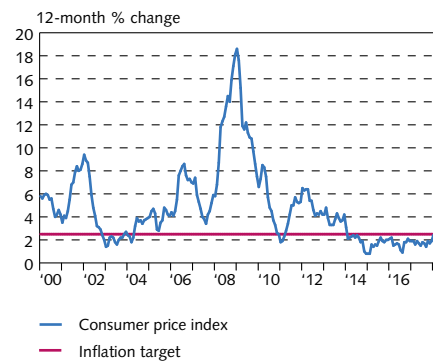
### I Macroeconomic environment

Chart I-1  
Output growth<sup>1</sup>



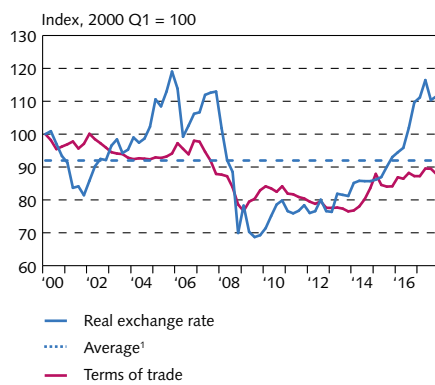
1. Contribution of individual components to output growth.  
Sources: Statistic Iceland, Central Bank of Iceland.

Chart I-2  
Consumer price inflation



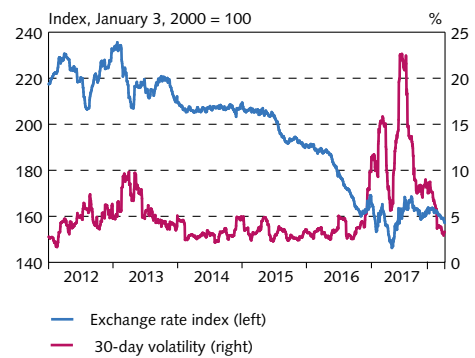
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-3  
Real exchange rate of the króna and terms of trade



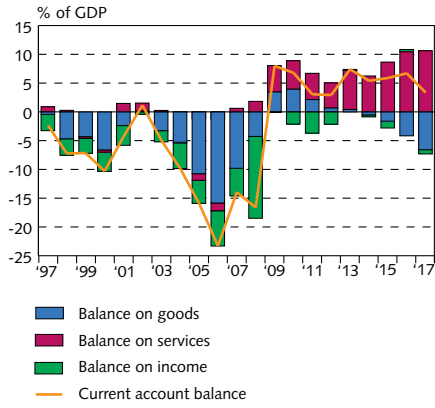
1. Real exchange rate average over the whole period.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-4  
Exchange rate of the króna<sup>1</sup>



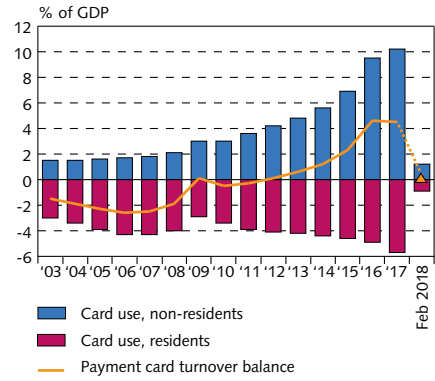
1. Exchange rate index based on average imports and exports, narrow trade basket (1%).  
Source: Central Bank of Iceland.

Chart I-5  
Current account balance<sup>1</sup>



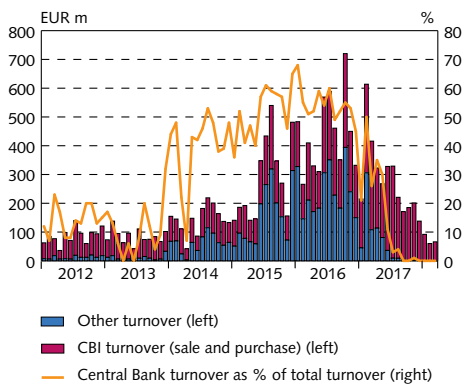
1. Effects of the old banks on factor income and the balance on services from Q4/2008 are ignored. From 2009 through 2012 the effects of Actavis on the balance on income are also ignored, owing to inaccurate data during the period. Secondary income is included in factor income.  
 Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-6  
Payment card balance<sup>1</sup>



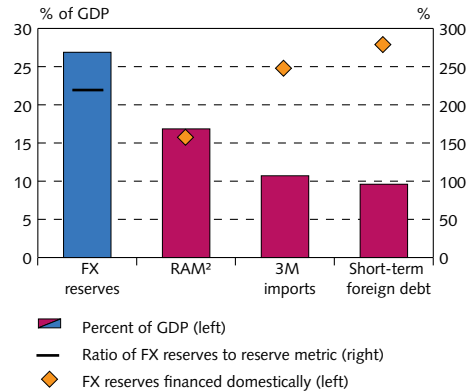
1. Residents' card use abroad is expressed with a negative sign. The card turnover balance shows the difference between foreign payment card use in Iceland and Icelanders' payment card use abroad.  
 Sources: Statistics Iceland, Central Bank of Iceland.

Chart I-7  
Foreign exchange market turnover



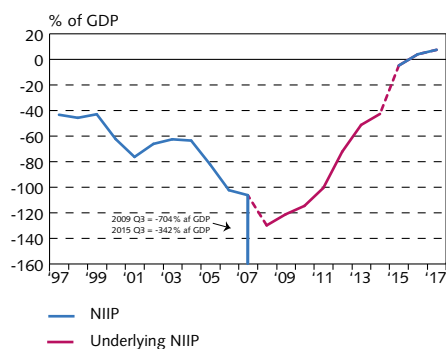
Source: Central Bank of Iceland.

Chart I-8  
Central Bank FX reserve adequacy  
Position as of end-2017



1. IMF Reserve Adequacy Metric. 2. Average of three months of imports in the last four quarters.  
 Sources: Statistics Iceland, Central Bank of Iceland.

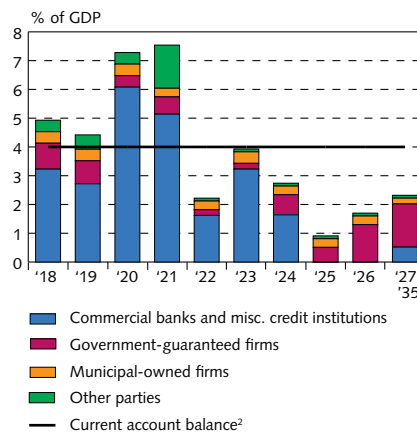
Chart I-9  
Net international investment position<sup>1</sup>



1. Based on underlying position from 2008 through end-2015; i.e., adjusted for the effects of settling the failed banks' estates and assuming equal distribution of assets to general creditors. At the end of 2015, the estates of the failed financial institutions reached composition agreements entailing the write-off of a large portion of their debt. As a result, there was no difference between the NIIP and the underlying NIIP.

Sources: Statistics Iceland, Central Bank of Iceland.

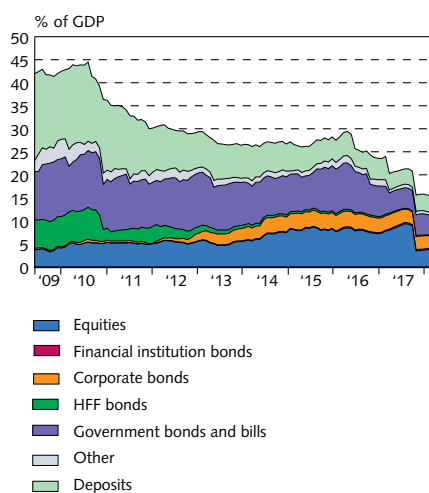
Chart I-10  
Repayment profile of long-term foreign loans, excluding the Treasury<sup>1</sup>



1. Foreign long-term loans based on position at year-end 2017 and exchange rate of 28 February 2018, plus commercial banks' foreign issuance in Q1/2018, adjusted for refinancing. 2. The effects of the old banks' holding companies and transactions with ships and aircraft are ignored.

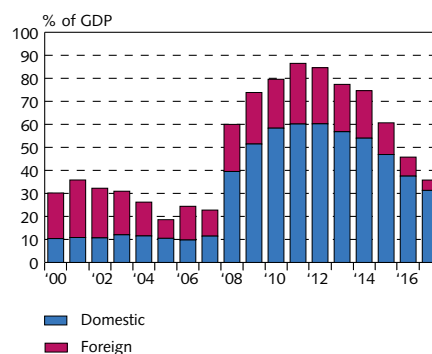
Sources: Financial information from DMBs, Statistics Iceland, Central Bank of Iceland.

Chart I-11  
Foreign-owned deposits and electronically registered securities in Iceland



Sources: Statistics Iceland, Nasdaq CSD Iceland, Central Bank of Iceland.

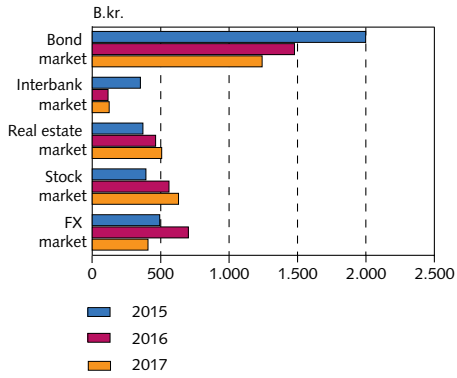
Chart I-12  
Treasury debt



Sources: Statistics Iceland, Government Debt Management.

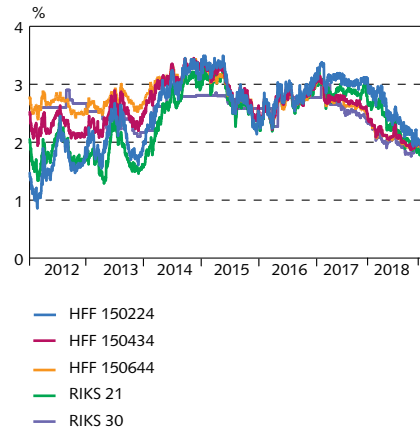
## II Financial markets

Chart II-1  
Domestic financial market turnover



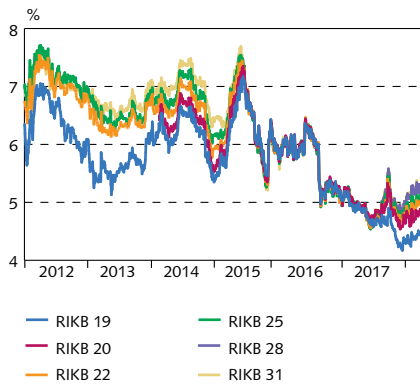
Sources: Nasdaq Iceland, Central Bank of Iceland.

