

# Financial Stability Report

2020:1





## The Riksbank's Financial Stability Report

The Riksbank's Financial Stability Report is published twice a year. In the report, the Riksbank gives an overall assessment of the risks and threats to the financial system and evaluates the system's resilience to them. The stability analysis is therefore directly linked to the Riksbank's task of promoting a safe and efficient payment system. By publishing the results of its analysis, the Riksbank wishes to draw attention to, and warn of, risks and events that might pose a threat to the financial system, and to contribute to the debate on this subject.

The Executive Board of the Riksbank has discussed the Report on two occasions – on 7 May and 18 May 2020. The report is available on the Riksbank's website [www.riksbank.se](http://www.riksbank.se). The Report takes into account developments up to and including 13 May 2020.

## The Riksbank and financial stability

- The Riksbank has a mandate from the Riksdag (the Swedish parliament) to promote a safe and efficient payment system. Achieving this requires a stable financial system so that payments and the supply of capital function well. In practice, this task means that the Riksbank is responsible for promoting financial stability. The Riksbank defines financial stability as the financial system being able to maintain its three basic functions – the mediation of payments, the conversion of savings into funding and risk management – and also being resilient to shocks that threaten these functions.
- The Riksbank can provide liquidity support to individual institutions if problems arise that threaten financial stability. To be able to do this in the best possible way, the Riksbank needs to be well prepared for crises by having an efficient crisis organisation with good information channels and tools for analysis, as well as well-developed cooperation with other authorities.
- The Riksbank does not have the sole responsibility for promoting financial stability. It shares this responsibility with the Ministry of Finance, Finansinspektionen (FI, the Swedish financial supervisory authority), and the Swedish National Debt Office. The Ministry of Finance is responsible for the regulation of financial companies, FI for supervision and the Swedish National Debt Office for the government's management of banks in crisis. The interaction between the authorities is important as regards both preventive work and any crisis management. The same also applies internationally, as financial companies increasingly operate across national borders.
- The financial system plays an important role in the economy. It is necessary to have a stable and smoothly running financial system for the economy to function and grow. A serious crisis in the financial system risks leading to extensive economic and social costs.
- The financial system is sensitive. This sensitivity is due to the vulnerability of central parts of the system, such as banks and markets. Banks are vulnerable mainly because they fund their operations at short maturities but lend at longer maturities. This imbalance makes them dependent on the general public and the market having confidence in them. If market participants lose confidence in their counterparties or in the financial instruments traded on the market, trading may suddenly come to a halt. The various parts of the financial system are also closely interconnected as, for example, financial institutions borrow from and trade with one another to such a large extent. This means that problems arising in one institution or market can rapidly spread throughout the system. Spillover effects may also arise if there is a general fall in confidence in similar activities.
- The combination of the sensitivity of the financial system and the large potential costs of a financial crisis means that the state has a particular interest in preventing threats to financial stability. This is because banks and other market participants do not have an incentive to give full consideration to the risks to financial stability to which they might be contributing, as some of the costs of a financial crisis fall to other agents both within and outside the financial system. If a crisis occurs, the state needs to be able to manage it at the lowest possible cost.
- The Riksbank analyses stability in the financial system on a continuous basis to enable the early detection of changes and vulnerabilities that may lead to a crisis. The main focus of the analysis is on the five major banks in Sweden (SEB, Swedbank, Handelsbanken, Nordea, and Danske Bank) and on the markets and infrastructure that are important for their funding and risk management.
- In some cases the Riksbank recommends specific measures to counteract risks. These recommendations may be based on current economic developments. But they may also relate to more structural circumstances and stem from current regulatory issues. The recommendations can be aimed at banks and other market participants, as well as at legislators and other authorities.

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## SUMMARY OF THE STABILITY ASSESSMENT

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The coronavirus pandemic has had serious consequences for the global economy and there is considerable uncertainty in financial markets. Around the world, powerful measures have been implemented to mitigate the effects on the real economy and reduce the turbulence in financial markets. In Sweden, too, the Government, authorities and the Riksbank have taken powerful measures. It is the Riksbank's assessment that the Swedish financial system is currently functioning satisfactorily. But the effects of the pandemic going forward are nevertheless difficult to estimate. If the real economy returns to a more normal state relatively soon, the consequences for the financial system will likely be limited. If the crisis is prolonged, however, the risks to financial stability will intensify. In that case, credit losses in the banking sector might increase to such an extent that banks may have problems maintaining credit supply. In such a situation, further public-sector measures may be required to provide support to credit supply and to manage problems in the banking sector. The Riksbank is ready to contribute by providing any necessary liquidity.

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### **The coronavirus pandemic is causing a global economic crisis...**

The coronavirus pandemic is hitting the world hard. Restrictions to reduce the spread of infection have had major real economic consequences. This development has completely changed real economic prospects both abroad and in Sweden.

Uncertainty with regard to how the real economy might cope with the crisis resulted initially in substantial fluctuations and impaired liquidity in financial markets. This made it more difficult for companies and banks to fund their operations.

To mitigate the effects of the crisis, governments, authorities and central banks the world over have implemented powerful measures. This has helped improve the functionality of financial markets for the time being. However, it is difficult to say in the current situation how much the measures will mitigate the real economic effects.

### **... and constitutes a threat to financial stability**

Many companies have seen a sharp decline in their revenues and are therefore having difficulty paying their expenses. This is affecting both economic growth and unemployment, as well as increasing the risks of the crisis spreading to the banking sector in the form of credit losses.

Many measures have been taken around the world since the global financial crisis of 2008-09 to strengthen resilience in the global financial system. New global regulatory frameworks have helped to ensure that banks have more capital and better liquidity than before. But there are still vulnerabilities that can exacerbate the

negative effects of the coronavirus pandemic. In many countries, for example, indebtedness among non-financial corporations had already increased before the crisis. In Europe, many countries have been struggling for some time with high sovereign debt as well as a large amount of non-performing loans and low profitability in the banking sector.

If the decline in the real economy is deep and prolonged, a new financial crisis or debt crisis could arise. It is uncertain how well the global financial system could cope with such a shock.

### **Extraordinary situation for the Swedish economy**

In Sweden, too, economic activity is being restricted by the measures introduced to slow the spread of infection. The impact on the Swedish real economy is considerable.

As in many other parts of the world, companies have been hit hard. The crisis is having a wide-ranging effect and many sectors have experienced disruptions in production. The demand for goods and services has decreased sharply and in some cases, deliveries of input goods have been delayed. There are also close links between companies, which is contributing to the spread of problems from one sector to other closely associated sectors. For example, property companies are affected when rent revenues from the retail trade, hotels and restaurants fall, activities that have been hit hard by the restrictions imposed on society.

In this situation, it is difficult to estimate the potential magnitude of the effects on the real economy. In the Monetary Policy Report in April, the Riksbank discussed developments in two different scenarios, in which Swedish GDP falls by 7 and 10 per cent respectively, while unemployment rises to 10 and 11 per cent respectively.<sup>1</sup>

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<sup>1</sup> See *Monetary Policy Report*, April 2020. Sveriges Riksbank.



### Increased uncertainty in financial markets in Sweden

As in other countries, the functionality of financial markets in Sweden has deteriorated as a result of the crisis. Liquidity on the markets for both commercial paper and corporate bonds has periodically been very low and it has become both more expensive and more difficult for companies to obtain funding.

The scope for banks to obtain funding has also been periodically impaired. At the start of the crisis, short-term market rates and risk premia for covered bonds rose. A general shortage of US dollars also impaired the scope of Swedish banks to borrow dollars in global financial markets. As a result, it was more difficult for Swedish pension funds and insurance companies to gain access to dollars via the banks.<sup>2</sup>

After the implementation of wide-ranging measures by the Riksbank<sup>3</sup> and other authorities, the scope for both companies and banks to obtain funding has improved. Many risk premia continue to be elevated, however.

### Signs of credit tightening in the Swedish economy

Companies need both direct economic support and loans in order to manage the economic decline. Small and medium-sized enterprises mostly turn to the banks when they need to borrow. The difficulties of obtaining funding via the securities market have also led to larger companies having to turn to banks for help to a greater extent.

According to the Financial Market Statistics from Statistics Sweden, bank lending to both households and companies increased in March, which is a positive development. According to the statistics, lending rates were also largely unchanged. However, many companies say that it has become both more difficult and more expensive to obtain bank loans. It is therefore possible that the statistics will indicate rising lending rates in the period ahead.

### Banks' lending capacity may deteriorate if the crisis is prolonged and spreads to the property sector

Credit losses among banks increased during the first quarter of this year. If credit losses increase substantially, they may in turn reduce the capacity of banks to provide loans to companies and households.

The Riksbank has used its stress-testing method to estimate the potential size of credit losses based on the two macroeconomic scenarios published in the April Monetary Policy Report.<sup>4</sup> The stress test indicates that banks' credit losses will be considerable in both scenarios. In the scenario where the economic recovery is more rapid and property prices fall less, however, banks' capital

is affected to a lesser degree. Banks should then have the prerequisites to continue to supply credit to the economy. In the scenario where the economic recovery is prolonged and property prices fall more, banks' leverage ratios, in the absence of further economic policy measures, decrease to such low levels that they may cause the banks problems in maintaining credit supply.

The results of the stress test are not a forecast and are to be interpreted with caution as the model is based on several assumptions. Crucial to the development of banks' capital situation are, among other factors, how deep and prolonged the crisis becomes, how many companies go bankrupt, by how much property prices fall, and what economic policy measures are taken.

### Good conditions, but more may be needed

Currently, it is the real economy that is being most affected by the coronavirus pandemic. Financial markets have also been affected, but thanks to the measures introduced, the Swedish financial system is currently functioning satisfactorily.

However, there are structural vulnerabilities in the Swedish financial system that could exacerbate the crisis.<sup>5</sup> These include high household indebtedness and banks' large exposures to property.

For a number of years, Finansinspektionen (FI) has taken measures to increase resilience in the financial system, for example by introducing requirements for capital and liquidity buffers for banks, and loan-to-value limits and amortisation requirements for households. This has improved resilience. If these measures had not been implemented, the current situation would have been worse.

But in the prevailing exceptional circumstances, FI has relaxed some requirements, including reducing the countercyclical capital buffer requirement to 0 per cent and giving banks the option of granting all mortgagors exceptions from the amortisation requirement. Given the uncertainty, banks have also said that they will postpone decisions on shareholder dividends. The Riksbank supports these measures. In a very difficult and special situation, they strengthen both banks' capacity to supply credit and household liquidity. The measures thereby limit the negative effects of the coronavirus pandemic, and facilitate an economic recovery in the period ahead.

It is important that banks do what they can to supply sufficient credit to companies and households. The capital and liquidity buffers that banks have built up in good times can now be used if needed. This helps to improve

<sup>2</sup> See the article "The interconnectedness of insurance companies, National Pension Insurance Funds and banks via the foreign exchange market".

<sup>3</sup> See the article "The Riksbank's measures during the coronavirus pandemic".

<sup>4</sup> See the article "The Riksbank's stresstest of banks' capital – an update".

<sup>5</sup> See *Financial Stability Report*, November 2019. Sveriges Riksbank.

the conditions for banks to continue to provide credit to companies and households.

If the recovery takes a long time and banks' lending capacity deteriorates, more public-sector measures may be needed. As Swedish sovereign debt is low, the conditions are good for the Government to implement the fiscal policy measures required to help households and companies to survive the crisis. For its part, the Riksbank is prepared to continue to use the tools available to provide support to the economy and inflation, and to ensure that the financial system continues to function.

### **The coronavirus pandemic is highlighting the importance of good resilience**

The coronavirus pandemic shows how quickly and unexpectedly the economic situation can change, and how important it is for the financial system to have good resilience to shocks. Earlier experiences also indicate that in the long run, only well-capitalised banks have the capacity to supply the credit the economy needs. It is therefore important that the established regulations regarding the banks' capital and liquidity are now retained.

When the economic situation permits, the resilience of the financial system will need to be reinforced again. If the banks have used parts of their capital and liquidity buffers, they will need to gradually build up sufficient capital and liquidity when the crisis is over.

It is also necessary to continue the work on reducing the structural vulnerabilities in the financial system and it is high time to take measures to remedy the fundamental problems on the housing market and to reduce the risks linked to the high household indebtedness.

In the next few years, Sweden, as well as other countries, should also introduce the internationally agreed new capital requirement rules based on Basel III. It is also very important not to reduce the transparency requirements for banks, which are currently being discussed internationally. In times of turmoil, it is particularly important that banks report their non-performing loans openly, and make enough provisions in capital for such loans, in order for them to be able to retain their confidence. The economic consequences of the coronavirus pandemic cannot be solved by ignoring or hiding the problems.



## ARTICLE – The Riksbank’s measures during the coronavirus pandemic

The coronavirus pandemic has led to a serious downturn in the global economy and created significant turmoil in financial markets. Even if the economic crisis in the wake of the pandemic has parallels with the global financial crisis of 2008-09, there are important differences. The current crisis is having more direct effects on non-financial corporations and households. This means that the Riksbank’s measures this time are focused to a higher degree on facilitating access to credit in the real part of the economy, alongside ensuring that banks have access to liquidity. One effect of the measures is that they subdue any increase in banks’ funding costs, which, in turn, is helping to hold down their lending rates to companies and households. In this way, the Riksbank’s measures are helping to further strengthen the impact of monetary policy.

### Major differences compared to the global financial crisis

The economic crisis the world is now experiencing in the wake of the coronavirus pandemic is sometimes compared with the global financial crisis of 2008-09. There are, however, important differences between the two crises.

The crisis of 2008-09 had its origin in the financial sector. That time, the main causes included imprudent lending on the US mortgage market and an overconfidence in the advanced securitisation<sup>6</sup> of credit risk among many banks around the world. This contributed to imbalances being able to grow over a longer period in the financial sector in a way essentially resembling the imbalances that have been the origin of most financial crises through history.<sup>7</sup> The problems that arose in the real part of the economy, that is to say non-financial corporations and households, were mainly indirect effects of the problems that arose among banks and other parts of the financial sector. Furthermore, the situation in a few European countries was exacerbated by various domestic imbalances and vulnerabilities that in part led to the problems in the banking sector becoming serious public financial crises.

This time the main causes of the crisis clearly lie outside the financial sector.<sup>8</sup> The threat of bankruptcies and increased unemployment has, instead, had a brutal and direct effect on companies and households. Large

parts of the world are in a state of shock, where the authorities have had to face the precarious dilemma of being forced, under substantial time pressure, to combine drastic measures to reduce the spread of infection and save lives with measures to counteract the economic effects of these same measures.

The measures now being launched to mitigate the effects of the coronavirus pandemic on economies around the world are comprehensive. In Sweden, the Government has decided on several support packages to ease the economic situation for companies and households. In parallel, the Riksbank has taken several powerful measures in a short time to help secure the supply of credit in the economy. This is necessary to counteract the decline in the Swedish economy and safeguard price stability.

### The financial turbulence has affected the funding of banks and other companies

Even if the current crisis did not originate in the financial sector, the large degree of uncertainty surrounding the further economic consequences of the coronavirus pandemic has led to substantial fluctuations in financial markets. The financial turbulence also means that the monetary policy being conducted by central banks risks having less of an impact. The fact that the functionality of financial markets started to deteriorate was apparent, for a period, from the sharp increase in risk premia for

<sup>6</sup> *Securitisation* is a method for converting illiquid loans into bonds.

<sup>7</sup> In a well-known study by Carmen Reinhart and Kenneth Rogoff, in which the authors, with a tad of irony, highlight the fact that while some form of careless risk-taking have characterised the origin of the majority of financial crises throughout history, such risk-taking often tends to be explained away by its contemporaries with the words “this time is different” and is therefore allowed to continue until the crisis becomes a reality. See Reinhart, C.M. and Rogoff, K.S. (2009), *This Time is Different: Eight Centuries of Financial Folly*, Princeton University Press.

<sup>8</sup> It can be debated whether the coronavirus pandemic can be regarded as a ‘black swan’, that is to say a highly improbable event with a potentially major effect on society, or a phenomenon that could nevertheless have been expected, with a significant probability, to have impacted the world sooner or later. The concept of the ‘black swan’ was popularised by the mathematician Nassim Taleb. See Taleb, N. N. (2007), *The Black Swan: The Impact of the Highly Improbable*, Random House. The fact that a crisis like this one was not totally unexpected is illustrated, for example, by Microsoft founder and philanthropist Bill Gates, who, in a celebrated TED talk in 2015 warned about the lack of preparedness in the fact of a future pandemic.

financial assets while at the same time the issuance of securities decreased. And, even if the banks are not in the eye of the storm this time, they, like other companies, are being affected indirectly by harder-to-find and more expensive funding as the functioning of financial markets deteriorates.

Banks are also important lenders to non-financial corporations and they are playing an even more important role as the functioning of bond markets deteriorates. But as the banks now risk greater credit losses when an increasing number of their borrowers encounter economic difficulties, there is a risk of them becoming increasingly cautious in their lending. This may lead to it becoming even more difficult for many companies to obtain funding, which may ultimately further exacerbate the real economic problems.

### **The Riksbank's measures are supporting credit supply**

The key aspect now is that households and companies manage to survive the deep recession caused by the coronavirus pandemic, while the stability of the financial system can be maintained. In a short time, the Riksbank has implemented a number of measures focused on avoiding a credit crunch and securing access to liquidity for robust companies (see also table 1).

For example, the Riksbank has launched a programme in which banks are offered loans against collateral totalling SEK 500 billion on particularly favourable terms if they increase lending to non-financial corporations operating in Sweden. Although the Riksbank cannot decide who banks lend money to, it will carefully follow developments in the banks' lending to companies. So far, up until 30 April, banks have borrowed a total of SEK 158 billion from the Riksbank via this facility. As many small companies around the country are customers of smaller, local banks rather than the major banks, the Riksbank has also temporarily made it possible for more counterparties than usual to have access to the programme.

Furthermore, the Riksbank has decided to extend its purchases of securities by up to SEK 300 billion up until December this year. These purchases supplement the Riksbank's previous purchases of government bonds. In order to keep monetary policy expansionary and ensure that rate-setting continues to function, the Riksbank has also started to purchase mortgage bonds and municipal bonds. For some time, commercial paper issued by Swedish non-financial corporations have been included in the asset-buying programme, which makes it easier for companies that have so far found it difficult to borrow by issuing such securities. So far, up until 6 May, the Riksbank has purchased commercial paper for SEK 6.3 billion. Since the peak was reached immediately prior to purchases being initiated at the beginning of April, the risk premia for

corporate bonds, measured as the difference in yield against the yield for a five-year government bond, have fallen from about 2 percentage points to about 1.6 percentage points on 11 May. This gives at least an indirect indication that the purchases have had an effect and that the market for commercial paper is functioning more smoothly. The Riksbank has also bought mortgage bonds for SEK 65 billion (up until 27 April). In total, within the asset-buying programme, the Riksbank (up until 7 May) has purchased assets for a nominal amount of SEK 87 billion.