Chart II-2  
Indexed bond yields



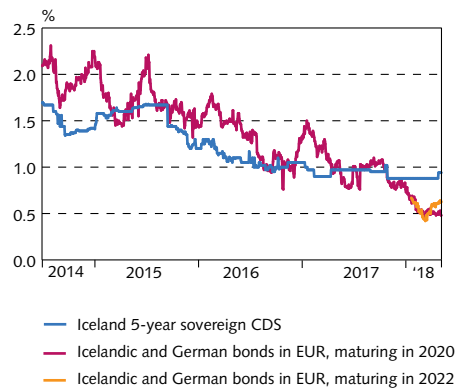
Source: Nasdaq Iceland.

Chart II-3  
Indexed bond yields



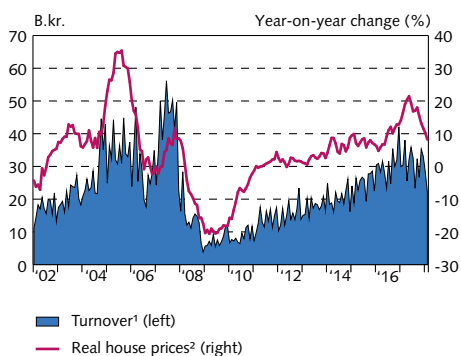
Source: Nasdaq Iceland.

Chart II-4  
Government bond spreads



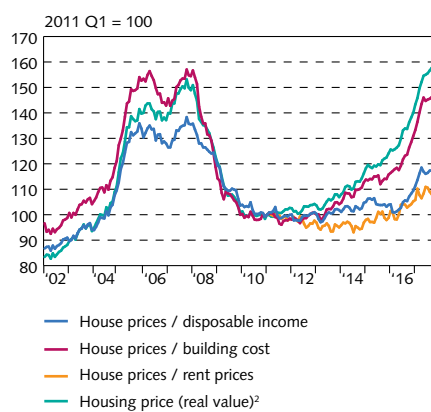
Source: Thomson Reuters.

Chart II-5  
Housing market prices and turnover



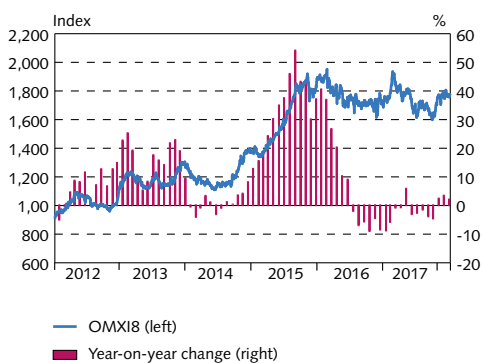
1. February 2018 price level. 2. Deflated with the consumer price index.  
Sources: Registers Iceland, Central Bank of Iceland.

Chart II-6  
House prices<sup>1</sup>



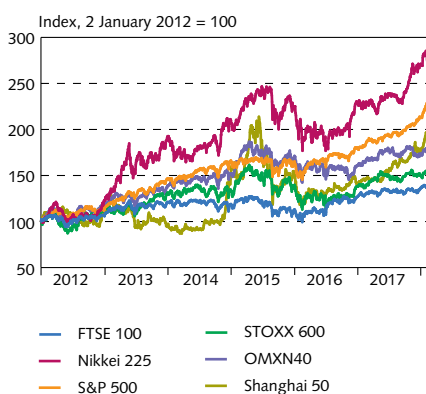
1. House price index relative to disposable income, building cost index and rent price index. 2. House price index, deflated with the consumer price index.  
Sources: Statistics Iceland, Registers Iceland, Central Bank of Iceland.

Chart II-7  
OMX18 share price index



Source: Nasdaq Iceland.

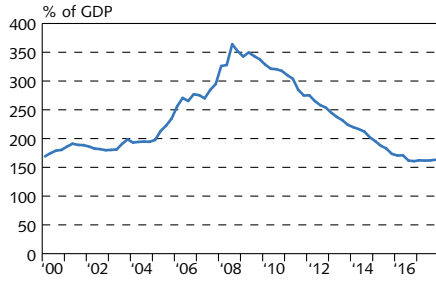
Chart II-8  
Share price indices



Source: Thomson Reuters.

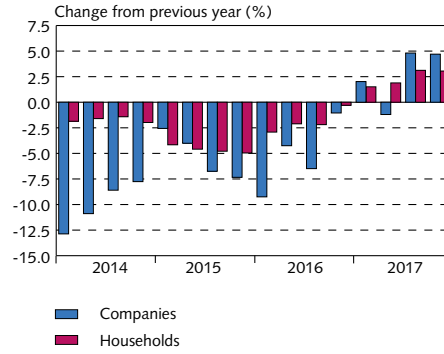
## III Households and businesses

Chart III-1  
Private sector credit-to-GDP



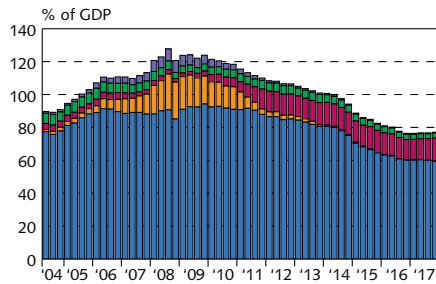
Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-2  
Real private sector credit growth<sup>1</sup>



■ Companies  
■ Households

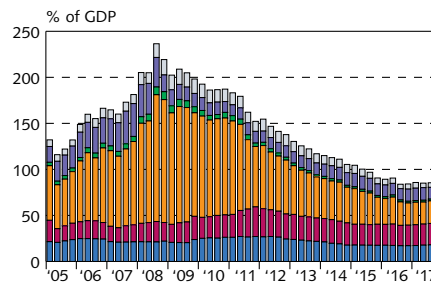
Chart III-3  
Households: Debt as % of GDP



■ Indexed  
■ Non-indexed  
■ Foreign currency  
■ Overdraft  
■ Asset financing

Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-4  
Companies: Debt as % of GDP<sup>1</sup>

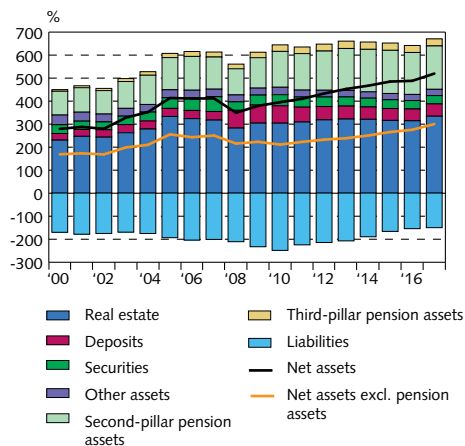


■ Indexed  
■ Non-indexed  
■ FX loans  
■ Asset financing agreements  
■ Domestic bonds issued  
■ Foreign bonds issued

1. Debt owed to domestic and foreign financial undertakings and market bonds issued. Excluding debt owed by holding companies.  
Sources: Statistics Iceland, Central Bank of Iceland.

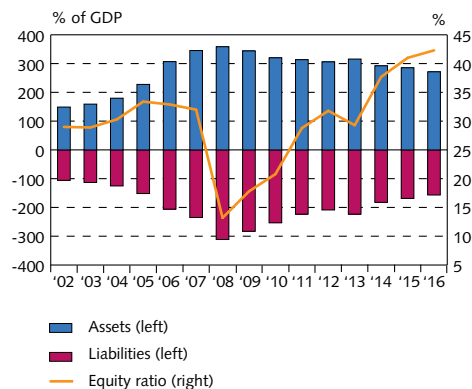


Chart III-5  
Households: Assets and liabilities as share of disposable income<sup>1</sup>



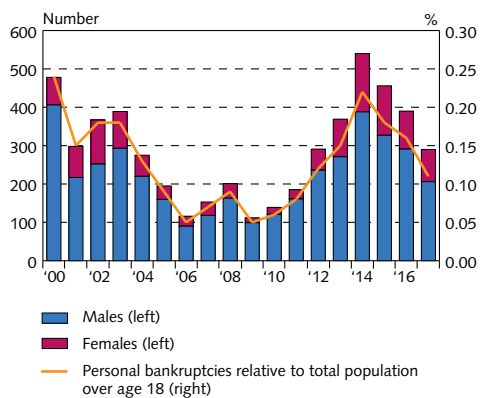
1. Pension fund assets are based on payouts after deduction of 30% income tax.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-6  
Companies: Assets and liabilities as % of GDP and equity ratio<sup>1</sup>



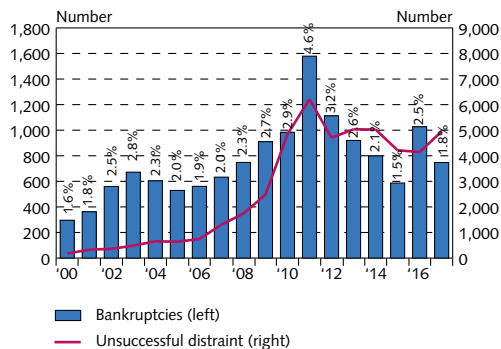
1. Commercial economy excluding pharmaceuticals, financial, and insurance companies (ISAT no. 03-20, 22-63, 68-82, 95-96).  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart III-7  
Individuals: Personal bankruptcies<sup>1</sup>



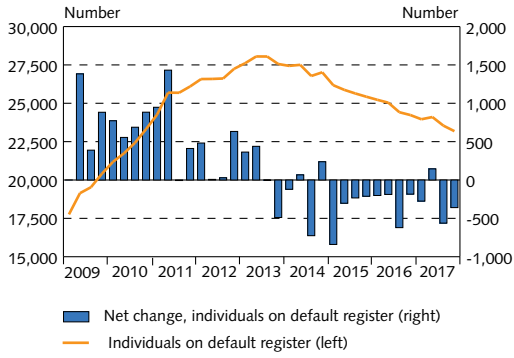
1. Total for entire year.  
Sources: Council of District Court Administration, Statistics Iceland.

Chart III-8  
Companies: Bankruptcies and unsuccessful distraint actions<sup>1</sup>



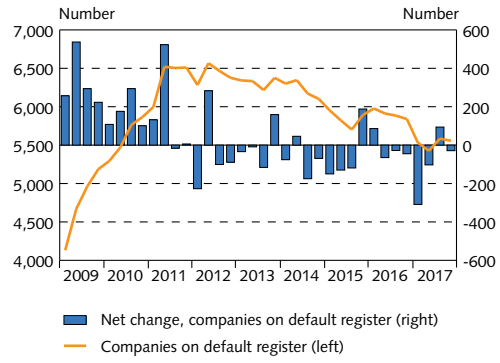
1. The percentages show bankruptcies as a share of the total number of firms.  
Sources: Registers Iceland, Statistics Iceland, Central Bank of Iceland.

Chart III-9  
Individuals: Number on default register



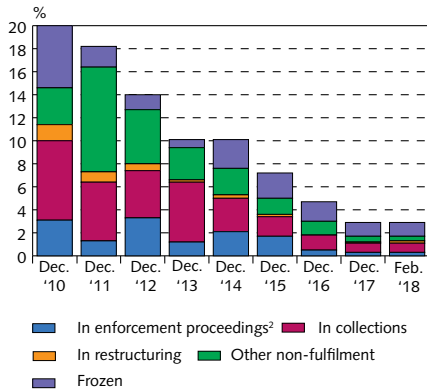
Source: CreditInfo.

Chart III-10  
Companies: Number on default register



Source: CreditInfo.

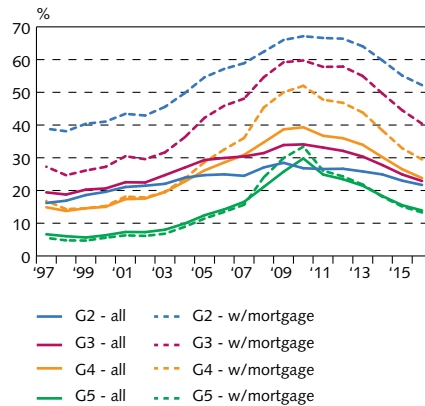
Chart III-11  
Households: Non-performing loans from D-SIBs and the HFF<sup>1</sup>  
Cross-default method



1. Domestic systemically important banks, parent companies, book value. 2. The share of loans in enforcement proceedings and collections declined in December 2011 because the HFF did not send out dunning letters or forced sale requests in the latter half of the month.

Source: Financial Supervisory Authority.

Chart III-12  
Share of taxpayers owing more than 300% of disposable income<sup>1</sup>  
By income group and debtor type

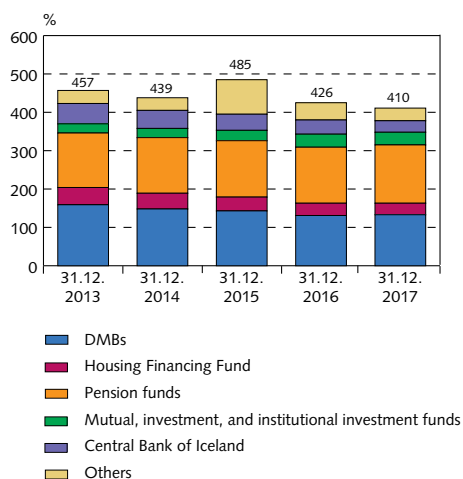


1. The broken lines show the share of taxpayers with mortgage debt whose total debt exceeds 300% of their disposable income. The lowest-income group, G1, is not shown.

Sources: Statistics Iceland, Central Bank of Iceland.

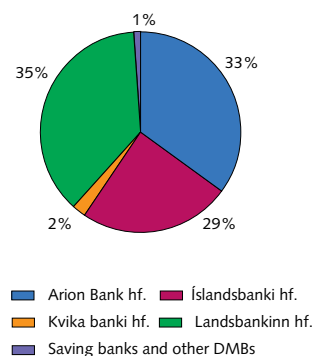
## IV The financial system

Chart IV-1  
Financial system: Assets as % of GDP<sup>1</sup>



1. Parent companies.  
Source: Central Bank of Iceland.

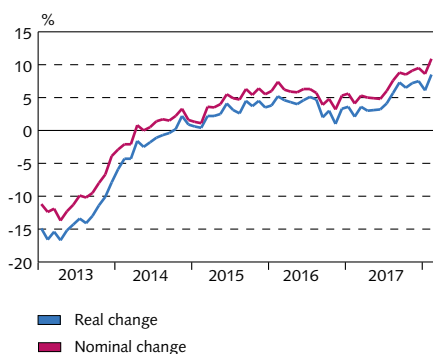
Chart IV-2  
DMBs: Share of total assets<sup>1</sup>  
December 2017



1. Parent companies.  
Source: Central Bank of Iceland.

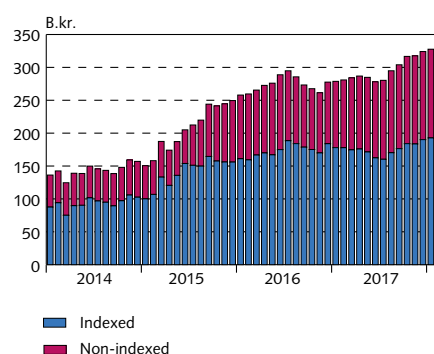
## V Systemically important banks and deposit institutions – lending

Chart V-1  
D-SIB: Lending to households and companies<sup>1</sup>



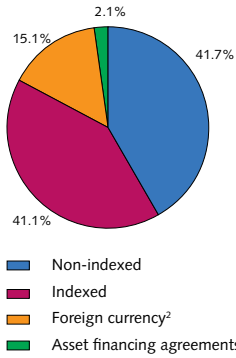
1. Annual changes. Adjusted for Government debt relief measures.  
Source: Central Bank of Iceland.

Chart V-2  
D-SIB: Net new lending to firms and households<sup>1</sup>



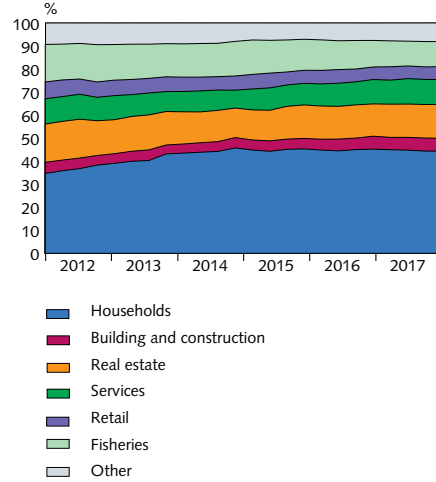
1. New loans net of prepayments. 12-months moving total. Prepayments are payments in excess of contractual payments.  
Source: Central Bank of Iceland.

Chart V-3  
DMBs: Distribution of loans by type<sup>1</sup>  
At the end year 2017



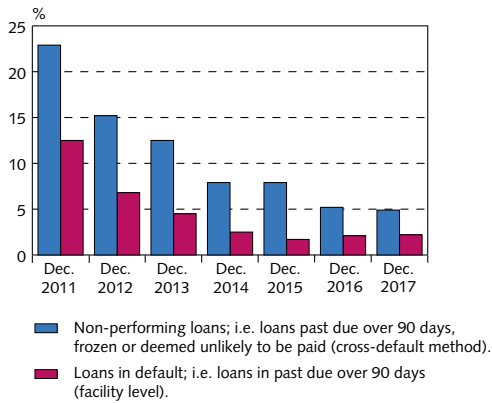
1. Parent companies. 2. Foreign currency loans include exchange rate-linked loans.  
Source: Central Bank of Iceland.

Chart V-4  
D-SIB: Classification of lending<sup>1</sup>



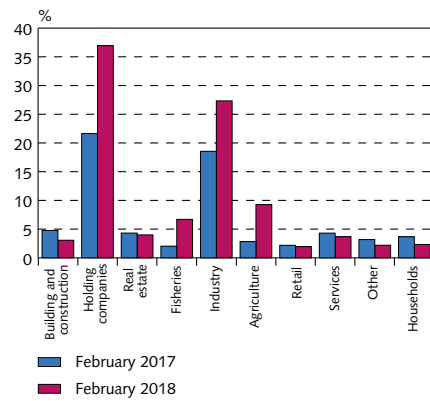
1. Loans to each sector as a share of total lending to households and operating companies.  
Source: Central Bank of Iceland.

Chart V-5  
D-SIB: Default ratios<sup>1</sup>



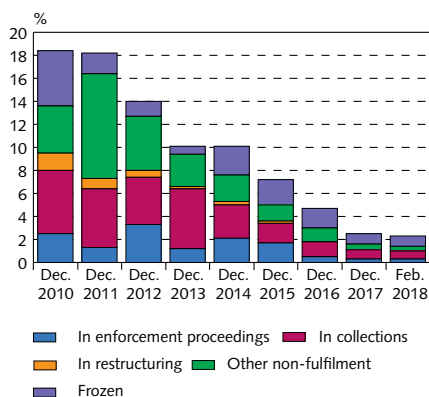
1. Domestic systemically important banks, parent companies, book value.  
Sources: Financial Supervisory Authority, Central Bank of Iceland.

Chart V-6  
D-SIB: Non-performing loan ratios<sup>1</sup>



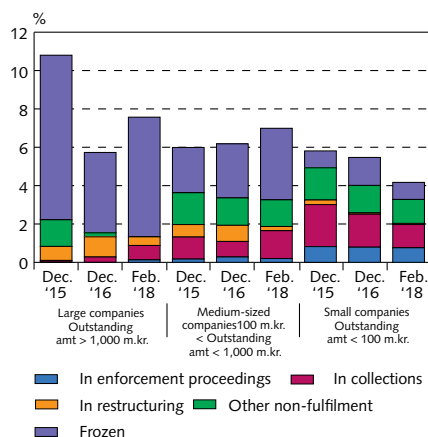
1. Domestic systemically important banks, parent companies, book value.  
Source: Financial Supervisory Authority.