To strengthen access to one of the most important currencies for Swedish companies, the Riksbank has decided to lend up to USD 60 billion, made possible by a swap agreement with the US Federal Reserve. The fact that the Federal Reserve has offered many central banks generous swap agreements is motivated by a desire to reduce the global shortage of dollars. So far, the banks have borrowed USD 2 billion from the Riksbank.

The Riksbank has also cut the lending rate for overnight loans to the banks from 75 to 20 basis points. In addition, the Riksbank is offering banks weekly loans of unlimited amounts in SEK against collateral with a maturity of three months at 20 basis points above the repo rate.

In addition, the Riksbank has eased the requirements for collateral when banks borrow from the Riksbank. Banks can now use a larger proportion of covered bonds, including self-issued ones, as collateral. The banks can thereby borrow more at the Riksbank in order to increase their own onward lending in the economy.

### **Insurance for the national economy**

The Riksbank's measures in the form of securities purchases, corporate lending and dollar loans so far totals about SEK 1,400 billion, which – if fully utilised – can be supplied to the economy to mitigate the effects on production and unemployment. Even if the banks were not to borrow everything on offer, the Riksbank's programme provides important insurance for the national economy. The measures are aimed at supporting credit supply to robust companies and preventing problems arising in financial markets that, in turn, create further problems for companies and households in need of credit. One important effect of the Riksbank's programmes in both SEK and USD is that they subdue any increase in banks' funding costs, which, in turn, helps to hold down their lending rates. In this way, the measures help to further strengthen the impact of monetary policy.

Going forward, it will be very important to monitor developments in the economy, both to evaluate the effects of the measures and to see whether more needs to be done. The Riksbank is closely following

developments in both the real economy and the financial sector and will also, naturally, follow up how the programme for corporate lending is being used. To support the financial system and the Swedish economy, the Riksbank still has plenty of scope to use its balance sheet to take further measures if necessary.

**Table 1. The Riksbank's measures during the coronavirus pandemic**

Date of decision	Measure	Scope	Purpose of measure	Details
12 March	Programme for corporate loans via monetary policy counterparties.	Up to SEK 500 bn. Lending so far: SEK 158 bn	Support credit supply to non-financial corporations.	Maturity 1 year with the option to extend 1 year. Lending takes place at the repo rate if lending to companies increases by 20 per cent of the borrowed amount, otherwise 20 basis points above the repo rate. Lending initiated on 20 March.
16 March	Purchases of bonds: government, municipal and covered.	Up to SEK 300 bn Purchases so far: SEK 80.5 bn	Keep monetary policy expansionary, provide help to the economy and support credit supply broadly in the Swedish economy.	The purchases are intended to be made up until December 2020. Purchases of government bonds were initiated on 18 March, purchases of covered bonds were initiated on 25 March, purchases of municipal bonds were initiated on 28 April.
16 March	Lowered interest rate in standing loan facility.	Unlimited	Ensure that the overnight rate on the market for Swedish kronor is close to the repo rate.	Interest rate on overnight loans in the Riksbank's standing facility reduced from 75 to 20 basis points above the repo rate.
16 March	Weekly extraordinary market operations.	Unlimited	Strengthen the banks' access to liquidity in Swedish kronor to facilitate their funding and their role as suppliers of credit to Swedish companies.	The loans are granted against collateral and at 3-month maturity with an interest rate of 20 basis points above the repo rate.
16 March + 19 March	Amended limit regulations for covered bonds as collateral.		Promote the impact of the lending programme to non-financial corporations and help improve functionality on the market for covered bonds.	16 March: maximum permitted share of covered bonds in a counterparty's total collateral volume raised from 60 per cent to 80 per cent. 19 March: This share raised to 100 per cent; maximum permitted collateral value issued by an individual issuer raised from 50 to 100 per cent; covered bonds issued by counterparty accepted as collateral.
19 March	Loans in US dollars.	Up to USD 60 bn. Lending so far: USD 2 bn.	Strengthen access to liquidity in USD in the Swedish financial system to facilitate the banks' funding in USD and increase access to USD for their end customers.	3-month maturity. Interest rate corresponding to a minimum of 25 basis points above overnight indexed swap (OIS). The programme runs until 18 September 2020. First auction was on 23 March.
19 March + 8 May	Purchases of bonds and commercial paper issued by Swedish non-financial corporations.	Included in the bond-purchasing programme (up to SEK 300 bn). Purchases so far: SEK 6.3 bn	Provide further support to credit supply for Swedish companies.	The purchases are intended to be made up until December 2020. Purchases of commercial paper with 3-month maturity were initiated on 2 April. 8 May: Purchases extended to include commercial paper with 6-month maturity.
26 March	Temporary extension of the counterparty circle.		Promote the impact of the lending programme to non-financial corporations.	The decision provides scope for institutions under the supervision of FI, other than monetary policy counterparties, to participate in the corporate lending programme.
6 April	Onward lending to companies extended to sole proprietors.		To maintain credit supply to companies operating in Sweden and thereby support demand, production and employment in the economy	The corporate lending programme extended to include onward lending to sole proprietorships.

## VULNERABILITIES AND RISKS IN THE FINANCIAL SYSTEM

The spread of the coronavirus and the comprehensive measures introduced to curb it have sharply reduced activity in the global economy. This dramatic development has completely changed the economic prospects for both Sweden and the rest of the world. Companies are suffering and many employees have already lost, or may lose, their jobs. The developments have led to major uncertainty in financial markets and volatility has been very high on several submarkets. The liquidity and functioning of the markets have deteriorated, which has made it more difficult for banks and companies to fund their operations. The major economic downturn in Sweden may also lead to an increase in banks' credit losses. However, the size of these losses is dependent on how deep and prolonged the crisis is, which is currently very uncertain. The measures implemented are for the time being helping the Swedish financial system to function satisfactorily. However, the risks to financial stability are deemed to be significantly greater than in the autumn.

### The coronavirus pandemic has caused a global economic crisis

Since the start of 2020, the coronavirus has spread rapidly worldwide and developed into a pandemic. In a short time, many people have fallen ill and many have also died as a result of the virus. To delay the spread of infection, countries the world over have introduced comprehensive control measures. The vast majority of these are aimed at limiting people's social contacts in the form of, for example, travel bans, quarantine regulations, the shutdown of manufacturing and curfews. Trading has been prohibited in some regions and companies allowed to operate are faced with a sharply reduced customer base.

#### The coronavirus pandemic is having major negative consequences for the global economy

The spread of the coronavirus and the measures deemed necessary to delay the spread of infection have led to a sharp slowdown in activity in the global economy.<sup>9</sup> Never before have the measures to control a pandemic been so comprehensive. The world therefore finds itself in an economic crisis that is affecting the global economy in a way that we have never experienced before. Restrictions on social life and changes in people's behaviour have meant that many companies have been affected by a large fall in demand. At the same time, shortages of input goods, disruptions in the transport system, and increased sickness absence have affected production. Many companies have therefore been hit by sharp falls in revenue but still have expenses to pay. To reduce the expenses, companies have been forced to

<sup>9</sup> See the separate Appendix for additional charts on developments on the financial markets and the situation in the major banks in Sweden and among their borrower groups ([www.riksbank.se](http://www.riksbank.se)).

**Table 2. Important developments in the financial system**

The coronavirus pandemic has completely changed the economic prospects and led to a **sharp slowdown** in economic activity in the **world**. Developments in financial markets have been characterised by **substantial turbulence**. Governments, central banks and other authorities have taken **powerful measures** to mitigate the consequences of the coronavirus pandemic.

**Many companies** have been hit hard by revenue losses and bankruptcies in the corporate sector are increasing. Corporate demand for loans or support to get through the crisis has increased. Reduced rent revenues and increased funding costs are impacting **property companies** and contributing to increased uncertainty over property prices. This sector is particularly important to financial stability as the banks have large exposures to it.

Many **households** have been affected or may come to be affected by unemployment, at the same time as their financial wealth has decreased in value due to the fall in equity prices. **Housing prices** fell in March and uncertainty over price developments is substantial. A sharp fall in prices could lead to a decrease in consumption among heavily indebted households, which would further worsen the situation for companies and the Swedish economy.

The banks' **access to wholesale funding** initially deteriorated during the crisis, but has improved following measures by central banks. At present, the banks are able to meet an increased demand for loans from companies and lending to companies has increased. Credit losses increased in the first quarter and are expected to increase further. If credit losses increase sharply, it may become more difficult for the banks to supply the economy with credit.

**Other financial agents**, such as funds and insurance companies, have been affected by the substantial price falls on the stock market. Due to the problems that arose on the corporate bond market, several Swedish UCITS temporarily suspended trading in some of their funds.

Availability in the **financial infrastructure** is mainly good. The rapid spread of the coronavirus has entailed financial and operational risks that need to be managed. At the same time, some of the risks for the infrastructure systems pointed out earlier partly remain.

With the measures implemented, it is the Riksbank's assessment that the **Swedish financial system** is currently functioning satisfactorily. However, the risks to financial stability are deemed to be significantly greater than in the autumn, especially if the crisis is prolonged.

furlough staff, put them on notice of redundancy or lay them off altogether. Many companies are also reducing their investment as a way of managing their costs, which may delay the economic recovery later on.

This entire process has taken place very rapidly and it is difficult to judge at present how much economic activity will be affected going forward. Forward-looking economic indicators, such as Purchasing Managers' Indices, fell sharply to begin with in China, the United States and the euro area. According to the International Monetary Fund's (IMF) assessment in April, global GDP will fall by over 3 per cent in 2020, which is more than during the global financial crisis of 2008-09.<sup>10</sup> This in spite of the implementation of wide-ranging support measures (see the fact box "Governments, central banks and other authorities have taken powerful measures").

### **Vulnerabilities may lead to the crisis becoming deeper and more prolonged**

Even if this crisis was not caused by the build-up of imbalances in the financial sector or real economy, such imbalances are contributing to the possibility that some agents and some parts of the global economy may be more vulnerable in the present situation.

One vulnerability that the Riksbank has pointed out in previous Financial Stability Reports is the increased risk-taking in the global financial system. Among other things, indebtedness has increased in the non-financial corporate sector. Loans to highly indebted companies with low or no credit ratings, so-called leveraged loans, have increased in recent years, particularly in the United States.<sup>13</sup> These companies are particularly vulnerable in the current situation.

At the same time as debt among households and companies has increased in many countries, several countries in the euro area also have high levels of sovereign debt. Despite some progress in recent years, several of these countries are also struggling with low profitability in their banking sectors and a large proportion of non-performing loans.

Fragile public finances and problems in the banking sectors contributed to several countries in the euro area being in a weak position even before the crisis. This situation is now being exacerbated as the crisis is expected to lead to an increase in non-performing loans.

### **Governments, central banks and other authorities have taken powerful measures**

To mitigate the consequences of the major economic decline, governments, central banks and other authorities the world over have taken powerful measures.

In various ways, central banks have adopted measures to make monetary policy more expansionary. Just like the Riksbank, the European Central Bank (ECB), the Federal Reserve and the Bank of England have established special facilities to help ensure that credit supply to companies continues to function and hence avoid a credit crunch further exacerbating and prolonging the crisis in the real economy. In addition, several central banks have extended their purchases of financial assets, both to hold different lending rates down and to improve the functionality of various financial markets. For example, the Riksbank has increased its purchases of securities, and broadened the holdings to also include, in addition to government bonds, municipal and covered bonds, and securities issued by companies (see also the article "The Riksbank's measures during the coronavirus pandemic"). Some central banks have also chosen to cut their policy rates. The Federal Reserve has cut the interval for its policy rate by 1.50 percentage points to 0.00-0.25 per cent. Other countries where the central bank has cut its policy rate include Australia, Canada, New Zealand, Norway and the United Kingdom.

At the same time, many countries are trying to mitigate the consequences for both households and companies affected by changed economic conditions and to reduce the costs, provide various forms of support and improve the prospects for companies to obtain loans. For example, the Swedish Government has taken a number of crisis measures.<sup>11</sup>

Many national supervisory and macroprudential authorities have also adjusted the capital requirements they impose on banks. In Sweden, FI has, among other measures, lowered the countercyclical capital buffer from 2.5 to 0 per cent. FI has also given banks the opportunity to exempt both new and existing mortgagors temporarily from the amortisation requirement. The Swedish National Debt Office is providing credit guarantees primarily to small and medium-sized enterprises in Sweden that have been affected financially by the coronavirus but are otherwise viable. These guarantees cover up to 70 per cent of the loan amount. Similar guarantee programmes have been established in countries such as Denmark and Norway. To support credit supply, the Swedish National Debt Office has extended the time the banks have to fulfil the minimal requirement for eligible liabilities (MREL) with capital and subordinated liabilities.<sup>12</sup>

<sup>10</sup> See *World Economic Outlook*, April 2020. International Monetary Fund.

<sup>11</sup> See The Swedish Government's crisis measures. Fact box in *Monetary Policy Report*, April 2020. Sveriges Riksbank.

<sup>12</sup> The MREL requirements aim to ensure that the bank has enough capital and liabilities that can be written down or converted into capital in the event of resolution.

<sup>13</sup> There is no clear-cut definition of what constitutes a 'leveraged loan'. A common approach is to use a company's credit rating or indebtedness in relation to its operating profit before interest, taxes, depreciation and amortisation as a basis. A loan can also be classified as 'leveraged' if the yield gap in relation to, for example, the government borrowing rate or an average bank rate is large. Leveraged loans are often arranged by several lenders together (syndication). In addition to banks, private equity firms are often involved in the transaction.



Various types of relaxation in financial regulatory frameworks may seem appealing in the current situation but do not improve the capacity of banks to manage the crisis and also risk creating greater problems in the longer term. In times of turmoil, it is particularly important that banks report their non-performing loans openly, and make enough provisions in capital for such loans. This is important so that they can retain the confidence of investors. Even if the crisis, at present, is mainly affecting the development of the real economy, the weak initial situation in several euro-area countries is exacerbating the risk of the crisis developing into a financial crisis or debt crisis and thereby become deeper and more prolonged.

**Major movements in global financial markets**

At the start of March, it became clear that the virus had developed into a pandemic that would have major consequences for economic activity. This led to major turbulence in global financial markets. Investors then started moving from risky assets to more secure and more liquid assets, as is often the case in times of substantial uncertainty. Global share indices fell sharply (see chart 1) and global, market-based measures of volatility have periodically been historically high during the spring (see chart 2). At the same time, strong turbulence in the oil market has fuelled the market movements.

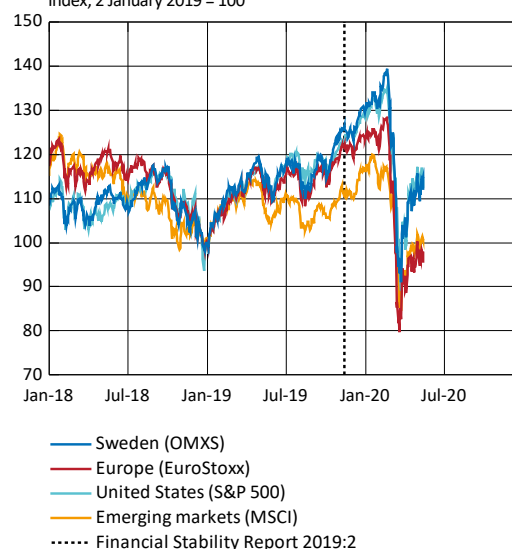
As risk-taking decreased and the market participants became uncertain of companies’ debt-servicing ability, risk premia rose. Credit markets, and in particular the corporate bond market, functioned less efficiently and were characterised by a shortage of liquidity (see chart 3). This made it more difficult and more expensive for several participants to obtain funding via these markets.

During the crisis, US money market funds have been impacted by outflows causing them to reduce their investments in bank certificates. Obtaining funding in dollars then became more expensive, which, in turn, caused interest rates to rise on the money markets. One example of this is that the interest rate on interbank loans in US dollars without collateral, USD LIBOR, rose from mid-March.<sup>14</sup>

As of late March, price movements on the equity market and risk premia in the credit market have fallen slightly as support measures have been introduced and the spread of infection has slowed in parts of Europe. However, risk premia for corporate bonds, for example, remain significantly higher than before the crisis.

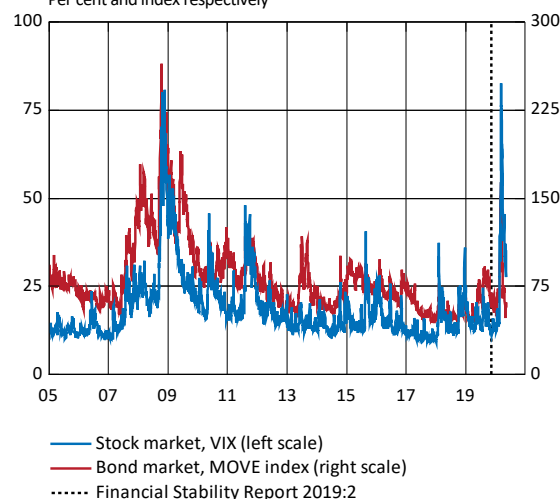
<sup>14</sup> For a more detailed explanation, see S. Avdjiev, E. Eren and P. McGuire, Dollar funding costs during the Covid-19 crisis through the lens of the FX swap market, *BIS Bulletin*, No. 1 April 2020, Bank for International Settlements.

**Chart 1. Stock market movements in domestic currency**  
Index, 2 January 2019 = 100



Source: Macrobond

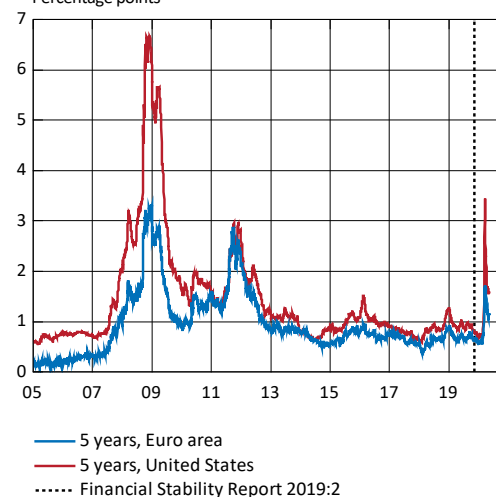
**Chart 2. Volatility index for US equity and bond markets**  
Per cent and index respectively



Note. Volatility Index (VIX) shows the expected volatility on the US stock market based on options prices. Merrill Lynch Option Volatility Estimate (MOVE) Index is a measure of the expected volatility of US government bonds based on options prices.