Chart V-7  
D-SIB: Status of non-performing loans to households<sup>1</sup>



1. Parent companies, book value.  
Source: Financial Supervisory Authority.

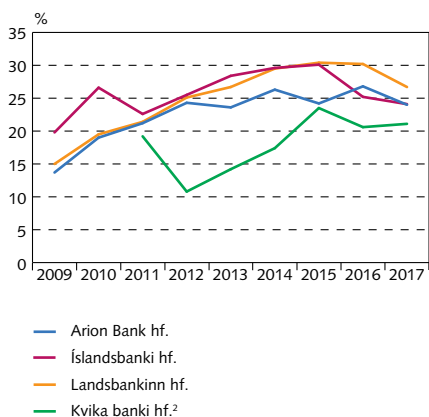
Chart V-8  
D-SIB: Status of non-performing corporate loans, by claim amount<sup>1</sup>



1. Percentage of total loans in each size category. Domestic systemically important banks, parent companies, book value.  
Source: Financial Supervisory Authority.

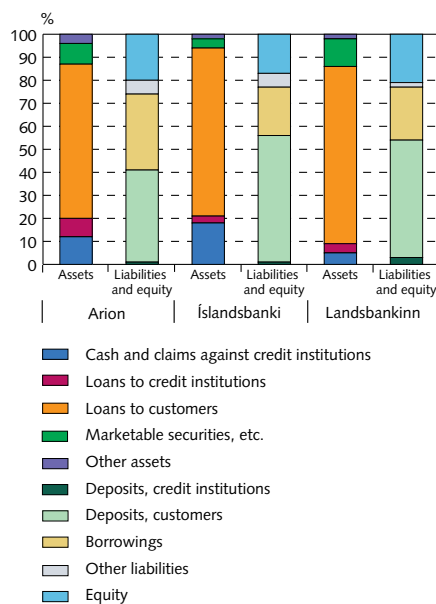
## VI Systemically important banks and other deposit institutions – operations and liquidity

Chart VI-1  
Commercial banks: Capital adequacy ratios<sup>1</sup>



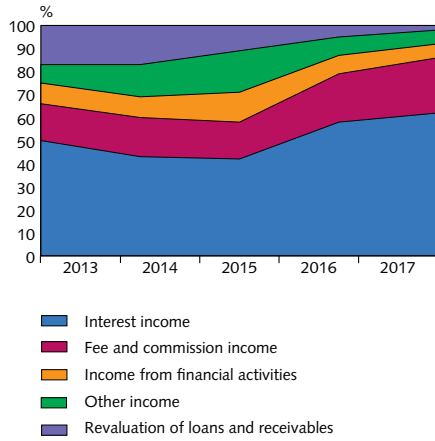
1. Consolidated figures. Capital base as % of risk-weighted base. CAR for MP bank until 2015.  
Sources: Commercial banks' financial statements.

Chart VI-2  
D-SIB: Assets, liabilities and equity<sup>1</sup>  
End of year 2017



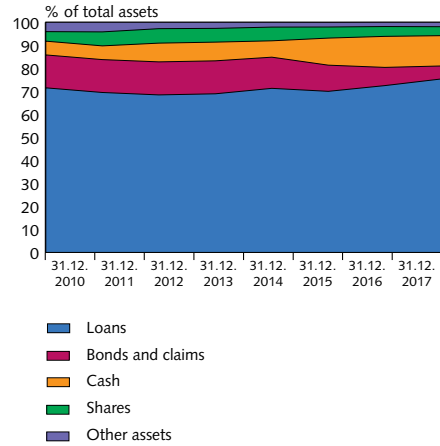
1. Domestic systemically important banks, consolidated accounts.  
Sources: Commercial banks' financial statements, Central bank of Iceland.

Chart VI-3  
D-SIB: Operating income<sup>1</sup>



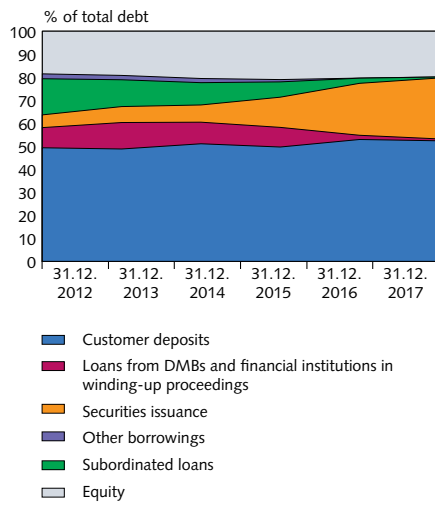
1. Domestic systemically important banks, consolidated figures.  
Sources: Commercial banks' financial statements, Central bank of Iceland.

Chart VI-4  
D-SIB: Assets<sup>1</sup>



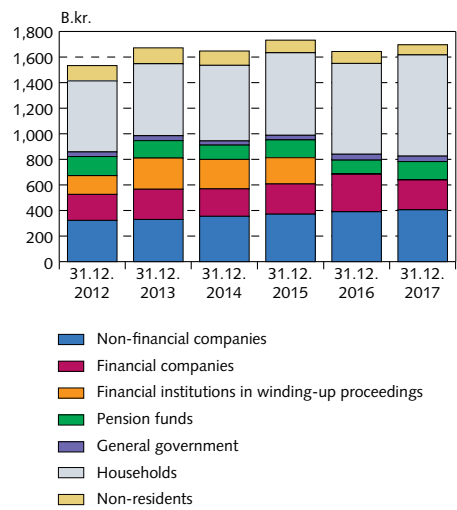
1. Domestic systemically important banks, parent companies.  
Source: Central Bank of Iceland.

Chart VI-5  
D-SIB: Funding<sup>1</sup>



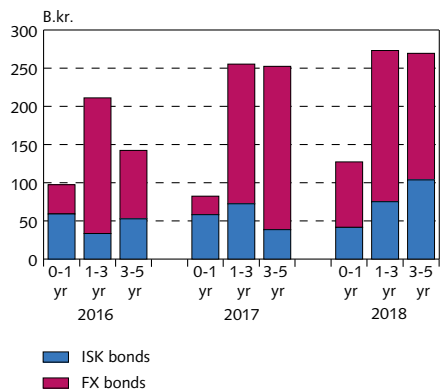
1. Domestic systemically important banks, parent companies.  
Including pension fund deposits.  
Sources: Statistics Iceland, Central Bank of Iceland.

Chart VI-6  
D-SIB: Depositors<sup>1</sup>



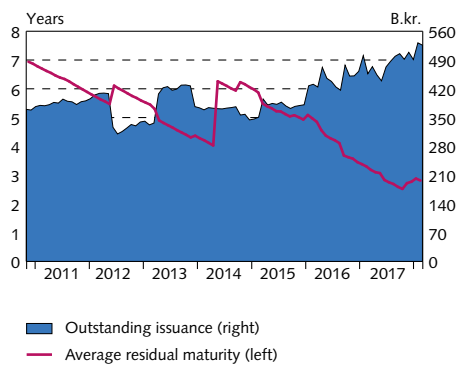
1. Domestic systemically important banks, parent companies.  
Source: Central Bank of Iceland.

Chart VI-7  
D-SIB: Bond maturities<sup>1</sup>



1. Instalments and interest. Domestic systemically important banks, parent companies figures. As of end-February each year.  
Source: Central Bank of Iceland.

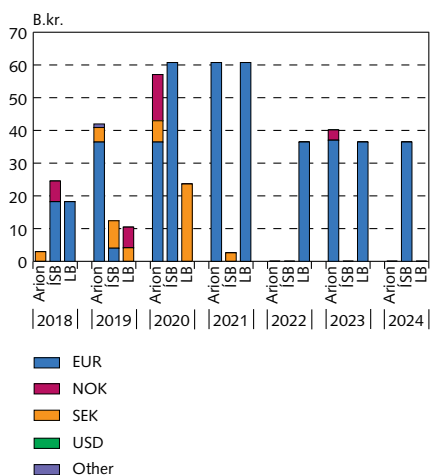
Chart VI-8  
D-SIB: Average residual maturity and total issuance of funding in foreign currency<sup>1</sup>



■ Outstanding issuance (right)  
— Average residual maturity (left)

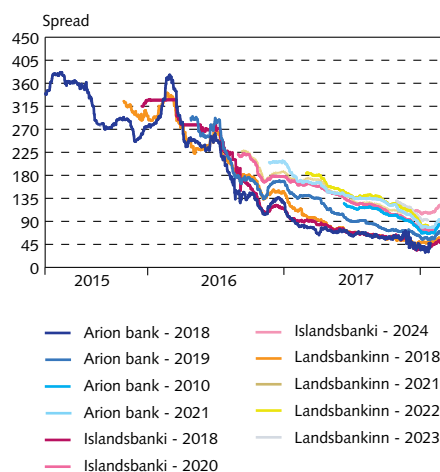
1. D-SIB: Domestic systemically important banks.  
Sources: Nasdaq Iceland, Central Bank of Iceland.

Chart VI-9  
D-SIB: Foreign bonds by maturity and currency<sup>1</sup>



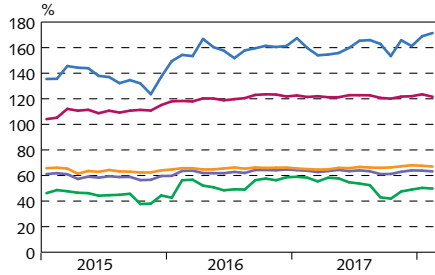
1. At 31 March 2018 exchange rate. Not included in the chart is Arion bank NOK issue maturing in 2027, in the total amount of 3,2 b.kr. and Tier 2 issuance from Islandsbanki, in the total amount of 9,3 B.kr., maturing in 2027.  
Source: Nasdaq Iceland.

Chart VI-10  
D-SIB: Spread on listed foreign bonds, EUR<sup>1</sup>



1. Spread on Euro benchmark curve.  
Source: Bloomberg.

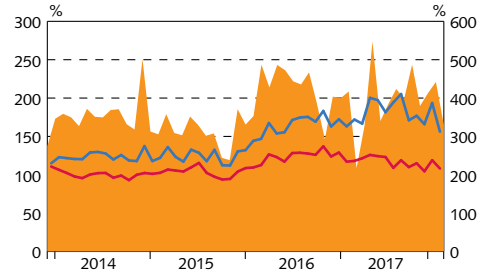
Chart VI-11  
D-SIB: NSFR ratio and ratio of core funding to total funding<sup>1</sup>



- NSFR FX
- NSFR Total<sup>2</sup>
- Core funding ratio - ISK
- Core funding ratio - FX
- Core funding ratio - Total

1. D-SIB: Domestic systemically important banks. Core funding is defined here as deposits held by resident individuals and non-financial companies (excluding pension funds), plus capital, subordinated loans, and issued negotiable securities with a residual maturity of more than three years. 2. According to Central Bank rules on stable funding, the Bank also monitors the NSFR for all currencies combined.  
Source: Central Bank of Iceland.

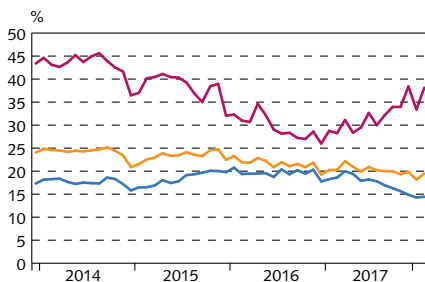
Chart VI-12  
D-SIB: Liquidity coverage ratio<sup>1</sup>



- LCR Total (left)
- 3-month LCR<sup>2</sup> (left)
- LCR FX (right)

1. Domestic systemically important banks, consolidated figures  
2. In accordance with older liquidity rules. New LCR rules were implemented in March 2017.  
Source: Central Bank of Iceland.

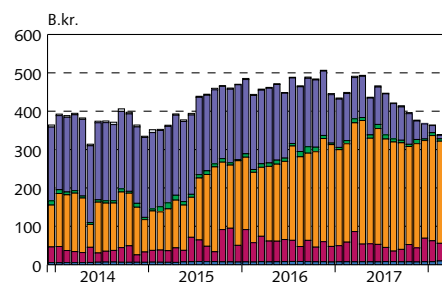
Chart VI-13  
DMBs: Ratio of liquid assets to total assets<sup>1</sup>



- ISK
- FX
- Total

1. Parent companies.  
Source: Central Bank of Iceland.

Chart VI-14  
D-SIB: Liquid assets<sup>1</sup>



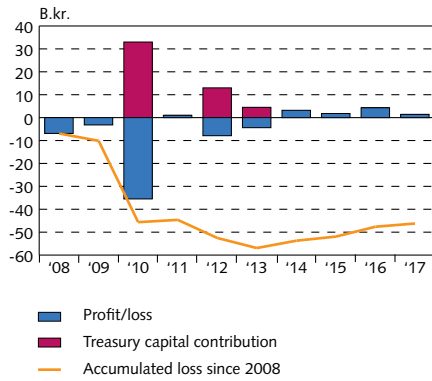
- Cash
- Sight deposits with central banks
- Term deposits with the Central Bank of Iceland
- Icelandic Government securities with market making
- Other Government bonds and obligations eligible as collateral for CBI facilities
- Other

1. Liquid assets in Icelandic krónur. 2. Domestic systemically important banks, parent companies.  
Source: Central Bank of Iceland.



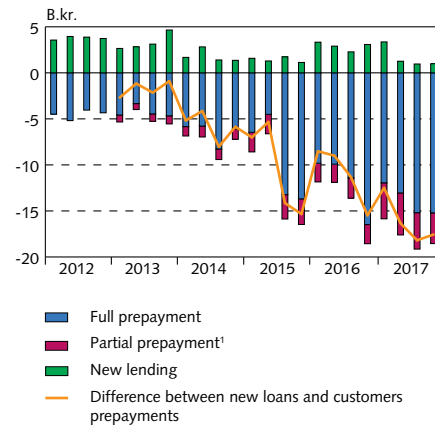
## VII Other financial market entities

Chart VII-1  
HFF: Profit/loss and Treasury capital contribution



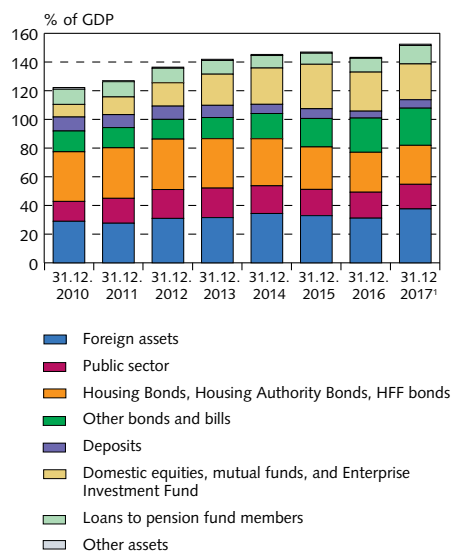
Sources: HFF annual and semi-annual accounts.

Chart VII-2  
HFF: Prepayment of customer loans and new lending



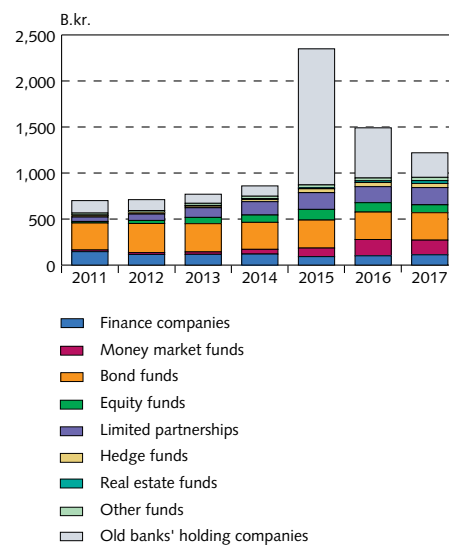
1. Data for 2012 not available.  
Source: Housing Financing Fund.

Chart VII-3  
Pension funds: Distribution of assets



1. Based on preliminary figures.  
Sources: Statistics Iceland, Central Bank of Iceland.

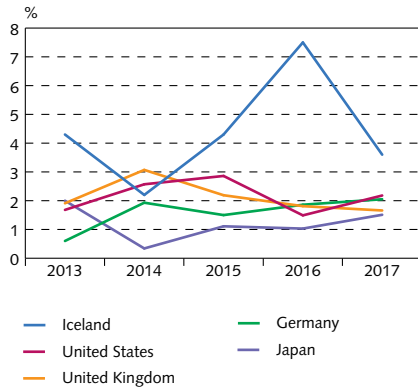
Chart VII-4  
Size of the shadow banking system



Source: Central Bank of Iceland.

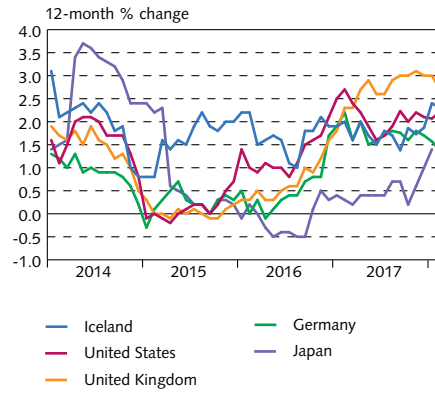
# VIII International comparison

Mynd VIII-1  
Output growth



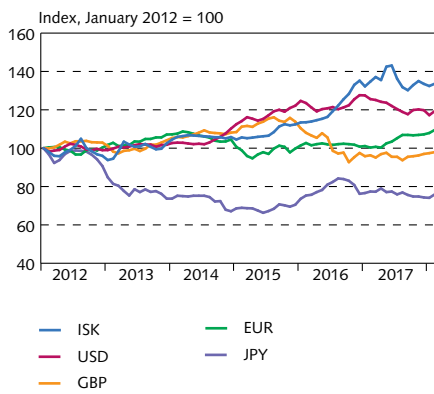
Sources: Statistics Iceland, Thomson Reuters.

Chart VIII-2  
Inflation<sup>1</sup>



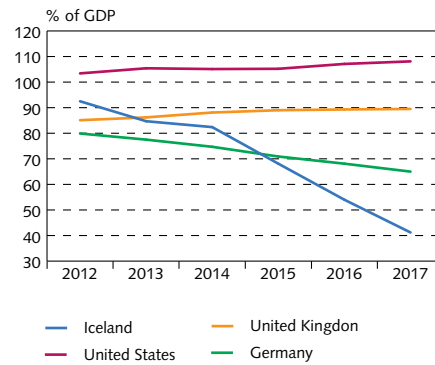
1. Consumer price index.  
Sources: Statistics Iceland, Thomson Reuters