Sources: Chicago Board Options Exchange and Merrill Lynch

**Chart 3. Difference between yields on corporate bonds and government bonds in the United States and euro area**  
Percentage points



Note. Yield differentials refer to 5-year benchmark issued by companies with good credit ratings and the government, respectively.

Source: Macrobond

### The current situation makes the global financial system more vulnerable to cyber risks

The Riksbank has previously pointed out that cyber risks form a major risk for the entire financial system.<sup>15</sup> The prevailing situation means that the financial system is now particularly vulnerable. The European Systemic Risk Board (ESRB) emphasises that it is especially in stressed situations that cyber incidents<sup>16</sup> run the greatest risk of affecting the stability of the financial system.<sup>17</sup>

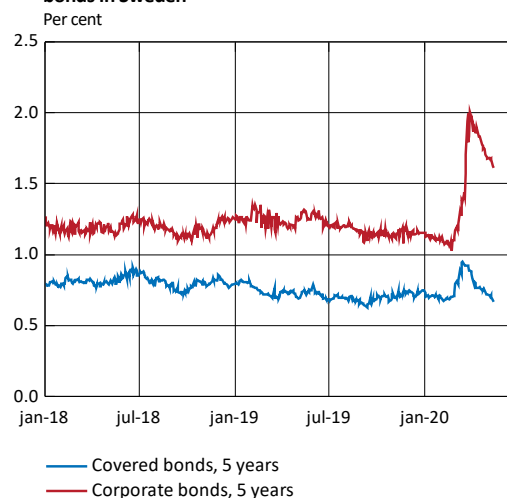
Due to the coronavirus pandemic, a large part of the workforce of systemically important agents in the financial sector are working from home to limit the spread of infection. In itself, this is a challenge for most organisations and may entail risks increasing, particularly if the restrictions on the community continue for a longer period. Combined with the stressed situation in financial markets, organisations may find themselves in a position where they choose to deviate from normal security routines to be able to fulfil their critical functions. However, it is not just vulnerabilities in the financial system that are increasing. The turbulence may also lead to more attempts from threat actors to take advantage of the situation, for example via so-called phishing<sup>18</sup> emails linked to the coronavirus pandemic.

### The coronavirus pandemic is having major effects on the Swedish economy

In Sweden, the spread of infection accelerated in late February. In Sweden too, the focus has been on restrictions on social life and orders for social distancing to restrict the spread of infection to a rate that is manageable for the healthcare system. Concern about the pandemic has also led to self-imposed restrictions among households and companies.

In this situation, it is very difficult to assess the potential magnitude of the effects on the economy. Consequently, in its Monetary Policy Report from April, the Riksbank decided to describe possible developments on the basis of two different scenarios. In the first scenario (Scenario A), the measures introduced in Sweden and in other countries to mitigate the spread of the infection are assumed to be in place until the beginning of the summer, and the general worldwide economic recovery is expected to start in the third quarter. The shutdown of the economy in Sweden and other countries during the second quarter causes Swedish GDP to fall by

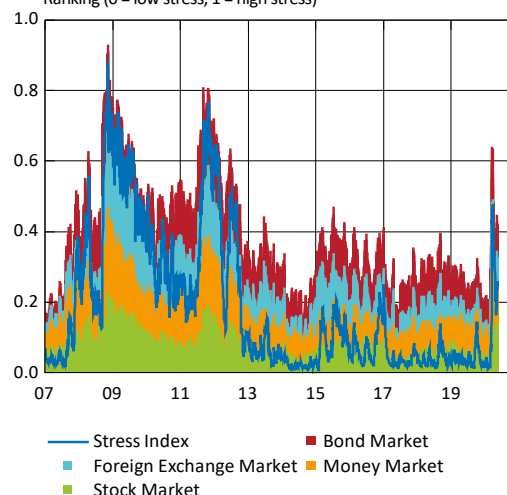
**Chart 4. Yield difference between bonds and government bonds in Sweden**



Note. All bonds are zero coupon rates calculated using the Nelson-Siegel method. Corporate bonds for companies with credit ratings of BBB or higher.

Sources: Macrobond, Refinitiv and the Riksbank

**Chart 5. Swedish stress index**  
Ranking (0 = low stress, 1 = high stress)



Note. The Swedish stress index has been produced by the Riksbank using a method similar to that used by the ECB for the European stress index. See T. Johansson and F. Bonthron (2013), Further development of the index for financial stress in Sweden, Sveriges Riksbank *Economic Review* 2013:1. Sveriges Riksbank.

Sources: Bloomberg and the Riksbank

<sup>15</sup> The Riksbank is working on cyber risks by, for example, implementing the TIBER-EU framework (Threat Intelligence-based Ethical Red Teaming). In December 2019, the Swedish adaptation of the framework, TIBER-SE, was published and the Riksbank has started the work of coordinating tests of cybersecurity among critical actors in the Swedish financial system.

<sup>16</sup> A cyber incident is defined as an event that (i) jeopardises the cybersecurity of an information system or (ii) breaches applicable security routines or policies. This applies regardless of whether or not the cyber incident is the result of intentional activity. See *FSB Cyber Lexicon*, November 2018. Financial Stability Board.

<sup>17</sup> See *Systemic Cyber Risk*, February 2020. European Systemic Risk Board.

<sup>18</sup> Phishing mails normally invite recipients to click on a false link.



about 7 per cent and unemployment to rise to about 10 per cent in 2020. The economy starts to cautiously recover in the summer.

If more serious imbalances arise in the real or financial economy, for example due to the pandemic lasting for longer, the economic decline may be greater and the recovery considerably slower. Such a development is described in the second scenario (Scenario B), where GDP falls by about 10 per cent and unemployment rises to over 11 per cent this year.<sup>19</sup>

### Major problems in several important financial markets

In many ways, developments in financial markets in Sweden reflect global developments. The substantial turbulence in international financial markets that began at the beginning of March led to investors generally moving away from risky assets to safer, more liquid ones, which in turn led to a fall in equity prices, an increase in volatility and a rise in the risk premia for risky assets (see chart 4).

The banks fund over half of mortgages by issuing covered bonds. Risk premia for these increased and banks have occasionally found it difficult to issue new covered bonds. STIBOR, which reflects the interest rates for short interbank loans, also increased to begin with.

The markets for corporate bonds have been substantially affected in this crisis. Just as in several other countries, liquidity on the secondary market in Sweden has been very low and it has also been difficult for companies to issue new securities. Risk premia have risen and issued volumes have been low. When few securities are traded, this, in turn, causes pricing to become unreliable and it becomes difficult for owners to value their holdings. Partly as a consequence of this, a number of Swedish UCITS, which have invested in corporate bonds issued by Swedish companies, suspended trading in March (see also the section “Other financial agents also affected by the situation in financial markets”).

Problems on the market for debt securities have led an increasing numbers of companies, which had problems with their securities borrowing in the spring, to instead request bank loans.

All in all, stress has increased on several submarkets. This can also be seen in the Riksbank’s stress index, which aims to illustrate stress in various submarkets in the financial system (see chart 5). However, following the Riksbank’s decision to purchase covered bonds and municipal bonds, and later also

<sup>19</sup> See *Monetary Policy Report*, April 2020. Sveriges Riksbank.

<sup>20</sup> This sub-component includes variables both from the Swedish housing market and the Swedish commercial property market.

<sup>21</sup> For a more detailed discussion of the link between the general level of interest rates and the Riksbank’s monetary policy, see *Account of Monetary Policy 2019*, April 2020. Sveriges Riksbank.

<sup>22</sup> The housing price increases can, however, be explained by more factors than just the level of interest rates. Above all, the housing market has long been characterised by structural problems that have contributed to the price increases. See Structural problems on the housing market. Fact box in *Financial Stability Report 2019:1*. Sveriges Riksbank.

### A new indicator for measuring and illustrating financial vulnerabilities and risks in Sweden

The Riksbank has developed a new indicator to measure and illustrate the risks and vulnerabilities in the financial system. Indicators of this type are often constructed in a similar way. In an initial step, the parts of the financial system considered to be important from a stability perspective are identified. In a second step, the variables that reflect the development of these submarkets are chosen, and, in a final step, they are weighted together so that they reflect the development of the system in a general manner.

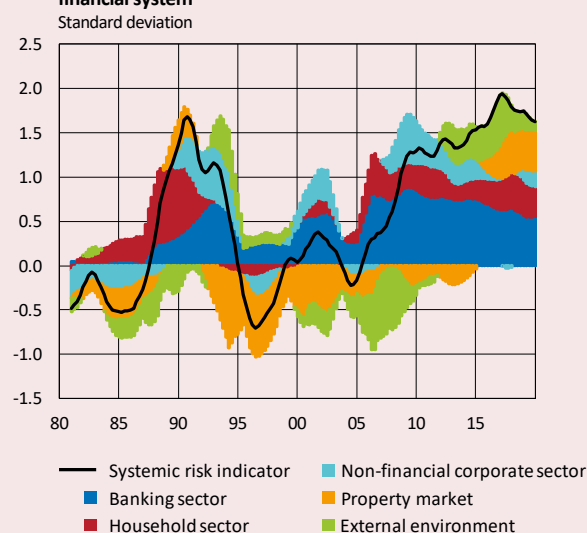
The Riksbank’s new indicator reflects developments in the household sector, the non-financial corporate sector, the banking sector and the property market.<sup>20</sup> In addition, the indicator includes a category of variables named external factors.

Economic and financial crises are often triggered by shocks that are difficult to predict. But vulnerabilities can also be accumulated over a long period. It is important to emphasise that this indicator is not primarily designed to predict crises in the near term or to capture the stress in the financial system at the moment (for an indicator that reflects the immediate stress in the financial system, see chart 5). Instead, the indicator shall largely reflect how vulnerabilities and risks in the financial system are accumulated over time, for example through increasing debt and asset prices. If any type of shock occurs, the consequences can be deeper and more prolonged if vulnerabilities are heightened.

The indicator signals that imbalances have accumulated in the Swedish financial system for a long time, making it potentially vulnerable in the current situation (see chart 6). Among other things, these high levels are due to vulnerabilities and risks having long been substantial in the household and banking sectors. At the same time, vulnerabilities on the property market have increased via rising prices on housing prices and commercial property. Unlike in the early 1990s, when levels were high for a shorter period, the indicator has now been on a high level and has been rising over a longer period. In addition, the general level of interest rates in Sweden and abroad has fallen over time.<sup>21</sup> This has contributed to an increase in most of the variables that are tracked by the indicator over a longer period, for example prices for housing and commercial properties.<sup>22</sup>

The indicator has fallen slightly in recent years, due to several different factors. For example, the size of the banking sector in relation to GDP has decreased while new financial regulatory frameworks after the crisis of 2008-09 have helped to improve liquidity among banks. In addition, subdued growth in housing prices in recent years has pushed the indicator down.

**Chart 6. Indicator of vulnerabilities and risks in the Swedish financial system**



Note. A higher value means higher risks and vulnerabilities.

Source: The Riksbank, for all series included, see D. Krygier and P. van Santen, A new indicator of risks and vulnerabilities in the Swedish financial system, Staff memo forthcoming 2020. Sveriges Riksbank.

securities issued by companies, the situation has improved in several submarkets.

### Elevated risks to financial stability

The speed of the course of events and the dramatic effects the coronavirus pandemic has so far given rise to, both in the real economy and in financial markets, are contributing to the currently elevated risks to financial stability in Sweden. Strong public finances are certainly helping to provide plenty of scope for fiscal policy to reduce the consequences of the crisis. But there are vulnerabilities in the Swedish financial system that have accumulated over time, as the Riksbank has highlighted in previous Financial Stability Reports. These include high household indebtedness and banks' large exposures to housing and commercial property. The vulnerabilities are also reflected in a new indicator developed by the Riksbank (see the fact box "A new indicator for measuring and illustrating financial vulnerabilities and risks in Sweden").

## Corporate sector being hit hard

In February, several companies witnessed that the coronavirus outbreak was a risk that was hard to assess, but that demand and output had only been affected to a limited extent.<sup>23</sup> Soon afterwards, conditions changed at a rapid rate. Many companies have experienced heavily reduced demand for goods and services, shocks in production and increased difficulties in obtaining funding. This has led to reduced revenues, with the consequence that the companies affected are finding it difficult to pay their costs.

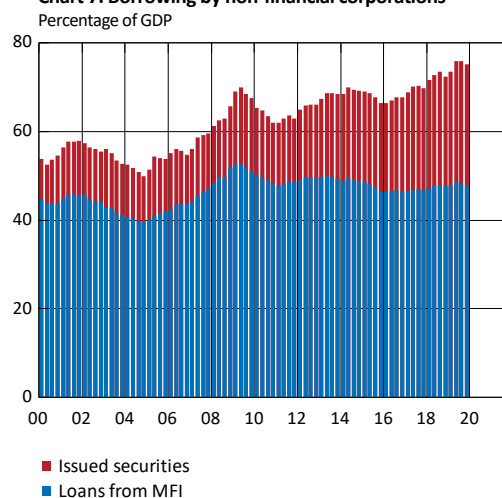
In addition to affecting economic growth and unemployment, it also increases the risks to financial stability. This is due to the fact that the majority of Swedish companies' borrowing consisting of loans from Swedish banks (see chart 7). This situation, with more companies now having problems in maintaining their operations, may lead to increased credit losses for Swedish banks.

A significant part of corporate loans also consists of borrowing via debt securities. The high growth rate of this form of borrowing in recent years has contributed to an increasingly large share of corporate debt being made up of securities. If the cost for companies of renewing their market-based funding rises sharply or if the market is functioning poorly, companies may instead have to turn to the banks for funding. Problems on the corporate bond market therefore mean that the risks also increase in the banking sector.

### The crisis is having major effects on many companies

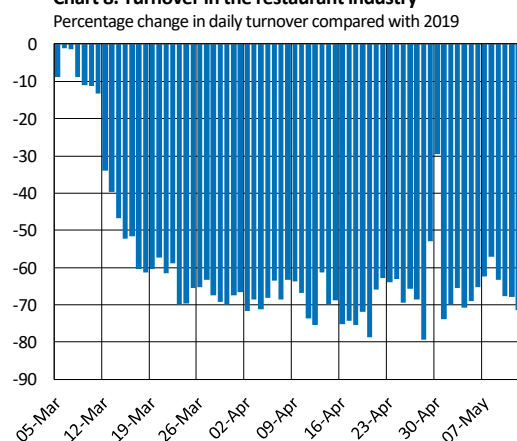
The coronavirus pandemic is affecting the corporate sector broadly and affecting many companies in several different

**Chart 7. Borrowing by non-financial corporations**



Sources: Statistics Sweden and the Riksbank

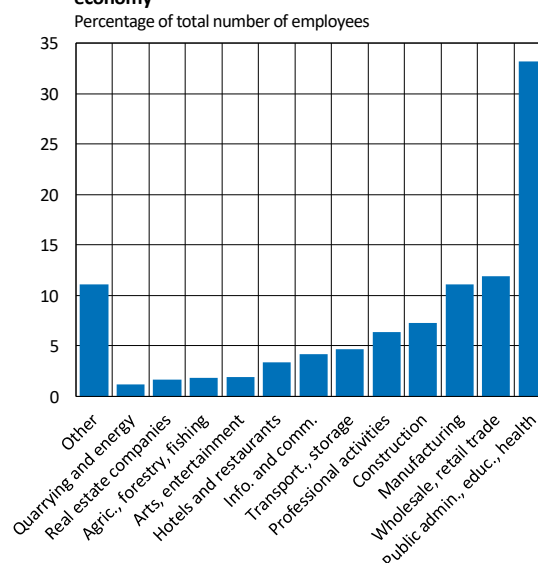
**Chart 8. Turnover in the restaurant industry**



Note. Daily turnover for about 600 restaurants with a total annual turnover of about SEK 11 billion.

Source: Caspeco

**Chart 9. Significance of different sectors for the Swedish economy**



Note. Data for percentage of employees refers to gainfully employed by industry and is from 2018. The category "Professional activities" refers to the industry code M, "Public admin., educ., health" refers to industry codes O, P and Q and "Other" refers to industry codes N, K, S and U.

Source: Statistics Sweden

<sup>23</sup> See the Riksbank's Business Survey, February and March 2020. Sveriges Riksbank.

sectors. This is confirmed by the heavy slowdown in the National Institute of Economic Research’s Economic Sentiment Indicator for April, but also by daily and weekly statistics that show that travel and hotel bookings, restaurant visits (see chart 8) and air traffic decreased heavily from mid-March.

Some of the sectors to be hit hard initially are the trade sector, hotels and restaurants, transport and the manufacturing industry.<sup>24</sup> These sectors employ about one-third of all those employed (see chart 9). This means that comprehensive problems in large parts of these sectors are having significant effects on both growth and the labour market as companies give their staff notice of redundancy or place them on short-time work schemes to reduce costs.

As sectors are often interlinked in various ways, most sectors risk being affected by the coronavirus pandemic in one way or another. The property sector is particularly important in this respect, as many property owners have tenants in sectors that are being hit hard. Property companies are sensitive to cyclical fluctuations, as rents are their primary source of income and increases in rents tend to follow the development of economic growth. Furthermore, the development of the commercial property market, both in Sweden and abroad, has often played a decisive role in larger financial crises.

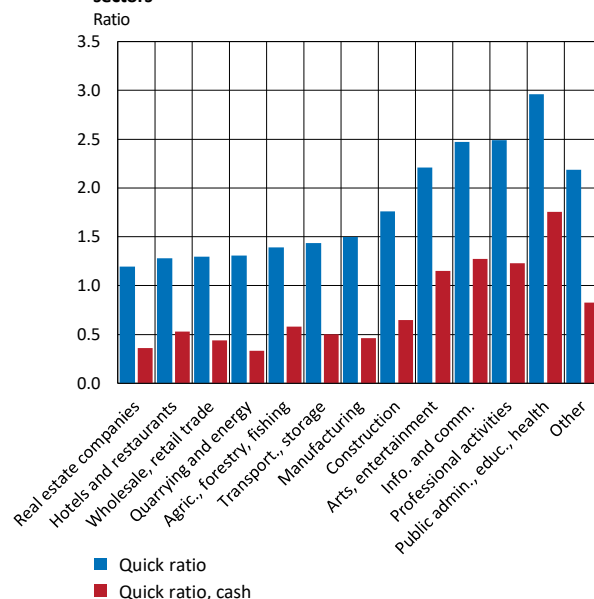
**The major problems in several sectors are affecting property companies negatively**

Property companies with tenants in the sectors hit hard initially, such as consumer-related retail and service companies in the hotel, restaurant and durable goods segments, may be affected negatively as their rental incomes decrease. Even if many rental agreements have a duration of 3-5 years, some agreements, for example for shops and shopping centres, are linked to the tenant’s turnover. Consequently, when turnover falls, the property companies’ rental incomes can also fall.

A greater problem for property companies at present is that many tenants are finding it difficult to pay rents at all due to their revenues having fallen so rapidly and heavily. The property companies can then choose between agreeing to cut rents to avoid tenants entering bankruptcy or sticking to the original agreement and risking tenants entering bankruptcy. Regardless of which, revenues will be lower for the property companies.

However, most property companies are not just exposed to the development of some individual sectors but have a broader property portfolio that includes more sectors than the restaurant, hotel and durable goods segments, for example. Consequently, as long as there is only a minor

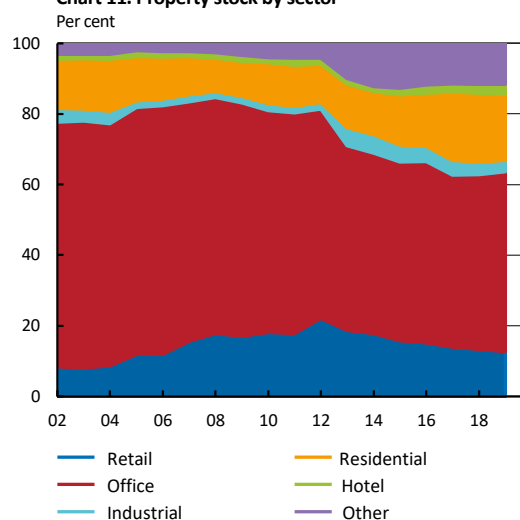
**Chart 10. Quick ratios for Swedish companies in different sectors**



Note. The quick ratio is the ratio of current assets (minus inventories) to current liabilities. If the ratio exceeds 1, this means that current liabilities can be paid relatively fast, provided that current assets can be converted into cash. This may be difficult in the prevailing situation, and so the red bar, “Quick ratio, cash”, refers to the company’s ability to meet its current liabilities using only cash. The indicator refers to the median of each sector. To see which sector codes belong to each category, see the note to chart 9.

Sources: Bisnode and the Riksbank

**Chart 11. Property stock by sector**



Note. The percentages are based on estimated market values.

Source: MSCI

<sup>24</sup> For complete classification of sectors, see SNI 2007 Swedish standard industrial classification 2007, MIS 2007:2. Statistics Sweden.

increase in the number of unlet premises, the property companies' revenues need not decrease heavily.

Many property companies have limited liquid assets in relation to their current liabilities, which means that they risk rapidly encountering problems if revenues decrease heavily (see chart 10). This also applies to companies renting their premises, for example hotels and restaurants.

### The uncertain development may lead to price falls for commercial properties

When economic prospects deteriorate and funding costs rise, the risk also increases that prices for commercial properties will fall. The risk is particularly great for properties focused on the hotel, restaurant and durable goods segments. However, these segments account for a smaller share of the property stock (see chart 11). Offices are the largest segment and this is also the segment in which values have risen most clearly in recent years.

Transaction volumes have decreased slightly recently, which indicates that investors on the market have become more cautious. However, as there have been so few transactions, it is difficult to know what effect recent developments have had so far on property values. Nevertheless, a number of companies have already reported write-downs of the value of their properties in their interim reports.

### Property companies are responsible for a large part of borrowing

One way of gaining an idea of the consequences that problems in the corporate sector could cause for financial stability is to examine how indebtedness looks in different sectors. The majority of Swedish companies' borrowing consists of loans from Swedish banks. A large part of bank loans go to property companies<sup>25</sup>, just over 40 per cent. The manufacturing industry and the category that includes the trade sector as well as hotels and restaurants also make up sectors with significant bank loans (see chart 13). When increasing numbers of companies are affected by payment difficulties or enter into bankruptcy, this will mean that the banks' credit losses increase (see fact box "Number of bankruptcies increasing"). As a large part of the banks' corporate lending goes to property companies, problems in this sector could have major consequences for financial stability (see the article "The Riksbank's stress-testing of banks' capital – an update").

### Increased credit risk leads to funding difficulties

Companies also use debt securities to fund their operations. The growth rate in securities borrowing has been significantly

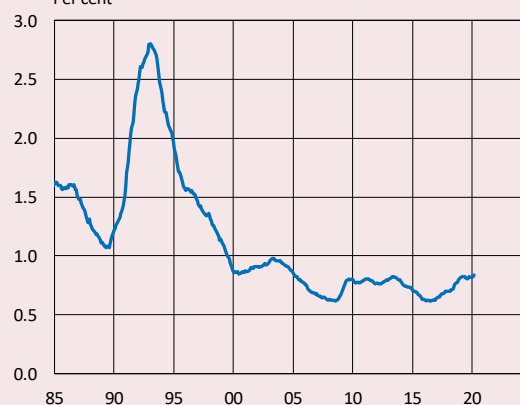
### Number of bankruptcies increasing

There is always a certain probability that a borrower will not be able to repay a loan. Banks and other lenders who grant loans to households and companies therefore take a credit risk by lending money.

The credit risk varies in magnitude for different borrower groups. For example, significantly more companies than households enter bankruptcy every year in Sweden. Consequently, credit losses have historically been linked to the corporate sector, while households have only been responsible for a small proportion. For example, only about six per cent of the major banks' total credit losses came from the household sector when the Swedish banking crisis culminated in 1992.

The default rate, which has been relatively low for a longer period (see chart 12), increased slightly in March. Statistics from the credit information agency, Upplysningcentralen, show that bankruptcies seem to have continued to increase in April. Statistics from the Swedish courts also show that the number of reconstructions has increased. The recorded number of bankruptcies will probably increase further, among other reasons due to reporting being subject to a certain time lag.

**Chart 12. Default rate for non-financial corporations in Sweden**  
Per cent



Note. Default rate refers to the number of defaults divided by the number of companies. Last observation is from March.

Sources: Statistics Sweden, the Swedish Companies Registration Office and the Riksbank

<sup>25</sup> Here, the term 'property companies' refers to companies classified under SNI code L with the activity type real estate activities by Statistics Sweden. See SNI 2007 Swedish standard industrial classification 2007, MIS 2007:2. Statistics Sweden.

higher than that for bank loans in recent years, which has contributed to an increasingly large share of companies' debts consisting of debt securities. Chart 13 shows that property companies are also responsible for a large part of securities borrowing, almost 40 per cent. The manufacturing industry also has a large degree of borrowing via debt securities.

When uncertainty over companies' credit ratings increased at the start of March, yields on corporate bonds increased. Furthermore, liquidity on the markets for both commercial paper and corporate bonds has occasionally been very low. This has made it difficult for companies to refinance their loans. Issue volumes in March 2020 were therefore significantly smaller than they were in March 2019 (see chart 14). Following this, volumes recovered somewhat in April and early May 2020.

Some companies have already set up credit facilities with the banks that they can use as a kind of insurance, for example when they are unable to refinance their certificates and bonds. As a consequence of the pandemic, the companies have started to use these facilities.

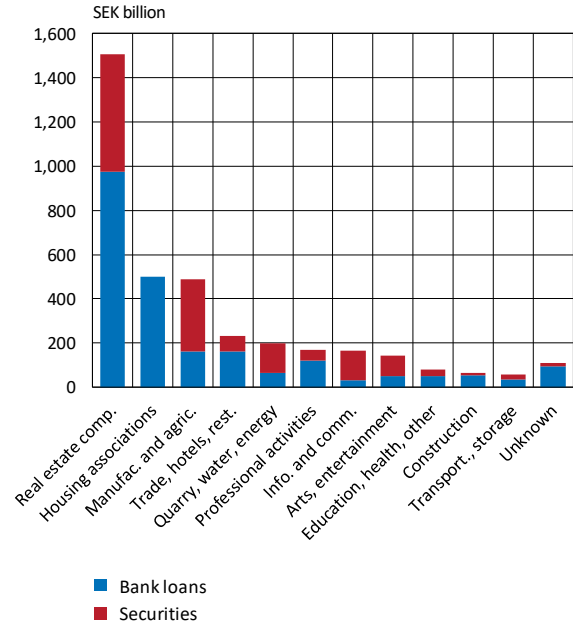
**Funding difficulties for companies are increasing the risks in the banking sector**

The fact that companies have started to utilise credit facilities could be a contributory factor for the banks' lending to companies having increased more rapidly in March than in February, according to financial market statistics (see chart 17). At the same time, interest rates for bank loans were relatively unchanged in March (see chart 15). Nevertheless, many companies witness that it has become both more difficult and more expensive to obtain a bank loan (see chart 16). This indicates that lending rates may increase in the period ahead. There are also significant volumes of securities that will mature in the near term and that need to be refinanced (see chart 18). A large part of these are maturing and may have to be refinanced at a higher interest rate, at the same time as demand for bank loans may increase further if many companies do not succeed in refinancing their securities borrowing.

**Deteriorated financial conditions for many households**

Declining demand, production shocks and rising funding costs have led to increasing numbers of companies being forced to take measures to reduce costs, among other things by issuing redundancy notices to staff. Up until 8 May, about 71,000 people had received notice of redundancy since the start of March. This means that many employees risk losing their jobs

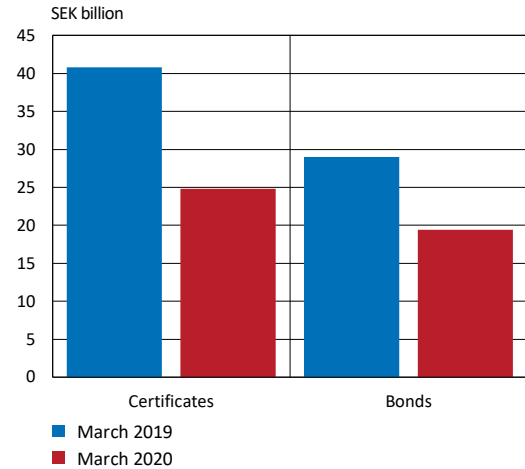
**Chart 13. Bank loans and securities borrowing broken down into different sectors**



Note. The data refers to March 2020 and includes about 95 per cent of all bank loans. Includes bank loans from Swedish banks and securities borrowing in both Swedish kronor and foreign currency. See the note to Chart 9 for details about sector codes. However, some sectors have been combined in this Chart in comparison with Chart 9.

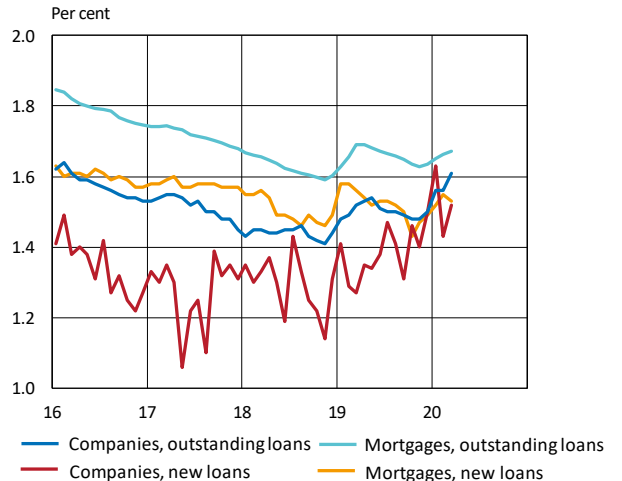
Sources: Statistics Sweden and the Riksbank

**Chart 14. Issues of certificates and bonds by Swedish non-financial corporations in March**



Note. Refers to issuance in both Swedish kronor and foreign currency. Source: Statistics Sweden

**Chart 15. Interest rates for households and non-financial corporations in Sweden**



Note. Refers to loans from monetary financial institutions (MFI). Source: Statistics Sweden



during this crisis.<sup>26</sup> The Government has presented fiscal policy measures aimed at increasing the possibilities for companies to retain their staff. Among other things, companies may place staff on short-time work schemes, meaning that employees reduce their working hours at the same time as they keep a large part of their salary, and companies' costs may be reduced by half. So far, companies have applied for short-time work schemes for about half a million employees. The measures that the Government has introduced mean that many employees will be able to keep their jobs, although it is uncertain to which extent the measures will be able to restrain the expected rise in unemployment.

In addition to many households being affected by losses of income, their wealth is also decreasing as a result of falling prices on the stock market.

The Riksbank has long pointed out that the heavy upswing in housing prices and household indebtedness mean that households may become sensitive to different types of shocks, such as loss of income, rising interest rates and falling housing prices. The vulnerabilities linked to household indebtedness can affect the economy through several different channels.<sup>27</sup> For example, this can happen through payment suspensions, reduced consumption or reduced confidence in the covered bonds that the banks issue to fund household mortgages.

### Lower debt growth but consumption loans are increasing rapidly

Household debt has been increasing strongly for a long time, which has contributed to indebtedness among households being historically high at present (see chart 19). Indebtedness is also high in relation to other countries. The development of household mortgage debt is affected by several factors.<sup>28</sup> One important factor is the development of prices on the housing market, which has been strong for a long time. Including loans via housing cooperatives, the debt-to-income ratio now amounts to 209 per cent of households' disposable incomes. Even if the growth rate of household loans is continuing to rise, the growth rate is lower in comparison with a few years ago and amounts to about 5 per cent per year (see chart 17).

### Consumer loans - a small but growing percentage of household debts

At present, Swedish households have debts to Monetary Financial Institutions (MFIs) amounting to just over SEK 4,200 billion. The largest part of these loans, 82 per cent, comprises mortgages. Of the other loans, 12 per cent are made up of loans with other collateral than housing and 6 per cent of loan without collateral, known as unsecured loans. The term consumer loan is the collective term for unsecured loans and loans with other collateral than housing (for example a car). Consequently, consumer loans make up 18 per cent of households' total debt to MFIs.

In recent years, the growth rate of consumer loans has risen significantly. It is primarily unsecured loans that are experiencing rapid growth. These increased by almost 8 per cent in March 2020, compared with the same period in the previous year (see chart 17). In addition, in its survey from June 2019, FI finds that lending volumes for unsecured loans of over SEK 250,000 were almost five times greater in 2018 than they were ten years before.<sup>29</sup>

It is not possible to see, in the statistics, what households are using these loans for. Usually, households use unsecured loans to purchase goods and services, but they can also be used for housing purposes. The relatively large size of the loans could indicate that households are using these to fund down payments in the purchase of housing, for example.

Consumption loans normally have higher interest rates and shorter maturities than mortgages, as well as being smaller. The loans are most often issued by sales finance companies (companies that issue loans for the purchase of a certain product or service) and niche banks (banks that specialise in one area, such as consumption loans).

Even if consumption loans make up a small percentage of households' total debts, the high interest rates mean that they make up a significant part of households' total interest rate costs. According to Statistics Sweden's financial market statistics, the average mortgage rate is 1.7 per cent, in comparison with the average interest rate for unsecured loans and loans with other collateral than housing, which are 6.8 and 2.5 per cent respectively. Using these interest rates and the relevant stock of debts as a starting point, the result is that interest expenditure for unsecured loans and loans with other collateral corresponds to just over 30 per cent of households' total interest expenditure.<sup>30</sup> The increasing consumption loans are leading to households becoming more vulnerable to shocks, such as loss of income or rising interest rates, for example.

<sup>26</sup> However, not all notices of redundancy lead to redundancy and unemployment. The number of those given notice of redundancy who lose their jobs depends, among other factors, on how long the crisis lasts. During the financial crisis, around 60 per cent of those given notice of redundancy were actually made redundant and around 30 per cent became unemployed. See "Are those who are laid off unemployed?" Article in *Monetary Policy Report*, April 2020. Sveriges Riksbank.

<sup>27</sup> For a review of the risks linked to household indebtedness, see Emanuelsson, R., Melander, O. and Molin, J. (2015), Financial risks in the household sector, *Economic Commentary* no. 6. Sveriges Riksbank.

<sup>28</sup> See Emanuelsson, R., Katinic, G. and Spector, E. (2018), Developments on the housing market and their effect on household debt, *Economic Commentaries*, No. 14. Sveriges Riksbank.

<sup>29</sup> See *Swedish loans for consumption*, June 2019. Finansinspektionen.

<sup>30</sup> As the rate of amortisation on these loans is higher, this means that they are responsible for an even greater share of households' debt payments.

In contrast, the growth rate of consumption loans has been higher in recent years. These loans are associated with higher interest rates and are responsible for a significant part of households' total interest expenditure (see the fact box "Consumer loans - a small but growing percentage of household debts"). As the Swedish economy is now entering a deep downturn and more households are being affected by loss of income, credit risk for these loans is increasing. This means that, in the period ahead, it will be important to monitor developments on this market, partly to see how households will be affected and partly because they could have consequences for some of the lenders whose operations specialise in loans of this type.

**Most households will probably be able to repay their loans**

Every year, FI conducts stress tests based on a random sample of new mortgagors. These analyse how many households, under various scenarios, would have debt payments exceeding their incomes after considering the household's other expenditure. One of the scenarios investigates how many new mortgage borrowers would suffer a deficit in their monthly calculations if they were to become unemployed.<sup>31</sup> A large majority would still be able to meet their debt payments. A large proportion of mortgage borrowers living alone who are members of an unemployment insurance fund but do not have income insurance could have problems repaying their loans if they were to become unemployed. However, this percentage would decrease significantly if these households were to be temporarily exempted from the amortisation requirement.

FI is also investigating how the new mortgage borrowers would cope with an interest rate corresponding to 7 per cent, and finds that almost all households would manage without suffering a deficit.<sup>32</sup>

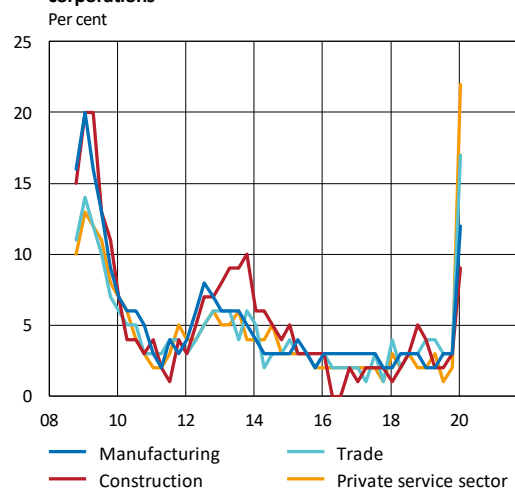
Almost 60 per cent of households' mortgages have interest-rate fixation periods that are very short (see chart 20), which means that rising interest rates have a rapid impact on households' interest expenditure. At the same time, the Riksbank's expansionary monetary policy, with both a low repo rate and purchases of financial assets, means that mortgage rates are low at present (see chart 15). Neither have households' interest rates risen substantially recently, even though the Riksbank has raised the repo rate and the banks' funding costs have been affected by rising risk premia. Instead, the banks' mortgage margins have continued to fall.<sup>33</sup>

<sup>31</sup> The random samples cover all new mortgage agreements entered into over the periods 30 August–6 September 2019 and 27 September–4 October 2019. See *The Swedish Mortgage Market*, April 2020. Finansinspektionen.