Chart VIII-3  
Currency exchange rates<sup>1</sup>



1. BIS nominal indices.  
Source: BIS.

Chart VIII-4  
Government debt



Source: IMF

Chart VIII-5  
Real estate prices

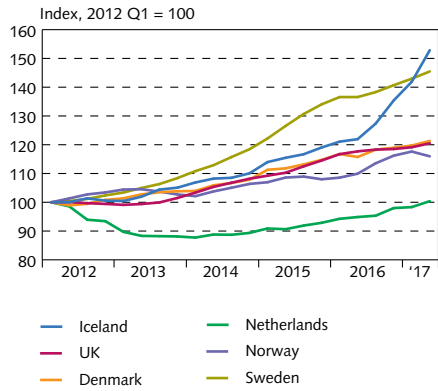


Chart VIII-6  
Households: Debt as share of disposable income

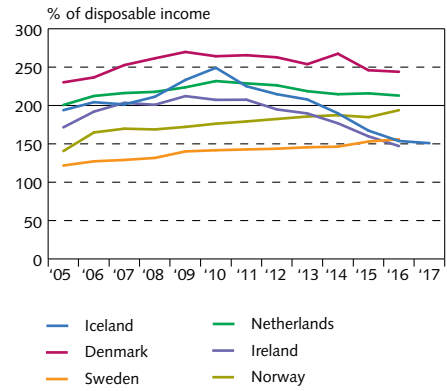


Chart VIII-7  
Households: Debt as share of GDP

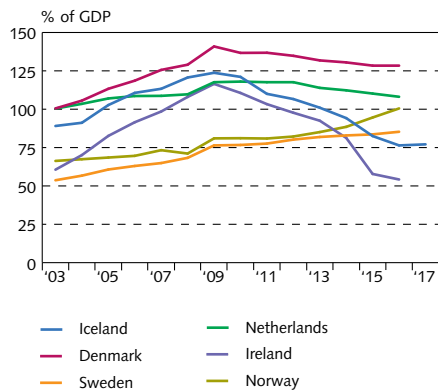


Chart VIII-8  
Corporate debt as percentage of GDP<sup>1</sup>

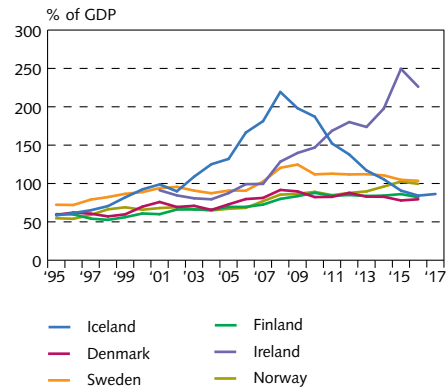
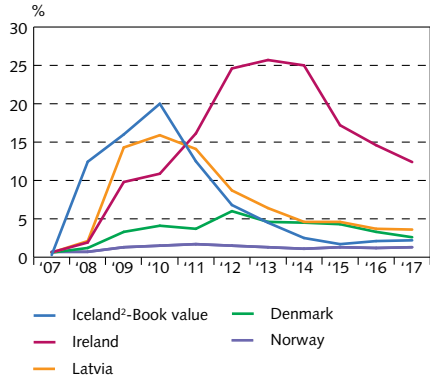
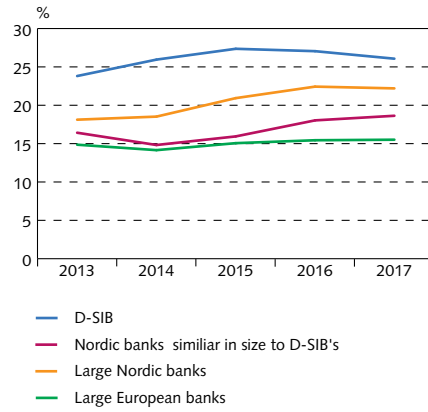


Chart VIII-9  
Default ratios<sup>1</sup>



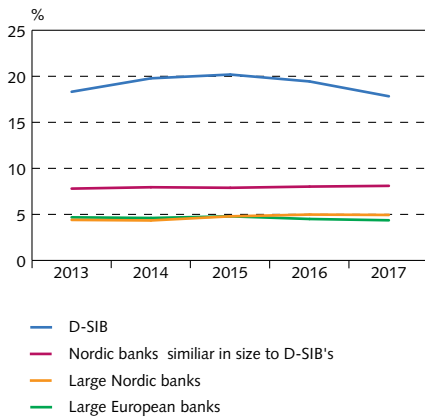
1. Households and corporates. Banks' non-performing loans as a percentage of gross loan portfolio w/o write-downs. 2017-Q3 figures for Denmark, Ireland and Greece and 2017-Q2 figures for Norway.  
2. 2007: Figures estimated from the annual accounts of the failed banks. 2008: Central Bank estimates.  
Sources: Financial Supervisory Authority, International Monetary Fund, World Bank, Central Bank of Iceland.

Chart VIII-10  
Tier 1 ratio  
Average of ratios



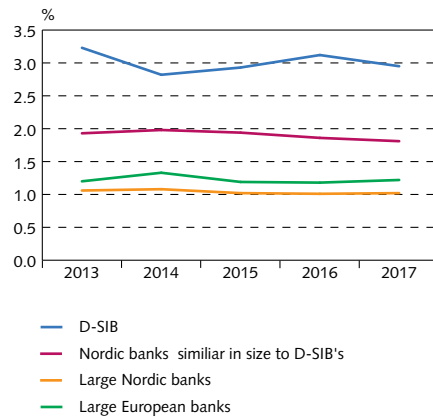
Source: S&P Global Market Intelligence.

Chart VIII-11  
Leverage ratio<sup>1</sup>  
Average of ratios



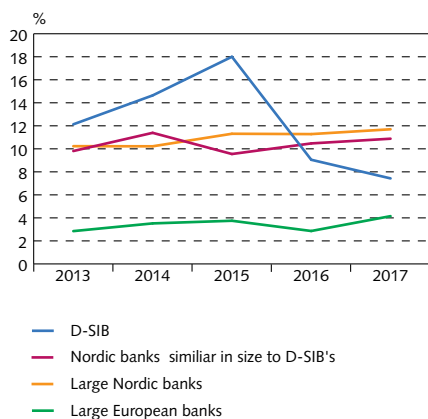
1. IFRS Tier 1 leverage ratio.  
Source: S&P Global Market Intelligence.

Chart VIII-12  
Net interest margin  
Average of ratios



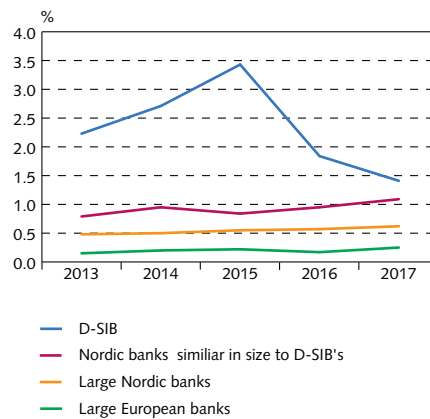
Source: S&P Global Market Intelligence.

Chart VIII-13  
Return on equity  
Average of ratios



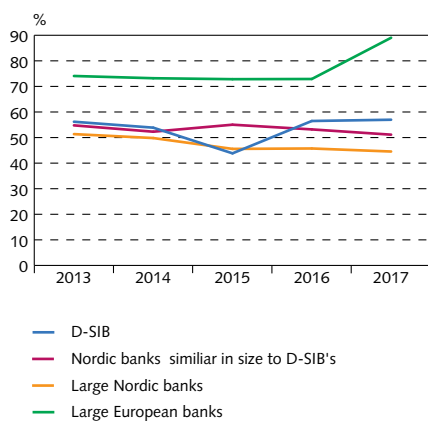
Source: S&P Global Market Intelligence.

Chart VIII-14  
Return on total assets  
Average of ratios



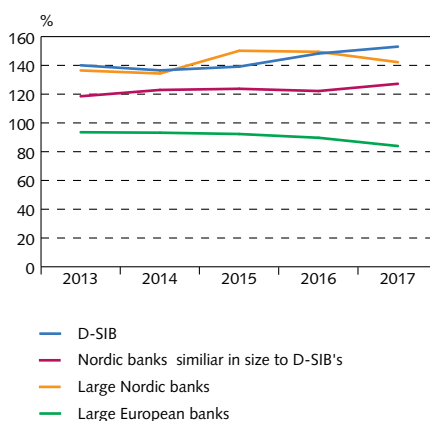
Source: S&P Global Market Intelligence.

Chart VIII-15  
Cost-to-income  
Average of ratios



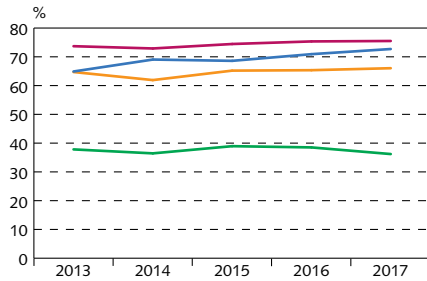
Source: S&P Global Market Intelligence.

Chart VIII-16  
Loans/deposits  
Average of ratios



Source: S&P Global Market Intelligence.

Chart VIII-17  
Loans/assets  
Average of ratios



- D-SIB
- Nordic banks similar in size to D-SIB's
- Large Nordic banks
- Large European banks

Source: S&P Global Market Intelligence.

## Appendix II

### Tables

Table 1 Financial system assets<sup>1</sup>

Assets, b.kr	31.12. 2013	31.12. 2014	31.12. 2015	31.12. 2016	31.12. 2017	Change from 31.12. 2016, %
Central bank of Iceland	1,004	957	948	901	760	-16
Commercial banks	2,968	2,939	3,175	3,199	3,381	6
Savings banks	60	59	22	23	24	3
Other credit institutions <sup>1</sup>	1,340	1,328	2,653	1,720	1,407	-18
- Housing Financing Fund	863	824	804	787	761	-3
Pension funds	2,696	2,935	3,284	3,584	3,894	9
Insurance companies	165	169	171	177	186	5
Mutual, investment, and institutional funds	452	488	596	845	833	-1
<b>Total assets</b>	<b>8,685</b>	<b>8,874</b>	<b>10,849</b>	<b>10,448</b>	<b>10,486</b>	<b>0</b>

1. Failed banks' holding companies are included from 31.12.2015.

Source: Central Bank of Iceland

Table 2 DMB assets

Assets, b.kr.	31.12. 2013	31.12. 2014	31.12. 2015	31.12. 2016	31.12. 2017	Change from 31.12. 2016, %
Cash and cash balance with Central Bank	184,184	139,069	294,599	385,056	378,701	-2
Deposits in domestic deposit-taking corporations	3,993	5,286	2,888	4,176	6,066	45
Deposits in foreign deposit-taking corporations	84,187	91,729	99,074	56,299	77,887	38
Domestic credit	1,901,695	1,980,343	2,072,205	2,187,741	2,407,763	10
Foreign credit	184,077	162,477	142,601	132,419	133,857	1
Domestic marketable bonds and bills	266,856	270,133	263,711	206,056	116,001	-44
Foreign marketable bonds and bills	163,054	133,415	99,227	53,590	85,778	60
Domestic equities and investment fund shares	147,036	144,260	152,631	130,720	114,558	-12
Foreign equities and investment fund shares	2,771	2,786	1,844	2,197	14,276	550
Other domestic assets	86,654	63,576	62,516	56,906	57,447	1
Other foreign assets	3,909	4,315	5,767	6,703	12,478	86
<b>Total</b>	<b>3,028,416</b>	<b>2,997,389</b>	<b>3,197,062</b>	<b>3,221,861</b>	<b>3,404,812</b>	<b>6</b>

Source: Central Bank of Iceland.

Table 3 Other financial corporations' assets

Assets, b.kr.	31.12. 2013	31.12. 2014	31.12. 2015	31.12. 2016	31.12. 2017	Change from 31.12. 2016, %
Cash and cash balance with Central Bank	24,472	41,944	38,819	77,712	92,311	19
Deposits in domestic deposit-taking corporations	84,692	72,135	233,424	73,233	46,465	-37
Deposits in foreign deposit-taking corporations	11,326	76,326	616,589	60,734	37,924	-38
Domestic credit	1,051,141	1,013,568	944,089	873,757	799,007	-9
Foreign credit	11,874	7,900	163,189	136,426	64,940	-52
Domestic marketable bonds and bills	45,123	42,401	241,551	217,461	178,270	-18
Foreign marketable bonds and bills	861	1,076	4,965	3,501	998	-72
Domestic equities and investment fund shares	13,486	11,864	221,386	160,510	104,885	-35
Foreign equities and investment fund shares	42,438	7,603	94,481	68,507	46,380	-32
Other domestic assets	51,417	50,667	68,700	35,655	29,983	-16
Other foreign assets	3,529	2,521	25,483	12,323	6,268	-49
<b>Total</b>	<b>1,340,358</b>	<b>1,328,006</b>	<b>2,652,676</b>	<b>1,719,819</b>	<b>1,407,431</b>	<b>-18</b>

Source: Central Bank of Iceland.

Table 4 Pension fund assets

Assets, b.kr.	31.12. 2013	31.12. 2014	31.12. 2015	31.12. 2016	31.12. 2017	Change from 31.12. 2016, %
Deposits in domestic deposit-taking corporations	161,525	129,275	151,726	117,992	150,435	28
Deposits in foreign deposit-taking corporations	3,239	6,273	8,605	18,450	20,455	11
Domestic credit	176,127	171,063	175,253	238,182	331,301	39
Foreign credit	-	-	80	200	268	34
Domestic marketable bonds and bills	1,325,519	1,408,405	1,509,429	1,751,677	1,790,100	2
Foreign marketable bonds and bills	4,245	3,269	1,777	1,011	609	-40
Domestic equities and investment fund shares	412,588	511,373	692,267	681,198	637,552	-6
Foreign equities and investment fund shares	591,541	685,428	724,540	750,092	938,593	25
Domestic insurance and pension entitlements	13,214	13,291	14,281	17,313	17,292	0
Foreign insurance and pension entitlements	-	-	35	44	63	42
Other domestic assets	7,578	6,695	6,335	7,874	7,338	-7
Other foreign assets	-	-	3	1	1	0
Total	2,695,575	2,935,072	3,284,331	3,584,033	3,894,007	9

Source: Central Bank of Iceland.

Table 5 Insurance company assets

Assets, b.kr.	31.12. 2013	31.12. 2014	31.12. 2015	31.12. 2016	31.12. 2017	Change from 31.12. 2016, %
Cash and cash balance with Central Bank	-	-	1,753	2,053	1,124	-45
Deposits in domestic deposit-taking corporations	13,832	8,394	7,258	4,452	4,652	5
Deposits in foreign deposit-taking corporations	1,017	68	1,395	208	149	-28
Domestic credit	3,070	2,880	1,239	1,487	3,449	132
Foreign credit	8	1	0	0	0	0
Domestic marketable bonds and bills	68,390	70,578	66,092	67,595	67,478	0
Foreign marketable bonds and bills	3,658	4,495	3,999	3,740	4,467	19
Domestic equities and investment fund shares	37,806	43,745	53,421	60,664	65,696	8
Foreign equities and investment fund shares	6,708	6,932	6,457	5,945	8,182	38
Domestic insurance and pension entitlements	19,287	19,911	17,024	17,869	20,331	14
Foreign insurance and pension entitlements	1,162	1,521	7,257	7,451	5,881	-21
Other domestic assets	8,263	8,771	3,835	4,426	3,226	-27
Other foreign assets	1,493	1,269	1,117	1,312	1,492	14
Total	164,694	168,565	170,847	177,202	186,128	5

Source: Central Bank of Iceland.



Table 6 D-SIB: Income and expenses<sup>1</sup>

<i>Income and expenses, b.kr</i>	31.12. 2013	31.12. 2014	31.12. 2015	31.12. 2016	31.12. 2017	<i>Change from 31.12. 2017, %</i>
<i>Arion Bank hf.</i>						
Operating income	44,211	54,328	86,620	54,774	56,273	3
Net interest income	23,800	24,220	26,992	29,900	29,835	0
Net fee and commission income	11,223	13,309	14,484	13,978	15,357	10
Other operating income	9,188	16,799	45,144	10,896	11,081	2
Operating expenses	25,072	26,701	27,811	30,540	32,630	7
Change in loan values	680	-2,135	3,087	-7,236	-186	-97
Income tax expense	6,052	7,458	6,043	9,731	9,204	-5
Net gain from discontinued operations, net of tax	250	6,290	0	0	-206	-
Profit	12,657	28,594	49,679	21,739	14,419	-34
<i>Íslandsbanki hf.</i>						
Operating income	42,597	42,443	44,673	52,716	60,759	15
Net interest income	28,430	27,105	28,010	31,802	35,594	12
Net fee and commission income	10,433	11,483	13,170	13,723	14,276	4
Other operating income	3,734	3,855	3,493	7,191	10,889	51
Operating expenses	26,567	23,956	24,827	26,478	28,129	6
Change in loan values	-16,299	-8,810	-8,135	-735	6,665	-1,007
Income tax expense	10,187	8,683	8,729	9,754	10,779	11
Net gain from discontinued operations, net of tax	927	4,136	1,326	2,939	4,552	55
Profit	23,069	22,750	20,578	20,158	19,738	-2
<i>Landsbankinn hf.</i>						
Operating income	55,240	43,486	54,395	49,018	43,641	-11
Net interest income	34,314	28,073	32,324	34,650	36,976	7
Net fee and commission income	5,291	5,836	6,841	7,809	8,777	12
Other operating income	15,635	9,577	15,230	6,559	-2,112	-132
Operating expenses	27,206	24,088	23,732	23,514	23,296	-1
Change in loan values	-13,053	-20,128	-18,216	318	18,852	5,828
Income tax expense	12,328	9,789	12,419	8,543	4,667	-45
Net gain from discontinued operations, net of tax	0	0	0	0	0	-
Profit	28,759	29,737	36,460	16,643	-3,174	-119
<i>D-SIBs</i>						
Operating income	142,048	140,257	185,688	156,508	160,673	3
Net interest income	86,544	79,398	87,326	96,352	102,405	6
Net fee and commission income	26,947	30,628	34,495	35,510	38,410	8
Other operating income	28,557	30,231	63,867	24,646	19,858	-19
Operating expenses	78,845	74,745	76,370	80,532	84,055	4
Change in loan values	-28,672	-31,073	-23,264	-7,653	25,331	-431
Income tax expense	28,567	25,930	27,191	28,028	24,650	-12
Net gain from discontinued operations, net of tax	1,177	10,426	1,326	2,939	4,346	48
Profit	64,485	81,081	106,717	58,540	30,983	-47

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

Source: SNL Financial.

Table 7 D-SIB: Key ratios

%	31.12.2013	31.12.2014	31.12.2015	31.12.2016	31.12.2017
Return on equity	12.2	14.1	16.8	8.9	7.4
Return on assets	2.2	2.7	3.5	1.8	1.4
Expenses as a share of net interest and commission income	71.0	68.0	63.0	62.0	61.0
Expenses as a share of total assets	2.8	2.5	2.5	2.6	2.5
Net interest and commission income as a share of total income	66.0	64.0	58.0	81.0	88.0
Net interest as a share of total assets	3.0	2.7	2.9	3.0	2.9
Capital ratio	26.2	28.5	28.2	27.7	25.0
Foreign exchange balance, % of capital base	6.4	6.1	2.1	-0.5	0.5
Liquidity coverage ratio (LCR) total	116.6	137.4	130.5	163.0	165.9
Liquidity coverage ratio (LCR) FX	360.4	501.8	371.0	403.8	412.8
Net stable funding (NSFR) total		104.5	115.4	123.0	122.2
Net stable funding (NSFR) FX		136.7	136.9	161.8	161.5

Source: Central Bank of Iceland.

Table 8 Commercial banks' foreign bond issues last 12 months (1 April 2017 - 31.March 2018)

Issuer	Date	Currency	Amount B.kr.	Years	Premium on interbank rate, <sup>1</sup> %
Arion Bank	April 2017	NOK	3.1	6.0	3.02 fixed
	April 2017	NOK	3.1	10.0	3.40 fixed
	June 2017	EUR	34.0	3.0	0.75 fixed
	September 2017	SEK	1.3	2.0	0.29 fixed
	September 2017	SEK	3.4	3.0	0.75
	March 2018	EUR	37.0	5.0	1.0 fixed
Total			81.9		
Íslandsbanki	July 2017	EUR	0.4	1.5	0.4
	September 2017	EUR	1.3	1.5	0.38
	September 2017	EUR	1.3	1.5	0.38
	September 2017	EUR	1.3	1.5	0.5
	January 2018	EUR	38.0	6.0	1.125 fixed
	January 2018	SEK	1.3	1.9	0.34 fixed
	February 2018	SEK	1.3	3.0	0.74 fixed
	February 2018	SEK	1.3	3.0	0.6
Total			46.1		
Landsbankinn	June 2017	SEK	8.4	4.0	1.0
	June 2017	SEK	3.6	4.0	0.75 fixed
	November 2017	EUR	36.7	5.5	1.0 fixed
Total			48.7		

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

Source: Nasdaq Iceland.