<sup>32</sup> However, the proportion becomes higher if debts via housing cooperatives are also included.

<sup>33</sup> See *The banks' margins on mortgages*, first quarter 2020. Finansinspektionen.

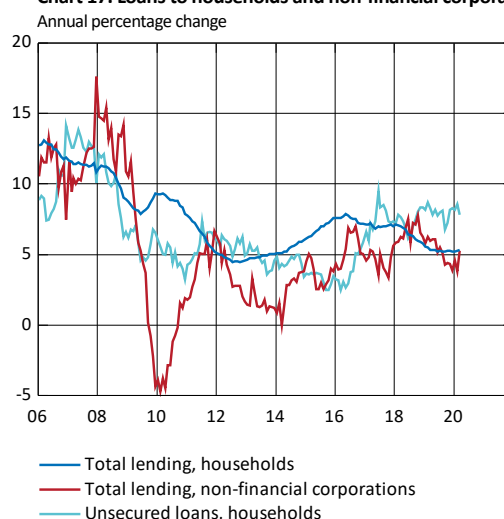
**Chart 16. Financing terms among Swedish non-financial corporations**  
Per cent



Note. The chart shows the percentage of companies that have stated that it is considerably more difficult than normal to fund the company's operations.

Source: National Institute of Economic Research

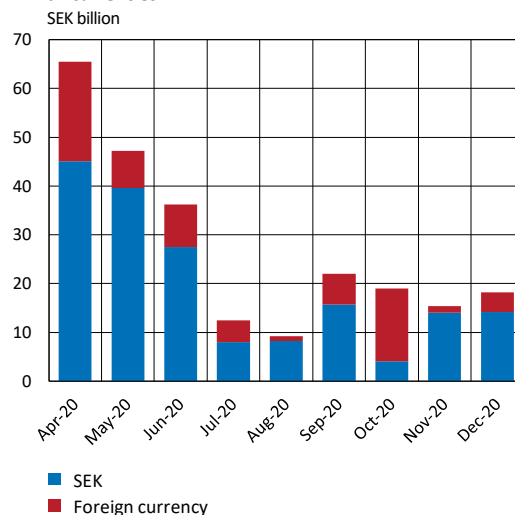
**Chart 17. Loans to households and non-financial corporations**  
Annual percentage change



Note. Refers to loans from monetary financial institutions (MFI).

Source: Statistics Sweden

**Chart 18. Maturity of companies' interest bearing securities in all currencies**  
SEK billion



Note. Balances at the end of March 2020. The values refer to principal payments on bonds and certificates.

Source: Statistics Sweden



### Measures by the authorities are improving households' resilience during the crisis

Even if most households currently have a good ability to pay their debts, it cannot be ruled out that individual households may encounter problems in paying their loans if their economic situations deteriorate. Credit losses on mortgages were, however, relatively small in the crisis of the 1990s, when both unemployment and mortgage rates increased heavily. Measures by the Government, FI and the Riksbank are also deemed to reduce the likelihood of households being forced to suspend payments on their loans. For example, FI has given the banks the possibility of giving both new and existing mortgage borrowers temporary exemption from the amortisation requirement, which could make it easier for many households to meet their housing expenditure during the crisis. This applies, in particular, to those living alone who are highly indebted and affected by unemployment.

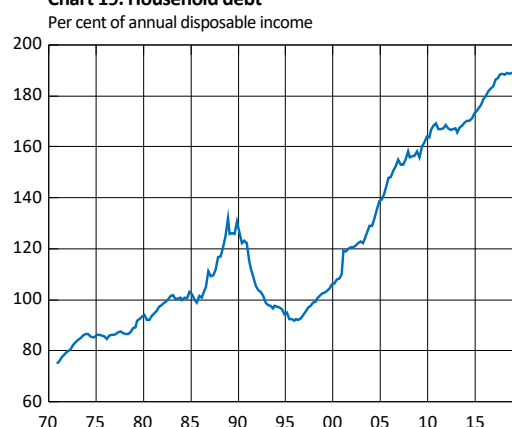
The distribution of assets between households with high and low debt is of considerable significance for the risk assessment. It is not possible, however, to analyse this at present, as data on households' assets is not gathered at the individual and household level. This makes it more difficult to assess the resilience of households. Better information on households' assets and liabilities is something that the Riksbank has been requesting for a long time and which would have been particularly desirable in a situation like this.<sup>34</sup>

### Falling housing prices could lead to a stronger decrease in household consumption

FI's stress tests are aimed at measuring households' capacity to pay their loans and thus do not capture any effects on household consumption. Even if most households will probably be able to meet their debt payments, particularly if they are exempted from the amortisation requirement, the higher indebtedness may contribute towards a larger downturn in household consumption if the downturn in the Swedish economy also coincides with a larger fall in housing prices.<sup>35</sup>

This is because households may wish to increase their saving when housing prices fall, as a precaution, as falling housing prices lead to rising loan-to-value ratios for households.<sup>36</sup> Rising loan-to-value ratios can also lead to restrictions on households' ability to increase their mortgages,

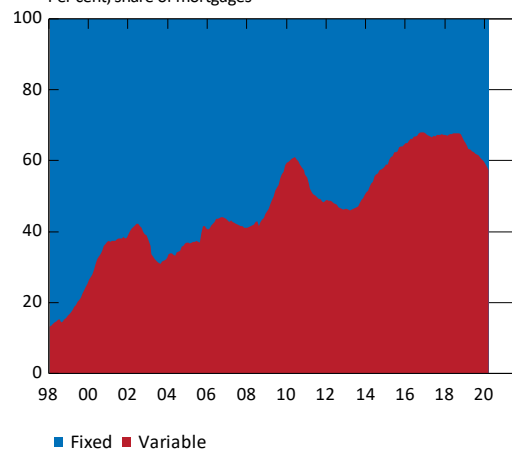
**Chart 19. Household debt**



Note. Households' total debts as a share of their disposable income totalled over the past four quarters.

Sources: Statistics Sweden and the Riksbank

**Chart 20. Interest-rate fixation periods in the mortgage stock**  
Per cent, share of mortgages



Note. Loans from mortgage institutions. The share of mortgages in each category is volume-weighted. Variable rate refers to rate fixation periods up to 3 months. Fixed rate refers to rate fixation periods above 3 months.

Source: Statistics Sweden

<sup>34</sup> See the Riksbank's petition to the Riksdag 2018/19:RB4, *Statistik över hushållens tillgångar och skulder* (Statistics on households' assets and liabilities).

<sup>35</sup> For a longer discussion of the relationship between household debt and consumption, see Relationship between household indebtedness and consumption during the financial crisis, 2007-2009. Fact box in *Financial Stability Report 2019:2*. Sveriges Riksbank. For studies based on micro data, see, for example, Dynan, K. (2012), Is household debt overhang holding back consumption?, *Brookings Papers on Economic Activity*. Brookings Institution, Bunn, P., and Rostom, M., (2014), Household debt and spending, *Quarterly Bulletin Q3*. Bank of England and Andersen, A. L., Duus, C., and Lærkholm Jensen, T., (2016), Household debt and spending during the financial crisis: Evidence from Danish micro data. *European Economic Review* 89, 96-115.

<sup>36</sup> The loan-to-value ratio refers to the size of the mortgage divided by the market value of the property.

which further restricts their scope for consumption. In addition, the banks can tighten credit granting for other reasons when housing prices fall.

When households reduce their consumption, this, in turn, contributes towards Swedish companies becoming less profitable and towards unemployment rising. Ultimately, this may also mean that the banks make larger credit losses. If housing prices were to fall heavily, this could therefore strengthen the effects on the real economy and, in addition, it could spread the problems to the financial system.

**Uncertainty in the housing market has increased**

After a more restrained period, the rate of increase of housing prices started to rise more clearly in the autumn of 2019. By February 2020, housing prices had risen by 7.1 per cent on an annual basis, according to Valueguard’s HOX index (see chart 21). Other indicators over the same period also pointed to strong development in the housing market. For example, the SEB Housing Price Indicator and the number of sales were at relatively high levels.

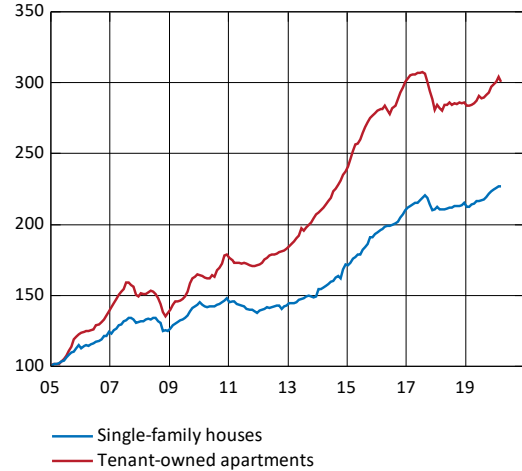
However, over the second half of March, the development of the housing market reversed. Since then, the SEB Housing Price Indicator has fallen heavily and now indicates that a majority of households expect falling housing prices in the period ahead (see chart 22).<sup>37</sup> During February and March, housing prices for both tenant-owned apartments and single-family houses fell by 0.4 per cent in seasonally adjusted terms, according to the HOX aggregate price index. This outcome is very weak from a historical perspective (see chart 23). For tenant-owned apartments, the fall was heavier and prices fell by 1.3 per cent.

A reduced number of sales, which is usually the case when uncertainty increases in the housing market, may be contributing to the effects of the crisis on the housing market not being fully reflected in housing prices but instead being expressed in reduced turnover. However, it is difficult to assess how the housing market will be affected and this is dependent on how prolonged the crisis is and what effects it has on the Swedish economy.

**Increased uncertainty over housing prices is affecting construction**

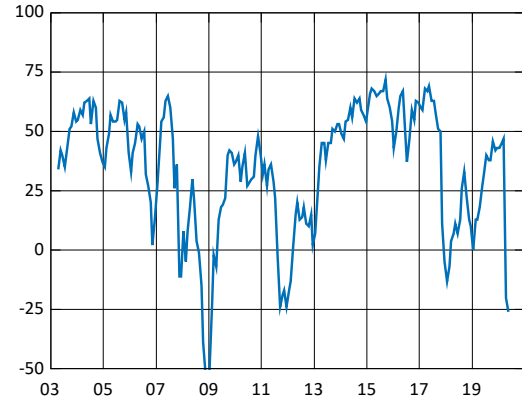
One reason for the fall in housing prices over the autumn of 2017 was the large increase in the number of newly built tenant-owned apartments, which, in turn, led to a market saturated by expensive tenant-owned apartments, especially in metropolitan areas. When the prices fell, so did construction, particularly in Stockholm, where prices fell the most. Despite this, construction has remained at historically high levels, even if it continues to be low in relation to population growth.

**Chart 21. Housing prices in Sweden**  
Index, January 2005 = 100



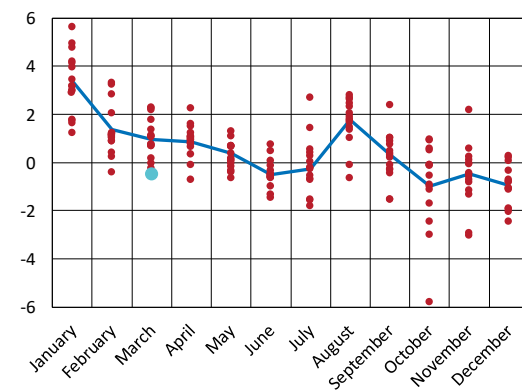
Note. Housing prices are seasonally adjusted.  
Sources: Valueguard and the Riksbank

**Chart 22. Households' expectations of housing prices**  
Net total



Note. Net total is defined as the difference between the percentage of households who believe that housing prices will rise and the percentage who believe that housing prices will fall.  
Source: SEB

**Chart 23. Monthly growth in housing prices and spread around mean value for each month**  
Per cent



Note. The red dots refer to monthly growth from 2005 and on, while the blue line refers to the historical mean value for each individual month over the same period. The turquoise dot refers to the latest outcome from March 2020.

Sources: Valueguard and the Riksbank

<sup>37</sup> The most recent survey was conducted between 28 April and 5 May 2020.

The fall in housing prices had significant effects for many housing developers, whose sales decreased clearly at the same time as their equity prices fell. Several developers had problems in maintaining their operations at all. Sales have recovered for many companies, particularly for several of the larger housing developers, who have also had good profitability for several years. However, several actors have had problems with profitability over a longer period. If housing prices were to continue to fall, this could lead to decreasing demand for new builds, which could create problems for housing developers and consequently lead to reduced housing production in the longer term.

## Worsened prospects are increasing the risks in the Swedish banking system

The five major banks in Sweden have long had good earnings and low credit losses. Their cost-effectiveness has been good in comparison with other European banks and return on equity has been relatively high (see chart 24).<sup>38</sup> However, the heavily worsened economic prospects and uncertainty in financial markets in light of the coronavirus pandemic are affecting the banks negatively. Prices on bank stocks fell sharply in March (see chart 25), at the same time as their funding costs have been affected by higher risk premia (see also the fact box “How is STIBOR determined?”). In addition, the banks’ credit losses increased over the first quarter of the year. At the same time, the market’s assessment of profitability among the major banks in Sweden has dropped, even if it remains higher than among comparable European banks (see chart 26).

Uncertainty over the course of the pandemic is making it difficult to assess how hard the banking sector will be affected. Even if the authorities have taken measures since the coronavirus pandemic broke out to ease lending by the banks, the banks’ conditions for obtaining funding from financial markets may be affected negatively. Increased numbers of corporate bankruptcies may also cause banks’ credit losses to increase further, which could affect their lending capacity.

### The banks obtain funding through both deposits and wholesale funding

The major banks in Sweden obtain more than half of their funding through deposits from households and companies, and the remainder from issuing securities (see chart 27).

In principle, deposits are considered to form a source of financing that is both stable and cheap. In light of the generally low level of interest rates, the banks’ deposit rates

<sup>38</sup> The comparison banks are BBVA, Banco Santander, Barclays, BNP Paribas, Commerzbank, Crédit Agricole, Credit Suisse, DNB, Erste Bank, BPCE, HSBC, Intesa Sanpaolo, KBC, Lloyds, Raiffeisen, RBS, Société Générale, UBS and UniCredit.

**Chart 24. Return on equity**

Per cent, rolling four quarters



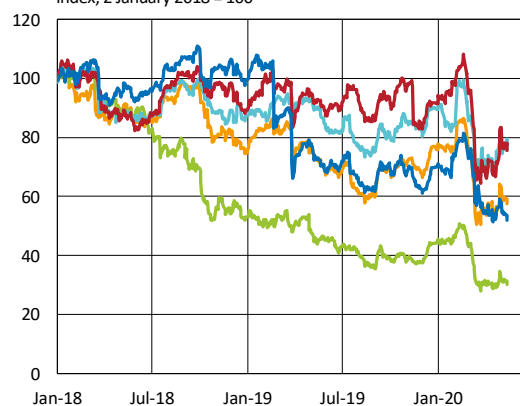
— The major banks in Sweden  
— European banks

Note. Unweighted average adjusted for nonrecurring items.

Sources: SNL Financial and the Riksbank

**Chart 25. Equity prices for the major banks in Sweden**

Index, 2 January 2018 = 100

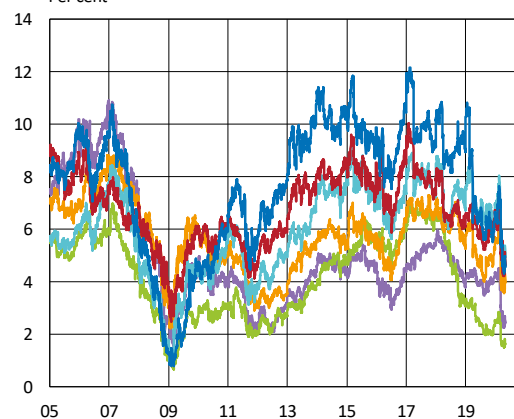


— Swedbank  
— SEB  
— Handelsbanken  
— Danske Bank  
— Nordea

Source: Bloomberg

**Chart 26. Market-based leverage ratios**

Per cent



— Swedbank  
— Handelsbanken  
— SEB  
— Nordea  
— Danske Bank  
— European banks

Note. Market-based leverage ratios refer to market capitalisation divided by total assets.

Source: Bloomberg

are around 0 per cent for households and companies.<sup>39</sup> The proportion of deposits in relation to lending has increased slightly over the first quarter of the year. Among other factors, this may be due to increased withdrawals from funds that have instead been invested as deposits with the banks.

The major Swedish banks have a large proportion of wholesale funding, a significant part of which is denominated in foreign currency (see chart 28). The banks are therefore dependent on the functioning of global financial markets, and funding is consequently affected if the markets function poorly. In a situation where risk premia, and thereby the cost of wholesale funding, are increasing against the background of increased turbulence in financial markets, relatively large scale deposits may restrain the banks' total funding costs.

**Global dollar concerns have affected banks' short-term wholesale funding**

The major Swedish banks' funding at short maturities is to a large extent denominated in US dollars.<sup>40</sup> In the initial phase of the crisis, there arose a global shortage of dollars, which was expressed, among other things, in US money market funds becoming unwilling to invest in banks' dollar certificates. This meant that risk premia increased, which had the consequence that the short interest rate for dollar loans, USD LIBOR, increased markedly from mid-March.<sup>41</sup> This turbulence thus meant that it became more difficult for major Swedish banks to obtain funding in dollars. The consequence of this was that Swedish major banks' issues of short-term securities through certificates in dollars was significantly lower in March of this year than in all months of 2019 (see chart 29). In addition, the securities issued were to a large degree for shorter maturities than normal (see chart 31).