Table 9 Capital buffers

Capital buffer	FSC recommendation	FME decision	Value %	Applicable from
Systemic risk buffer, D-SIB	22.1.2016	1.3.2016	3	1.1.2017
Systemic risk buffer, other DMBs	22.1.2016		1.5	1.1.2017
	22.1.2016	1.3.2016	2	1.1.2018
			3	1.1.2019
Capital buffer on systemically important institutions	22.1.2016	1.3.2016	2	1.4.2016
Countercyclical capital buffer	22.1.2016	1.3.2016	1	1.3.2017
	30.9.2016	1.11.2016	1.25	1.11.2017
Capital conservation buffer			2.5	1.1.2017

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

Table 10 Indicators pertaining to the international investment position

	Unit	2012	2013	2014	2015	2016	2017
Net IIP <sup>1</sup>	% of GDP	-72.2	-51.3	-42.7	4.8	4.0	7.5
External debt <sup>2</sup>	% of GDP	187.4	163.5	155.1	118.9	102.4	81.9
Treasuries' FX debt as a share of total debt	%	29.6	26.9	27.9	23.0	18.1	12.8
DMBs' FX-denominated bonds	% of GDP	19.0	19.8	17.0	17.1	18.9	19.6
Current account <sup>3</sup>	% of GDP	2.9	7.4	5.4	5.9	6.7	3.3
FX reserves	% of GDP	30.2	25.7	26.2	29.2	33.3	26.9
FX reserves financed in ISK	% of GDP	-4.7	-4.1	1.0	13.6	24.2	21.6
FX reserves/RAM	%	77.3	70.0	80.1	115.9	179.1	159.5
Terms of trade	Value	77.6	76.5	83.6	84.1	87.2	87.9
Nominal exchange rate <sup>4</sup>	Value	232.7	210.1	206.6	191.5	161.7	162.9
Real exchange rate <sup>5</sup>	Value	76.6	81.2	85.7	93.0	109.7	111.5
Treasury's highest credit rating	Rating	Baa3/BBB-	Baa2/BBB	Baa2/BBB	Baa1/BBB+	A3/A-	A2/A

1. Based on underlying IIP until 2015. 2. External debt excluding equity, unit shares, derivatives, and other investment. Excluding old banks. 3. Ignoring effects of old banks. 4. Narrow trade index. 5. In terms of relative consumer prices.

Sources: Financial information from DMBs and old banks' holding companies, Statistics Iceland, Central Bank of Iceland.

## Appendix III

### Glossary

Balance on goods	The difference between the value of exported and imported goods.
Balance on income	The difference between revenues and expenses due to primary income and secondary income.
Balance on services	The difference between the value of exported and imported services.
Bill	A debt instrument with a short maturity, generally less than one year.
Bond	A written instrument acknowledging the issuer's unilateral and unconditional obligation to remit a specified monetary payment.
Book value of a loan	The nominal value or outstanding balance of a loan once haircuts or loan loss provisions have been deducted.
Capital base	The sum of Tier 1 and Tier 2 capital after adjusting for deductions; cf. Articles 84-85 of Act no. 161/2002.
Capital buffer	Additional capital required by the Financial Supervisory Authority upon receiving recommendations from the Financial Stability Council. Capital buffers currently in effect are: capital conservation buffer, countercyclical capital buffer, capital buffer for systemically important institutions, and systemic risk buffer.
Calculated return on equity	The profit for a given period as a percentage of average equity over the same period.
Capital ratio	The ratio of the capital base to risk-weighted assets (risk base).
Claim value of a loan	The nominal value or outstanding balance of a loan before deducting discounts or loan loss provisions.
Commercial bank	A financial institution that has been granted an operating licence pursuant to Article 4, Paragraph 1, (1) of the Act on Financial Undertakings, no. 161/2002.
Credit institution (credit undertaking)	A company whose business is to receive deposits or other repayable funds from the public and to grant credit on its own account.
Cross-default nonperforming loans	Based on the cross-default method, all of a given customer's loans are considered to be in default if one loan is 90 days past due, frozen, or deemed unlikely to be repaid.
Current account balance	The sum of the goods, services, and income account balances.
Deposit institutions	Commercial banks and savings banks licenced to accept deposits.
Disposable income	Income net of taxes.
Domestic systemically important banks (D-SIB)	Banks that, due to their size or the nature of their activities, could have a significant impact on the stability of the financial system and the general economy, in the opinion of the Financial Stability Council. Currently, D-SIBs in Iceland are Arion Bank hf., Íslandsbanki hf., and Landsbankinn hf. In addition, the Housing Financing Fund (HFF) is considered a systemically important supervised entity.
Economic outlook index	Corporate expectations concerning economic developments and prospects, based on the Gallup survey carried out among executives from Iceland's 400 largest firms.
Encumbrance ratio	The proportion of a bank's assets that are hypothecated for funding.
Equity	Assets net of liabilities.
Expense ratio	The ratio of operating expense net of the largest irregular items to operating income, excluding loan valuation changes and discontinued operations.

Facility-level default	Based on the facility method, a given customer's loan is considered to be in default if it is past due by 90 days or more.
Financial system	Deposit institutions; miscellaneous credit institutions (including the Housing Financing Fund, HFF); pension funds; insurance companies; mutual, investment, and institutional investment funds; and State credit funds.
Foreign exchange balance	The Central Bank of Iceland sets rules on credit institutions' foreign exchange balance. According to the rules, neither the overall foreign exchange balance nor the open position in individual currencies may be positive or negative by more than 15% of the capital base.
Foreign exchange imbalance	Difference between assets and liabilities in foreign currencies.
Foreign exchange reserves	Foreign assets managed by monetary authorities and considered accessible for direct or indirect funding of an external balance of payments deficit.
Funding rules	The Central Bank of Iceland sets rules on foreign currency funding ratio. The rules are based on the net stable funding ratio (NSFR) developed by the BCBS. The rules are designed to limit the extent to which banks can rely on unstable, short-term foreign funding to finance long-term loans granted in foreign currency. The ratio is subject to a minimum of 100%.
Holding company	A company whose sole objective is to acquire stakes in other companies, administer them, and pay dividends from them without participating directly or indirectly in their operations, albeit with reservations concerning their rights as shareholders.
Indexation imbalance	Difference between indexed assets and indexed liabilities.
Interbank market	A market in which deposit institutions lend money to one another for a period ranging from one day to one year.
International investment position (IIP)	The value of residents' foreign assets and their debt to non-residents. The difference between assets and liabilities is the net international investment position (NIIP), also referred to as the net external position.
Interest burden	Interest payments as a percentage of disposable income.
Interest premium	A premium on a base interest rate such as the interbank rate.
Key Central Bank of Iceland interest rate (policy rate)	The interest rate that is used by the Central Bank in its transactions with credit institutions and is the most important determinant of developments in short-term market interest rates. The interest rate that has the strongest effect on short-term market rates and is therefore considered the Central Bank's key rate may change from time to time.
Liquidity coverage ratio (LCR)	The ratio of high-quality liquid assets to potential net outflows over a 30-day period under stressed conditions; cf. the Rules on Liquidity Coverage Requirements for Credit Institutions no. 266/2017.
Liquidity rules	The Central Bank's liquidity rules are based on the liquidity coverage ratio (LCR) requirements developed by the Basel Committee on Banking Supervision (BCBS) and are largely harmonised with European Union liquidity rules. Credit institutions must always have sufficient high-quality assets to cover potential liquidity needs over the coming 30 days under stressed conditions. The LCR may not fall below 100% for all currencies combined or for all foreign currencies combined.
Loan-to-value (LTV) ratio	A debt as a percentage of the value of the underlying asset (for instance, mortgage debt as a percentage of the value of the underlying real estate).
Net stable funding ratio (NSFR)	The ratio of available stable funding to required stable funding; cf. the Rules on Funding Ratios in Foreign Currencies, no. 1032/2014.
Payment card turnover balance	The difference between foreign nationals' payment card use in Iceland and Icelandic nationals' payment card use abroad.
Real exchange rate	Relative developments in prices or unit labour costs in the home country, on the one hand, and in trading partner countries, on the other, from a specified base year and measured in the same currency. The real exchange rate is generally expressed as an index.

Real wage index	An index showing changes in wages in excess of the price level. It is the ratio of the wage index to the consumer price index (CPI).
Risk-weighted assets	Assets adjusted using risk weights; cf. Article 84(e) of Act no. 161/2002.
Risk-weighted assets (risk base)	The sum of the weighted risks of financial institutions (e.g., credit risk, market risk, operational risk, etc.), cf. Article 84(e) of Act no. 161/2002.
Shadow bank	Definition based on the methodology of the Financial Stability Board (FSB). Activities that entail the transfer of credit with the participation of entities or activities outside the conventional banking system. Entities and activities falling under this definition are referred to as other financial intermediaries. A detailed discussion of the methodology can be found in the Committee on Shadow Banking's March 2015 report to the Ministry of Finance and Economic Affairs.
Terms of trade	The price of goods and services imports as a percentage of the price of goods and services exports.
The IMF's reserve adequacy metric (RAM)	The reserve adequacy metric (RAM) was developed by the International Monetary Fund (IMF) as a criterion for desirable size of foreign exchange reserves, which can be determined with respect to a number of factors that affect a country's balance of payments and could provide indications of potential capital outflows. The RAM consists of four elements: i. Export revenues: Reflect the risk of contraction in foreign currency accumulation ii. Money holdings: Reflect potential capital flight in connection with liquid assets iii. Foreign short-term liabilities: Reflect the economy's refinancing risk iv. Other foreign debt: Reflects outflows of portfolio assets The RAM is the sum of 30% of current foreign short-term liabilities, 15% of other foreign debt (20% at constant exchange rates), 5% of money holdings (10% at constant exchange rates), and 5% of export revenues (10% at constant exchange rates).
Tier 1 capital base	Common equity after adjusting for deductions (common equity Tier 1, or CET1), plus additional Tier 1 capital.
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.
VIX implied volatility index	The expected volatility of the S&P 500 index according to the pricing of options related to it. It gives an indication of investors' risk appetite or aversion.
Yield	The annualised return that an investor requires on funds invested.
Yield curve	A curve that plots the interest rates, at a set point in time, of bonds with equal credit quality but differing maturity dates.