The major Swedish banks convert a large part of their borrowing in dollars to Swedish kronor by entering into what are known as foreign exchange swaps, for example with insurance companies and National Pension Insurance Funds. When the banks' access to dollars deteriorated, it therefore affected insurance companies negatively (see also the article "The interconnectedness of insurance companies, National Pension Insurance Funds and banks via the foreign exchange market").

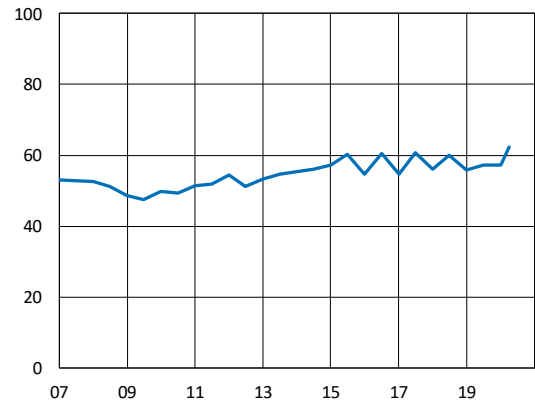
Following the measures taken by several central banks to increase the banks' access to dollars (see the article "The Riksbank's measures during the coronavirus pandemic"), the stress in the dollar market has decreased, with the result that

<sup>39</sup> See *Financial Market Statistics*, March 2020, Statistics Sweden.

<sup>40</sup> Short-term funding means wholesale funding with instruments with maturities of less than one year. The major Swedish banks' funding at short maturities often takes place in US dollars by the banks issuing a certificate of deposit (CD), in which the counterparty makes a deposit at the bank for a set time at a set interest rate, or a commercial paper (CP). Short-term funding for the major Swedish banks consists of US dollars to about 70 per cent and euros to 20 per cent. One of the reasons that the banks use securities in foreign exchange for short-term funding is that no larger liquid market exists in Swedish kronor.

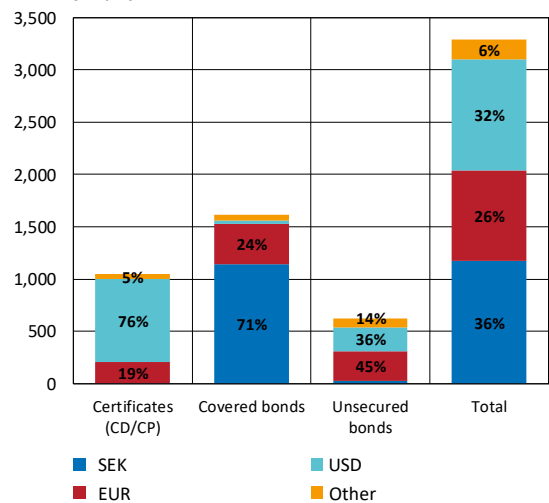
<sup>41</sup> Chart 27 in the chart appendix shows that the difference between the 3-month LIBOR and the OIS rate increased heavily in the initial phase of the crisis before then decreasing.

**Chart 27. Deposit-to-loans for the major banks in Sweden**  
Per cent



Sources: Liquidatum and the Riksbank

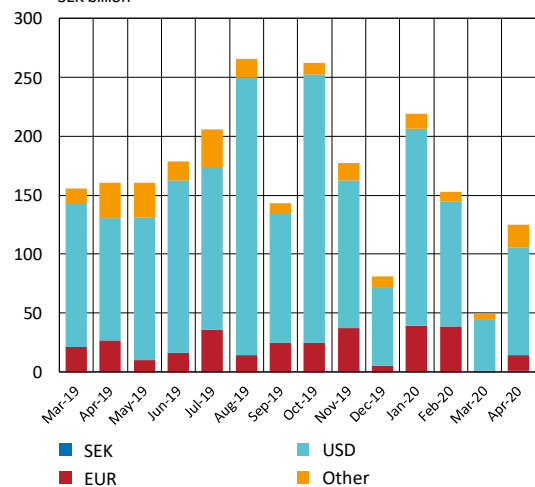
**Chart 28. Wholesale funding for the major Swedish banks**  
SEK billion



Note. Refers to the average for the major Swedish banks.

Source: The Riksbank

**Chart 29. Issued CD/CP broken down by currency**  
SEK billion



Note. Issued volumes of commercial paper and certificates of deposit for the major Swedish banks. Refers to averages.

Source: The Riksbank

money market funds have increased their demand for bank certificates and LIBOR has fallen. Taken together, this has improved the Swedish banks' possibilities of obtaining funding (see chart 29).

### The banks' long-term funding has also been affected

A large part of the major Swedish banks' long-term funding consists of covered bonds (see chart 28). This market is particularly important for the housing market and it is therefore important from a financial stability perspective that this market functions satisfactorily.

At the start of the coronavirus pandemic, risk premia for covered bonds rose, as did, as a result, the cost of banks' long-term funding. This was connected to generally lower risk appetite in financial markets in pace with the mounting uncertainty (see chart 32). Another reason contributing to the increased risk premia was that various UCITS sold off covered bonds when withdrawals by investors increased as a consequence of the turbulence (see the section "Institutional investors are affected by the situation in financial markets"). Risk premia have, however, decreased following the Riksbank's extended bond purchases, which include covered bonds.

The major Swedish banks are also issuing unsecured bonds, for example to fund lending to companies (see chart 28). Unsecured bonds do not give investors the same priority to a specific cover pool as covered bonds do, which makes them more price sensitive in stressed periods. The cost of issuing these bonds, illustrated by the banks' so-called CDS premia, also increased, even if to a lesser extent than for many European banks (see chart 33).

### The regulations are giving the banks the conditions to stand against the crisis

After the global financial crisis of 2008-09, requirements increased on banks worldwide to increase their resilience. Capital requirements have been tightened with higher minimum requirements and requirements for capital buffers, which have contributed to the banks, over time, increasing their capital. Common Equity Tier 1 (CET 1) ratios for the major banks in Sweden amounted to just under 17 per cent of risk-weighted assets at the end of the first quarter of this year. The leverage ratio has been around 5 per cent for a number of years, and amounted to 4.5 per cent in the first quarter of the year (see chart 34).

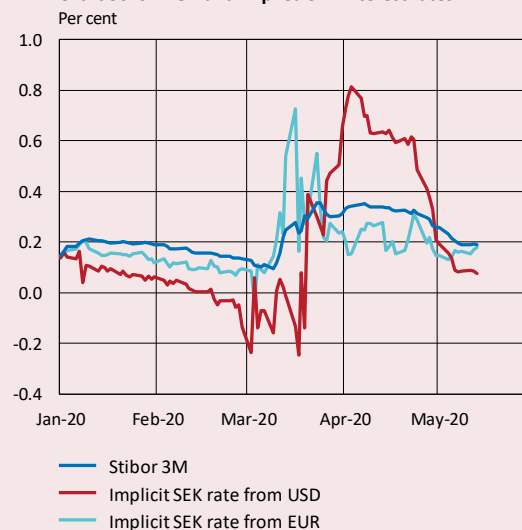
Requirements have also increased on the banks to have greater liquidity buffers (Liquidity Coverage Ratio or LCR) and more stable funding (Net Stable Funding Ratio or NSFR). The major Swedish banks have long reported levels above the requirements for LCR in total currencies and in individual

### How is STIBOR determined?

A large part of the Swedish banks' funding takes place in other currencies than Swedish kronor, above all dollars and euros. The banks convert part of this foreign funding to Swedish kronor using various FX derivatives. The banks thus gain access to funding in kronor to fund assets in Swedish kronor. The cost for the banks to receive funding in kronor in this way can be called the 'implied SEK interest rate' and depends, among other factors, on the conditions on the international funding markets.<sup>42</sup> These implied SEK interest rates are highly significant for the banks' funding costs and form the basis, to a great extent, for how the banks calculate the STIBOR rate.

Chart 30 shows STIBOR with a three-month maturity and the implied SEK interest rates obtained by converting funding in dollars and euros to Swedish kronor. The implied SEK interest rates increased in March. This contributed to an increase in STIBOR over the same period. Since then, the implied SEK interest rates have gradually come down, which has contributed to STIBOR falling.

**Chart 30. STIBOR and implied SEK interest rates**



Note. The implied SEK interest rates refer to the interest rates at which the banks obtain funding by first borrowing dollars or euros and then converting this to Swedish kronor through foreign exchange swaps. They are calculated by using the covered interest rate parity condition, based on spot and forward rates, as well as the domestic 3-month interest rates (EURIBOR and USD LIBOR).

Sources: Bloomberg and the Riksbank

<sup>42</sup> The implied SEK interest rates are calculated by using the covered interest rate parity condition, based on spot and forward rates, as well as the domestic 3-month interest rate (for example EURIBOR and USD LIBOR).



significant currencies. Since the requirement was introduced in significant currencies, they have also increased their LCRs in SEK. One important aim of the LCR requirement is for the banks to build up liquidity buffers that they can use in a serious economic downturn. During the coronavirus pandemic, the major Swedish banks' LCRs have fallen slightly, partly due to the stress in the dollar market, albeit from levels at a good level above the requirements (see chart 35). The major Swedish banks' NSFR is 112 per cent on average and levels have been relatively stable since the crisis broke out.

Since the financial crisis, the banks must also have a certain level of capital and liabilities that can be converted to new capital if the bank should encounter problems, known as MREL requirements<sup>43</sup>. The Swedish National Debt Office's application of the regulations means that, apart from capital, the three major Swedish banks Handelsbanken, SEB and Swedbank also have to retain a certain proportion of liabilities with a remaining time to maturity of over one year, mainly composed of unsecured bonds. At the start of the year, the three major banks had volumes of unsecured bonds that exceeded what was needed to meet the Swedish National Debt Office's requirement by about SEK 175 billion. Even if this can be considered a comfortable margin, the banks will eventually have to issue new unsecured bonds to replace those maturing. Even though the markets have periodically been turbulent, a few issuances have been carried out by the Swedish banks since April.

**Temporarily lowered requirements are facilitating the banks' credit supply**

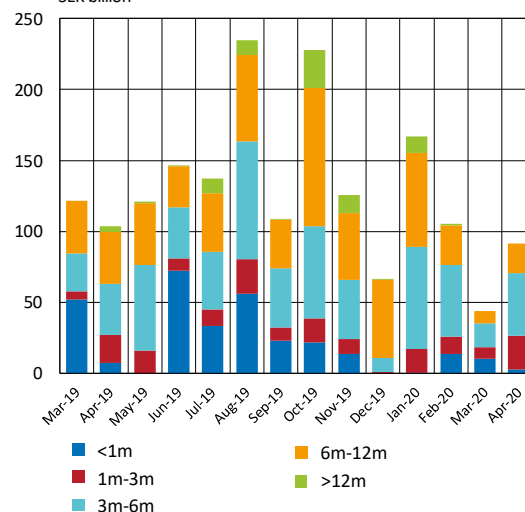
In the wake of the coronavirus pandemic, FI has lowered the so-called countercyclical capital buffer to 0 per cent, which means a total of about SEK 32 billion less in capital requirements for the major Swedish banks. This improves the banks' possibilities of continuing to provide companies and households with credits. At the same time, the major Swedish banks have announced that they are postponing their decisions on planned dividend payments corresponding to a total of SEK 34 billion.<sup>44</sup>

FI is also allowing the banks to fall below the LCR requirement temporarily, with the aim of making the banks' role as suppliers of credit easier, so that the requirement does not lock in liquidity and restrict credit granting by the banks.

The Swedish National Debt Office has the principle that the banks must replace the unsecured bonds used to meet the MREL requirement with subordinated bonds by 2022 at latest. To make it easier for the banks to support the supply of credit, the Swedish National Debt Office has decided to extend this phase-in period until 2024.

During the coronavirus pandemic, it is important that banks are able to maintain sufficient credit supply. Overall,

**Chart 31. Issued CD/CP broken down by maturity**  
SEK billion



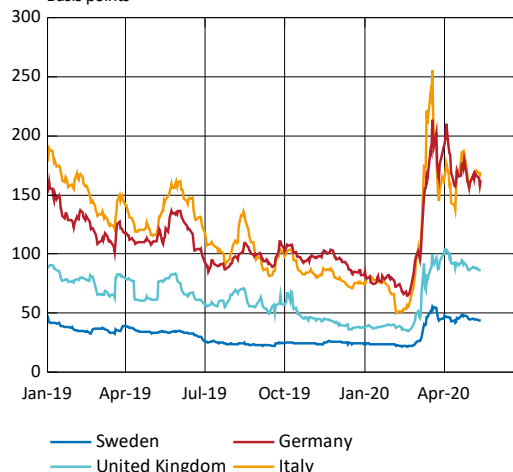
Note. Issued volumes of commercial paper and certificates of deposit for the major Swedish banks. Refers to average. Refers to issues in USD.  
Source: The Riksbank

**Chart 32. Swedish covered bonds**  
Five-year bond, basis points



Note. Refers to difference from swap rate.  
Sources: Macrobond and the Riksbank

**Chart 33. Five year CDS premia for banks**  
Basis points



Note. Average of comparable major banks domiciled in each country. CDS premia represent an indicator of the banks' funding costs via unsecured borrowing on the bond market.  
Sources: Markit and the Riksbank

<sup>43</sup> MREL stands for Minimum Requirement for Own Funds and Eligible Liabilities  
<sup>44</sup> However, the capital will not be freed up until the banks cancel their dividend payments.

the capital, liquidity or MREL requirements do not currently prevent the banks from doing this. In addition, banks can borrow up to SEK 500 billion via the Riksbank for onward lending to companies. It is therefore the Riksbank's assessment that access to liquidity will not restrict the banks from supply credit during the pandemic.

### Estimates show that credit losses could increase significantly and may affect the banks' credit supply

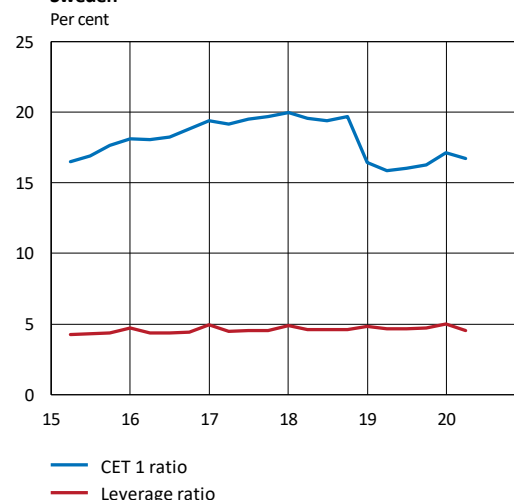
The major banks in Sweden reported increasing credit loss levels for the year's first quarter against the background of more bankruptcies in the corporate sector, as well as increased provisions to cover expected credit losses. The banks made total credit losses and provisions of about SEK 12 billion. If more companies go bankrupt, it is likely that banks' credit losses will increase even more, which may have a negative effect on their capital situation.

The Riksbank has used its method for stress tests to estimate how large credit losses could be for four of the major banks in Sweden in the two possible macroeconomic scenarios (A and B) published in the Monetary Policy Report in April (see the article "The Riksbank's stress test of banks' capital – an update").<sup>45</sup>

In both scenarios, the banks' credit losses are significant. At the same time, however, the banks' earnings compensate for the losses, to a certain extent. The credit loss level, i.e. the credit losses as a percentage of lending to the general public, reaches a maximum of just above 1 per cent in Scenario A and just under 3 per cent in Scenario B (see chart 36). Overall, the banks' credit losses over the three-year period amount to about SEK 200 billion in Scenario A, and about SEK 480 billion in Scenario B.

In Scenario A, the leverage ratio of the four banks is unchanged at 5.2 per cent.<sup>46</sup> On the other hand, the CET 1 ratio falls from 17.1 to 15.7 per cent. In Scenario B, the banks' leverage ratio falls to 3.4 per cent and the CET 1 ratio to 11.1 per cent. In both cases, the banks are above the currently applicable minimum requirements. In Scenario B, the banks' leverage ratio falls to such low levels that the banks may have problems maintaining credit supply in the economy. If banks' capital ratios were to fall to the level described in Scenario B, it is likely that both the authorities and the banks themselves would take measures to improve the capacity of the banking sector to maintain credit supply to the economy (see the article "The Riksbank's stress test of banks' capital – an update" and the chapter "Summary of the stability assessment").

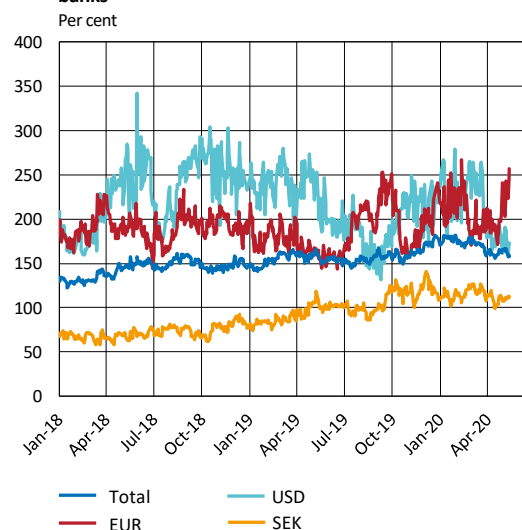
**Chart 34. CET 1 ratio and leverage ratio for the major banks in Sweden**



Note. Refers to a volume-weighted average. The large reduction in the CET 1 ratio in 2018 is due to the risk-weight floor for Swedish mortgages being moved from Pillar 2 to Pillar 1. See Risk-weight floor for Swedish mortgages to become a Pillar 1 requirement. Fact box in *Financial Stability Report 2018:2*. Sveriges Riksbank.

Source: Bank reports

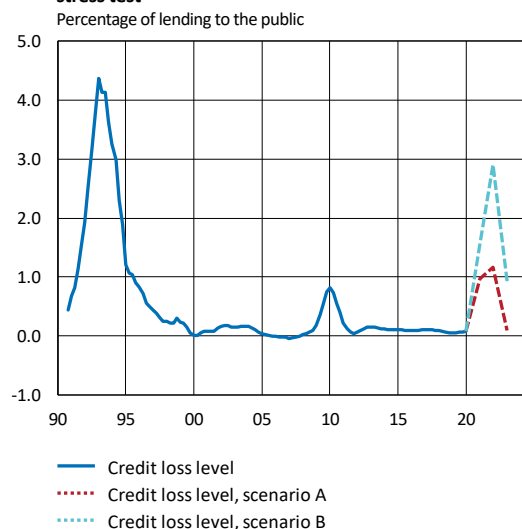
**Chart 35. LCR in various currencies for the major Swedish banks**



Note. Refers to a non-volume weighted average.

Source: The Riksbank

**Chart 36. The major banks' credit losses in the Riksbank's stress test**



Note. The stress test includes Handelsbanken, Nordea, SEB and Swedbank.

Sources: Bank reports and the Riksbank

<sup>45</sup> The four major banks are Handelsbanken, Nordea, SEB and Swedbank.

<sup>46</sup> The calculations in the stress test are based on the fourth quarter of 2019 as this is the last period for which there is outcome data for all variables.



## Other financial institutions are also affected by the situation in financial markets

For institutions with large equity holdings on the asset side in the balance sheet, such as Swedish insurance companies, the equity price fall on global stock markets has led to major reductions in value. Investment funds have also been affected by the fall in equity prices. However, the problems have been most tangible with regard to funds that invest in corporate bonds. As a result of the problems that arose in the corporate bond market, several Swedish fund management companies suspended trading of funds that have invested in Swedish corporate bonds. As a large share of the funds that are active in the Swedish corporate bond market are also active on the market for covered bonds, the problems to some extent spread further in the financial system.

Insurance companies and investment funds are important both for the supply of capital to Swedish companies and because they manage a large share of households' financial wealth and thus constitute an important channel into the household sector. How these agents are affected and act is therefore of considerable significance.

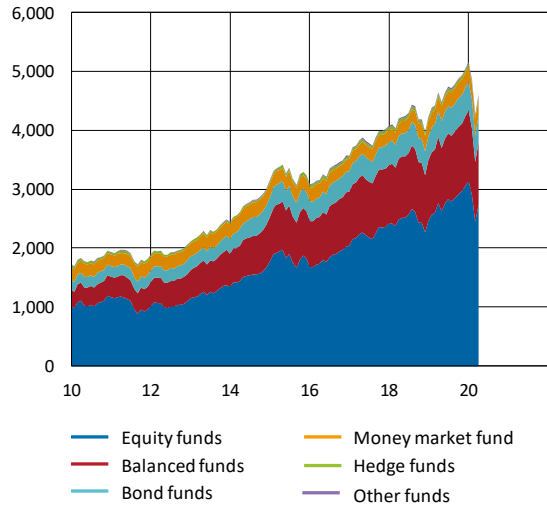
### Equity price fall has resulted in assets declining in value

Both Swedish insurance companies and investment funds have large equity holdings (see chart 37 and chart 38), which has meant that their assets have declined relatively substantially as a result of the global fall in equity prices. For some insurance companies, falls in equity prices of this nature could lead to solvency problems, particularly if prices continue to fall. Insurance companies that already had strained solvency ratios to start with and at the same time have large equity holdings are particularly vulnerable. In addition, the prevailing situation means that many market agents expect interest rates to remain very low for a long time to come. Low interest rates are in particular disadvantageous to insurance companies with long guaranteed pension commitments. This concerns pension companies offering so-called traditional life insurance policies, which comprise the largest share of the insurance sector's investment assets (see chart 39). The guaranteed commitments become more difficult to maintain when interest rates are low and lead to the pension companies possibly needing to turn to more risky assets in the search for yield.

The funds do not have the same type of commitments towards their customers as the insurance companies. As the funds' assets are independent of the fund management companies' assets, it is the owners of the fund shares, to a large extent households, that are directly affected by the falls in value via their fund units. The equity price fall has thus affected households' financial wealth through the funds (see

**Chart 37. Fund wealth for Swedish investment funds**

SEK billion

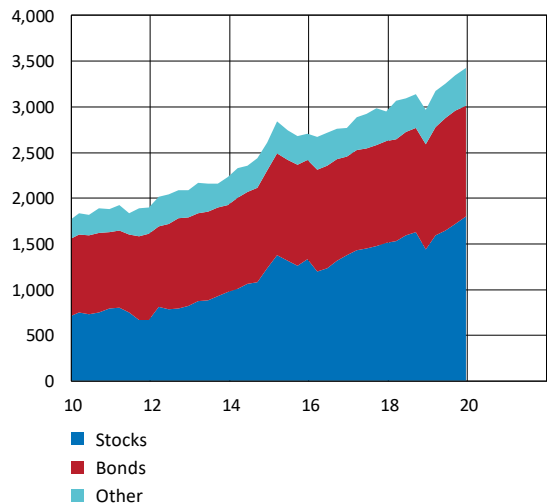


Note. Fund wealth consists of the funds' assets minus fees deducted. This can be affected by both net flows and fluctuations in value.

Source: Macrobond

**Chart 38. Insurance companies' holdings of different types of assets**

SEK billion

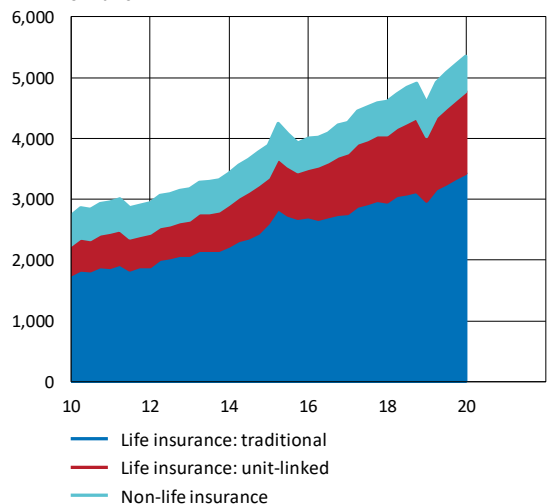


Note. Excluding unit-linked life insurance policies.

Source: Statistics Sweden

**Chart 39. Insurance companies' investment assets**

SEK billion



Note. All life insurance that is not unit-linked insurance is classified as traditional life insurance.

Source: Statistics Sweden

also the section “Deteriorated financial conditions for households”).

### Several funds that invest in corporate bonds needed to temporarily stop trading

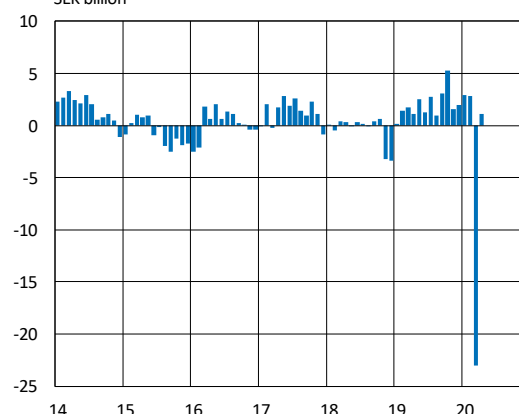
When liquidity in the corporate bond market began to deteriorate, several Swedish mutual fund companies suspended trading in March 2020<sup>47</sup> in some of their funds with holdings in Swedish corporate bonds. This concerned both a number of corporate bond funds, a few balanced funds and money-market funds.<sup>48</sup> At most, the number of funds closed for trading amounted to around thirty, corresponding to just over SEK 120 billion.<sup>49</sup> The reason for the closures was that the funds considered that the low turnover on the secondary market had led to the pricing of bonds becoming unreliable. This in turn meant that it was not possible to calculate the value of the fund units with sufficient reliability. Moreover, many of the funds exposed to the corporate bond market perceived the outflows from owners to be much higher than normal (see chart 40), which put further pressure on the funds, as they need to have sufficient liquidity to be able to meet the outflows.

### Problems in funds spread to other participants

When funds close, this can give rise to contagion risks. This can both concern a spread to other funds and fund management companies, if many owners become worried that more funds will close, and contagion to other parts of the financial system. As many of the funds that had problems with their holdings of Swedish corporate bonds needed liquidity, they chose to a large degree to sell covered bonds, as these were easier to sell than corporate bonds in the prevailing market situation. Problems on the corporate bonds market thus spilled over, via the funds, into the market for covered bonds.

As the funds are major investors in the corporate bond market, problems in the funds can also spread to other participants that are dependent on the functioning of the corporate bond market, for instance, Swedish non-financial companies that to a large degree finance their operations via this market. In this case, the problems on the secondary market made it more expensive and difficult for companies to issue new bonds, even on the primary market (see the section “Corporate sector being hit hard”).

**Chart 40. Net flows for Swedish corporate bond funds**  
SEK billion



Note. The total fund wealth for Swedish corporate bond funds amounted to just over SEK 143 billion at the end of March 2020. Prior to the coronavirus pandemic (at the end of February 2020), the fund wealth amounted to just over SEK 180 billion.

Source: Macrobond

<sup>47</sup> The temporary closure or suspension of trading means that deposits and withdrawals made by owners are not implemented until the fund opens again.

<sup>48</sup> A few fund of funds with holdings in the funds that ceased trading were also forced to close.

<sup>49</sup> This corresponds to just over 2.5 per cent of total Swedish fund wealth. The funds that closed opened again after a few days.

## The financial infrastructure is adapting its operations to maintain good availability

A well-functioning financial infrastructure is a necessary condition for private individuals, companies and public authorities to be able to make payments and execute transactions safely and efficiently. The financial infrastructure is thus a vital part of the financial system and a precondition of its functioning.

A distinctive feature of the financial infrastructure is that the systems are closely interconnected. Banks and other financial institutions are participants in the infrastructure systems and in many cases, the systems are one another's participants. This means that shocks can spread rapidly in the financial system. In addition, there is often only one financial infrastructure per country than can execute a certain type of transaction. This means that participants must be well able to manage disruptions and risks to ensure that their systems are always available and do not spread risks. The Riksbank therefore places considerable emphasis on good availability and functionality in the infrastructure systems. This applies not least in the prevailing situation when stress levels in financial markets have been high.

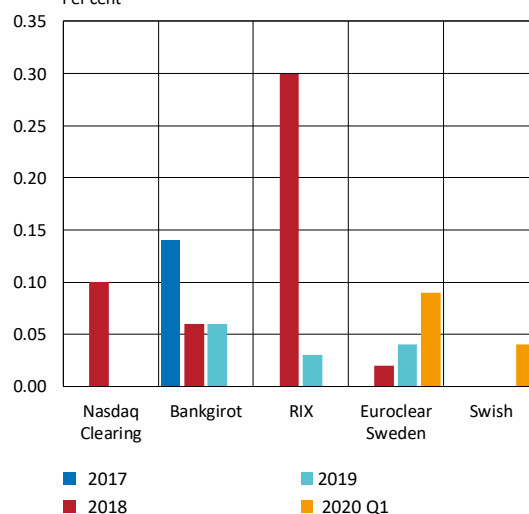
### The availability of the financial infrastructure is high despite an unusual situation

In the Riksbank's oversight of the financial infrastructure, availability is in focus. This is because availability is important for the functioning of the financial system and to the maintenance of financial stability. During 2019 and the first quarter of 2020, availability in the infrastructure systems that the Riksbank oversees was high and there were few disruptions (see chart 41). This also applies to the payment application Swish, which has now begun to publish figures regarding its availability.<sup>50</sup>

### Swedish financial market infrastructures (FMIs) have a long-term survival capacity

The long-term survival of FMIs is important to ensure payments and securities transactions can be implemented, in both the current situation and in the future. At the same time, in stressed situations problems may arise that lead to financial losses. The infrastructure companies therefore need to have the financial conditions to manage this type of situation and to continue running their operations. The economic conditions for FMIs can be measured in terms of *Orderly Wind Down (OWD)* ratios.<sup>51</sup> The ratios are a way of illustrating the possibility for FMIs to conduct operations in a situation without revenue. The FMIs have a relatively good financial

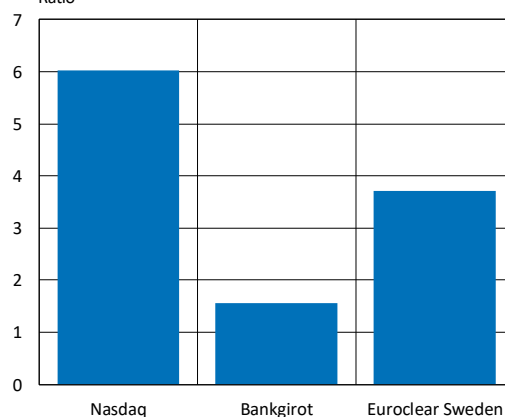
Chart 41. Interruptions to the Swedish infrastructure systems  
Per cent



Note. 0 per cent shows that the system has been available the entire time without interruption. 0.2 per cent corresponds to an interruption of 5 hours over a period of one year. Over a period of one quarter, 0.2 per cent corresponds to about 1 hour and 15 minutes. The availability of Swish is calculated as the total downtime for the Bankgirot platform Betalningar i Realtid, BankID and GetSwish. Please note that the chart only shows availability figures for Swish with effect from 2020.

Sources: Bankgirot, BankID, Euroclear Sweden, Nasdaq Clearing, GetSwish and the Riksbank

Chart 42. OWD ratios for the infrastructure systems  
Ratio



Note. The Orderly Wind Down (OWD) ratios correspond to the economic position of FMIs on 31 December 2019. The OWD ratio is calculated as the ratio between a company's net liquid assets and average half-year expenditure (operational expenditure including interest) for the last 3 years. An OWD ratio of 1 means that operations can continue for 6 months without income.

Sources: Bankgirot, Euroclear Sweden and Nasdaq Clearing

<sup>50</sup> The Riksbank pointed out in the previous Financial Stability Report that it is important that statistics on availability and disruptions for the bank-owned Swish payment service are made public. See *Financial Stability Report 2019:2*. Sveriges Riksbank.

<sup>51</sup> For further information, see *Financial Infrastructure, 2017* Sveriges Riksbank.

position at present (see chart 42). This provides them with the right conditions to maintain their operations even during the current circumstances.

### Coronavirus pandemic is making demands of FMI's operations

When the coronavirus took hold in Sweden, FMIs activated their crisis management systems. In this way, they could rapidly make decisions on necessary measures and safeguard availability. Their rapid actions and the efficient business continuity plans also made it easier for them to safeguard access to staff and key personnel.

However, the coronavirus pandemic has meant that FMIs needed to make major adjustments to their operations. These adjustments contribute to safeguarding the functionality of the systems in the long term. For instance, FMIs, like large parts of the rest of society, have changed from working at their head office to managing much of their work from alternative workplaces<sup>52</sup>, to reduce the risk of contagion (see chart 43). Despite FMIs needing to make major changes to their methods of working, they have managed to maintain critical functions. If the coronavirus pandemic is protracted, however, this will make demands on their perseverance.

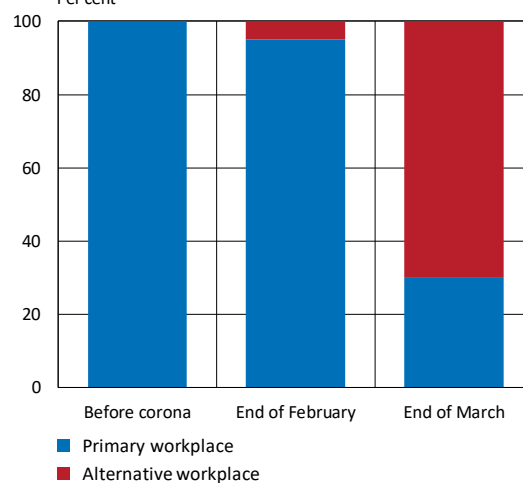
### Governance and control of risks in the wake of the coronavirus pandemic

Considering the important role of the infrastructure systems in the financial system, they need to constantly be prepared to identify and manage operational risks that could affect their activities.

One risk that has become more tangible in connection with the coronavirus pandemic, is linked to several FMIs having outsourced parts of their operations, often to companies in other countries. This means, for instance, that it becomes more difficult for them to have control over the entire chain in their operations. As the situation is different in different countries, the service providers' deliveries to FMIs may be affected. By monitoring their suppliers' contingency planning, however, FMIs can clarify potential risks and take measures to reduce them. Without proper monitoring, the risk of disruptions in the infrastructure systems increases, which can affect availability.

In stressed situations like the current one, it is particularly important to have good governance and control. This enables the infrastructure companies to quickly and efficiently manage the risks that arise. The Riksbank has previously pointed out that there are some shortcomings in governance and control.<sup>53</sup> The work on remedying these shortcomings is proceeding well with regard to both RIX and Euroclear, but

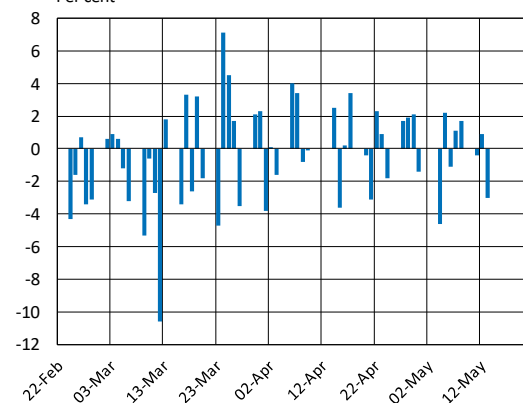
Chart 43. Split operations during the coronavirus pandemic  
Per cent



Note. Based on the Riksbank's estimates. Alternative workplaces are, for instance, other sites and working from home.

Sources: Bankgirot, Nasdaq Clearing, Euroclear Sweden and RIX

Chart 44. Daily changes in the OMXS30 index  
Per cent



Note. The OMXS30 is an index consisting of Nasdaq Stockholm's 30 most traded equities.

Source: Nasdaq Clearing

<sup>52</sup> Dividing up the workforce is usually referred to as *split operations*. In this case, alternative workplaces comprise, for instance, other sites and working from home, where this is possible. It can also be attained by dividing up the work force at the head office, with sections of the staff having access to only specific areas/floors or similar.

<sup>53</sup> See *Financial Stability Report 2019:2*. Sveriges Riksbank.

some work remains to be done. This means that to some extent the risks previously highlighted by the Riksbank still remain.

**Central counterparties consider large market movements in their risk management**

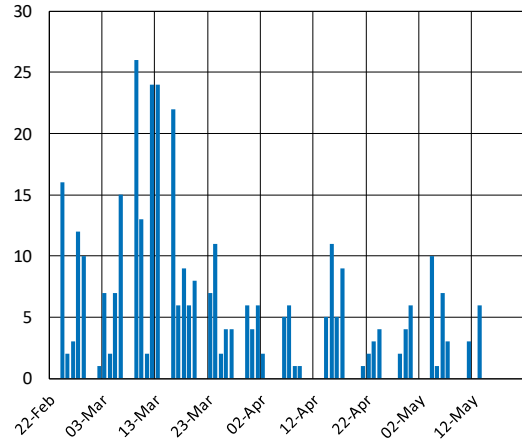
The spread of the coronavirus has led to major fluctuations on various asset markets. For instance, the fixed-income, equity and commodity markets have been affected substantially (see chart 44). The role of central counterparties (CCPs) is to manage counterparty risk for their participants in the clearing of various derivatives and repo transactions in order to reduce the risks to the financial system. Large movements on the asset markets affect CCPs and their participants as CCPs are exposed to market, credit and liquidity risks.<sup>54</sup> For example, the risk of participant failure can increase, which in turn can cause significant losses for both CCPs and their participants.

On the other hand, the risk management of CCPs is designed to allow for stressed market situations from the start.

The stress in various financial markets in the first quarter of 2020 has increased the risk exposure of CCP participants. This has meant that participants during a trading day have had to provide further collateral to cover their risk exposure, what is known as intraday margin calls (see chart 45). This requires participants to have access to funds that they can quickly submit as extra collateral. During the initial stages of the crisis, all participants have been able to meet the requirements for more collateral. It is important that market participants continue to be prepared to submit extra collateral if movements on the market increase sharply again.

The models used by CCPs to calculate the collateral that participants need to submit also take large market movements into consideration. Since the turbulence in financial markets increased, the CCPs, including Nasdaq Clearing, have updated their model parameters several times, which is positive (see chart 46). By changing the model parameters, the models better reflect the prevailing financial risks.

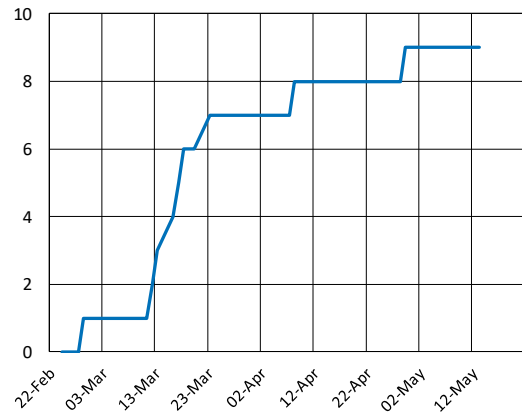
**Chart 45. Daily intraday margin calls within financial clearing**  
Number



Note. Intraday-margin call (IDMC) is when a participant has to provide further collateral during the course of a trading day to cover its risk exposure. This happens when the risk in a participant’s portfolio exceeds a predetermined level. Please note that the chart only refers to financial clearing at Nasdaq Clearing and the number of IDMCs that has taken place there.

Source: Nasdaq Clearing

**Chart 46. Risk parameter changes**  
Cumulative incidence



Note. Parameter changes refer to changes in model parameters at Nasdaq Clearing that are used to calculate marginal collateral requirements. The parameters are changed to take movements in financial markets into account. Please note that the chart only refers to financial clearing.

Source: Nasdaq Clearing

<sup>54</sup> CCPs help to maintain financial stability by taking on some of the risks in financial transactions in their role as central counterparty. CCPs act as intermediaries in financial transactions and go in as buyer to all sellers and seller to all buyers, respectively. As a result of this, the original parties have a claim on, or a liability to, the central counterparty instead of each other. This means that the counterparty risks that the parties would have been exposed to in relation to each other are transferred to the central counterparty. This means that the CCP is in turn exposed to credit and liquidity risks if one of the participants is unable to meet its obligations.

## ARTICLE – The Riksbank’s stress test of banks’ capital – an update

The Riksbank uses stress tests of banks’ capital to estimate how a bank’s financial situation is affected under stressed conditions. It is important to assess banks’ capacity to provide the economy with credit if economic developments deteriorate. On the basis of two different scenarios, the Riksbank’s stress test shows that credit losses could increase substantially for the four major banks<sup>55</sup> in Sweden if production and house prices fell significantly and unemployment increased. In the more serious scenario, credit losses could increase the risk that credit supply in the economy is being negatively impacted. If this were to happen, both banks and public authorities might need to take measures to support the supply of credit.

### The Riksbank’s stress tests are based on several assumptions

The Riksbank’s stress test of the capital in the banking sector is a so-called top-down stress test, which involves all calculations being made by the Riksbank.<sup>56</sup>

In the stress test a number of models form the basis of the calculations.<sup>57</sup> These models describe how different items in the banks’ profit and loss accounts and balance sheets can be affected by economic and financial stress. The models show how capital ratios in the banking sector can develop in different scenarios. The model for credit losses is based first and foremost on historical correlations between the banking system’s credit losses and, for instance, developments in housing prices, unemployment, interest rates and corporate and household sector debts as a percentage of GDP.

In the Riksbank’s stress tests, there are also separate models for net interest income and net commission income. The models explain the banks’ net interest income and net commission income using various macroeconomic and bank-specific variables. In addition, there are two mechanisms that take into account contagion effects that can arise in the financial system.

### The stress test is not a forecast

The Riksbank’s stress test does not take into account the fact that banks can make changes in their business models in the scenario or in other ways act to reduce their credit losses. Nor does the stress test assume that any measures are taken by the authorities.<sup>58</sup> The results of the stress

test should therefore not be regarded as a forecast of future credit losses or capital ratios. Instead, the stress test is an analysis of the banks’ capital strength on the basis of today’s balance sheets and under the specific conditions assumed in the different scenarios. Although one should exercise caution in drawing any strong conclusions from individual analyses, they may nevertheless guide both banks and authorities on how they may need to act under different stressed circumstances.

### Different models give different results

The model used in the Riksbank’s stress test to estimate credit losses is sensitive to which variables are included and which history is taken into account. In the model, developments in housing prices have a considerable impact on how the banks’ credit losses develop. However, this does not mean that credit losses largely stem from mortgages, rather that housing prices function as an indicator of the general developments in the economy, and particularly property prices. The Riksbank’s data on the banks’ credit losses stretches back to the end of the 1980s and thus includes the banking crisis at the start of the 1990s. This was a period in which the banks made significant credit losses and the Swedish economy experienced major and protracted problems. Methods where housing prices are given less weight and where the 1990s are not taken into account to the same extent typically result in much lower credit losses for the banks.

<sup>55</sup> The four major banks refer in this article to Handelsbanken, Nordea, SEB and Swedbank. The stress test includes the four banks at group level.

<sup>56</sup> This differs from so-called bottom-up stress tests in which the banks themselves make the calculations. This means that bottom-up stress tests are based on more granular data and can take into account more institution-specific qualities than a top-down stress test.

<sup>57</sup> See Buncic, D., Li, J., van Santen, P., Wallin, P. and Winstrand, J. The Riksbank’s method for stress tests of banks’ capital, *Staff Memo*, May 2019. Sveriges Riksbank.

<sup>58</sup> It is a question of measures to both avoid resolution and make resolution easier to manage if it nevertheless became unavoidable. Under the European Bank Recovery and Resolution Directive (BRRD) and as part of any resolution, authorities can, for instance, allow parts of banks’ liabilities to bear the losses by using the so-called bail-in tool. This involves some of the banks’ lenders having their claims written down or converted into shares in the bank.



## Two economic scenarios form the basis for the stress tests

In addition to the models described above, economic scenarios are used as a basis for the calculations. Given the considerable uncertainty about developments going forward, the Riksbank's April Monetary Policy Report published two possible future macroeconomic scenarios (A and B) stretching until the end of 2022.<sup>59</sup> This article estimates how the credit losses for the four major banks in Sweden might develop in these two scenarios and how this would affect the banks' capital ratios. In addition to the assumptions regarding the scenarios described in the Monetary Policy Report, further assumptions are made in the stress tests, for instance with regard to how housing prices and the equity market will develop (see table 3 and table 4). This means that the scenarios on which the stress test is based cannot be compared in full with those in the Monetary Policy Report.

### Substantial stress in the scenarios

The two scenarios, Scenario A (see table 3) and Scenario B (see table 4), contain different degrees of macroeconomic stress<sup>60</sup>. In Scenario A, GDP declines substantially during 2020, and then recovers rapidly during the two following years. Unemployment will be higher during 2020-2021 and then decline somewhat in 2022. In addition, it is assumed in the stress test that asset prices, that is, housing prices and equity, will fall during 2020, after which housing prices will recover slowly while equity prices recover at a faster pace.

**Table 3. Scenario A**

	2020	2021	2022
GDP	-6.9	4.6	5.0
House prices*	-9.5	0.5	4.2
Inflation	0.6	1.5	1.6
Unemployment	8.8	9.0	8.2
Equity prices*	-20	18.8	5.3

Note. GDP, house prices and equity prices are given as annual percentage change. Inflation is given as annual percentage change in price index. Unemployment is given in per cent. The variables marked with an asterisk in the tables are ones not included in the scenarios in the Monetary Policy Report. It is assumed in the model for the stress tests that the banks distribute profits to shareholders as long as they are making a profit and are not in breach of the capital adequacy buffers (see Buncic, D., Li, J., van Santen, P., Wallin, P. and Winstrand, J. The Riksbank's method for stress tests of banks' capital, *Staff Memo*, May 2019. Sveriges Riksbank). This also applies to profits from 2019.

Source: The Riksbank

In the second scenario, Scenario B, the sequence of events is more protracted and GDP falls further during 2020, and the recovery is slower. Unemployment rises more the first two years, but then declines in 2022, just as in Scenario A. In the stress test, housing prices and equity prices fall more in Scenario B than in Scenario A and the recovery is slower. All in all, Scenario B describes a more protracted sequence of events, with a larger economic downturn than Scenario A. It is assumed in the stress test that risk premia will increase and that growth in lending is 0.

**Table 4. Scenario B**

	2020	2021	2022
GDP	-9.7	1.7	5.4
House prices*	-14.8	-13.4	7.2
Inflation	0.6	1.3	1.4
Unemployment	10.1	10.4	9.3
Equity prices*	-30	14.3	18.8

Note. See note in table 3.

Source: The Riksbank

### Credit losses affect the results to a considerable extent

In both scenarios the banks make substantial credit losses, although in Scenario B they are more than twice as large in absolute values (see table 5). In Scenario B house prices (approximating property prices in general) fall more than in Scenario A, which to a large extent explains why the credit losses are greater. The banks' earnings fall somewhat relative to their starting point in 2019<sup>61</sup>. The fact that earnings are slightly lower in Scenario B than A is partly due to worse macroeconomic developments and larger stock market falls. In Scenario A, the banks' leverage ratios are unchanged relative to 2019. On the other hand, their Common Equity Tier 1 (CET 1) ratios fall somewhat, as the banks' risk-weighted assets increase because the lending stock is assessed as more risky.<sup>62</sup> In Scenario B, the banks' leverage ratio falls to 3.4 per cent and the CET 1 ratio to 11.1 per cent.

The stress test indicates that the banks have good capacity to manage a macroeconomic development similar to Scenario A, where the economic recovery is relatively rapid and the fall in housing prices is moderate. In Scenario B, where the economic recovery is protracted and house prices fall more, the impact on the banks' capital ratios is much greater. But in this scenario, too, the banks' capital is above the regulatory minimum requirement.<sup>63</sup>

<sup>59</sup> See *Monetary Policy Report*, April 2020. Sveriges Riksbank.

<sup>60</sup> The scenarios are contingent on certain general economic policy measures taken by authorities, see *Monetary Policy Report*, April 2020. Sveriges Riksbank.

<sup>61</sup> The calculations in the stress test are based on the fourth quarter of 2019 as this is the last period for which there is outcome data for all variables. The calculations thus

do not take into account the results the banks have reported for the first quarter of 2020.

<sup>62</sup> In the first two years, the banks' risk-weighted assets increase as a result of higher credit risk by 7.5 per cent a year.

<sup>63</sup> The stress test describes the banks' aggregate capital situation and different banks are affected to a different extent in the stress test.



**Table 5. Results**

	Scenario A	Scenario B
Earnings before credit losses (SEK billion)	253	231
Total credit losses (SEK billion)	201	476
Leverage ratio, 2019 and final period of scenario (per cent)	5.2 / 5.2	5.2 / 3.4
CET 1 ratio in 2019 and final period in the scenario (per cent)	17.1 / 15.7	17.1 / 11.1

Note. See note in table 3.

Source: The Riksbank

### The assumptions are important for the results

The stress test is based on a few simplified assumptions, for instance, that the banks' lending growth is 0 in the scenarios and that the banks pay dividends if they make a profit. If lending had increased, the banks' capital ratios would have been lower. If the banks had not been assumed to pay dividends, the capital ratios would instead have been higher.

It may also be interesting to compare the results in table 5 with the results from stress tests published by the Riksbank in Financial Stability Report 2019:1. The estimated credit losses become lower in this stress test than that from 2019.<sup>64</sup> The stress test from 2019 is based on scenarios from the European Banking Authority's (EBA) stress tests. The difference in the results can be largely explained by developments in house prices, which showed much weaker development in the EBA's scenario than in the scenarios described in table 3 and table 4.

### Importance of continued good credit supply

There is considerable uncertainty surrounding the results of the stress tests, as regards both the scenarios and the assumptions made in the models.<sup>65</sup> Future macroeconomic outcomes can be either better or worse than assumed in the two scenarios. Moreover, the different scenarios can in reality affect the banking sector more or less than is assumed in the stress test models.

All in all, the banks are more negatively impacted in scenario B than scenario A. If the banks' capital ratios were to decline to an extent corresponding to the description in scenario B, credit supply could be negatively impacted. Although the banks' capital in the scenario is above the minimum requirement, individual banks may nevertheless choose to reduce their lending to compensate for increased credit losses. It is important that banks, in such a situation, do what they can to supply sufficient credit to companies and households. In the Riksbank's view, the buffers built up by the banks in good times can be used if needed (see chapter "Summary of the stability assessment"). The banks can also take other measures to improve their capital situation, for instance, by limiting potential dividend payments to shareholders.

If the economic recovery takes a long time and banks' lending capacity deteriorates, even more measures may, however, be needed. In such a situation, further public-sector measures may be required to provide support to credit supply and to manage problems in the banking sector. The Riksbank is ready to contribute by providing any necessary liquidity both now and if the situation were to deteriorate.

<sup>64</sup> In the stress test in *Financial Stability Report 2019:1*, the banks' total credit losses amounted to SEK 771 billion.

<sup>65</sup> For further information on which assumptions are made in the model, see Stress tests of banks' capital. Article in *Financial Stability Report 2019:1*. Sveriges Riksbank.

## ARTICLE – The interconnectedness of insurance companies, National Pension Insurance Funds and banks via the foreign exchange market

The reason that insurance companies, National Pension Insurance Funds (AP Funds)<sup>66</sup> and Swedish banks are interlinked on the foreign exchange market is that they are able to satisfy one another's different needs for currency. The insurance companies and AP Funds are present on the foreign exchange market to invest in foreign assets but, at the same time, they do not want to be fully exposed to the exchange rate risks such investments entail. The banks are there to offer the currencies demanded by their customers and, in return, to receive the funding in kronor arranged via the foreign exchange market. When the actors enter into a foreign exchange transaction, in which different currencies are exchanged for each other, an interaction is created in which each party gets the currency it wants. When access to foreign exchange deteriorates, this interaction is disrupted. This is demonstrated by experiences from the global financial crisis of 2008-09 and by the current coronavirus pandemic. This article focuses on how the Swedish insurance companies, the AP Funds and the banks are linked together through the foreign exchange market, and the risks this may involve for financial stability.

### Swedish companies need foreign exchange

Sweden is a small, open economy with considerable foreign trade and a financial system that is dependent on international financial markets. In addition, a large part of Swedish households' pensions are invested in foreign assets. This means that there is a need among Swedish non-financial corporations and companies managing Swedish households' pension assets to gain access to foreign exchange and to be able to manage exchange rate risk. The Swedish banks can help companies with these needs by entering into various financial contracts and conducting transactions with foreign exchange. However, to be able to offer such transactions, the Swedish banks first need to gain access to foreign exchange by borrowing in financial markets.

### Access to foreign exchange in periods of stress is often more limited

However, the need for foreign currency among various actors in the financial system is linked with risks, which tend to materialise during periods of stress. Not least, this can be illustrated by the course of events we have seen recently during the coronavirus pandemic, in which a general deterioration in dollar supply impaired Swedish banks' ability to borrow dollars in international financial markets (see also the chapter "Vulnerabilities and risks in the financial system"). Access to dollars also weakened

substantially during the global financial crisis of 2008-09. Both now and then, the consequence was that it became both more difficult and more expensive for other companies in the Swedish economy to gain access to dollars.

The previous experiences and the high degree of international dependence in the Swedish financial system underline the importance of understanding how the various actors in the Swedish financial system are interconnected and how problems in one part of the chain can easily spread to other parts. In this article, we focus on how the Swedish insurance companies, the AP Funds and the banks are linked together through the foreign exchange market and the risks this may entail for financial stability.

### The Swedish insurance companies and the AP Funds invest large assets in foreign exchange

To protect themselves economically from various types of risk and save for their pensions, Swedish savers and insurance policyholders regularly pay premiums and savings in kronor to the insurance companies. These assets are called *investment assets* and make up the capital that the insurance companies manage to meet their financial commitments.<sup>67</sup> The national AP Funds also manage assets (buffer capital), which is used to manage the differences that may arise between the pension

<sup>66</sup> The National Pension Insurance Funds (AP Funds) have existed in Sweden since the 1960s. They have changed character, name and direction over the years. The present classification was created in 2001.

<sup>67</sup> Some investment assets are managed by customers themselves (for example unit-linked life insurance policies).

contributions paid over the year and the payments for the year in the state pension system.<sup>68</sup>

At the end of the fourth quarter of 2019, the Swedish insurance companies' total investment assets amounted to just over SEK 5,400 billion. The corresponding amount for the AP Funds' assets was about SEK 1,700 billion.<sup>69</sup> Together, the two actors' assets correspond to about 140 per cent of Sweden's GDP. Almost all assets are invested in equities and bonds in various currencies. At the end of the fourth quarter of 2019, about 30 per cent<sup>70</sup> of the insurance companies' investment assets were in foreign currency (SEK 1,054 billion) and about 65 per cent of the AP Funds' assets (SEK 1,106 billion) (see chart 47).

### Foreign investments spread the risks...

The insurance companies and AP Funds invest in foreign assets because they wish to diversify their assets to spread the risks and potentially raise the risk-adjusted return.<sup>71</sup> Their policyholders and the pension system also thereby gain access to a global market and the returns that this can entail. In addition, the actors together have such large assets that it may be difficult for them to invest sufficient

sums in certain Swedish asset markets without affecting price formation to an excessive degree.

### ... but simultaneously give rise to exchange rate risk

Parts of the assets of the insurance companies and AP Funds (investments) are thus in foreign currency. At the same time, their liabilities, which is to say the commitments they have to policyholders and the pension system, are almost exclusively in kronor. The gap between assets and liabilities gives rise to *exchange rate risk*, which is to say the risk of making losses because the exchange rates have developed unfavourably.

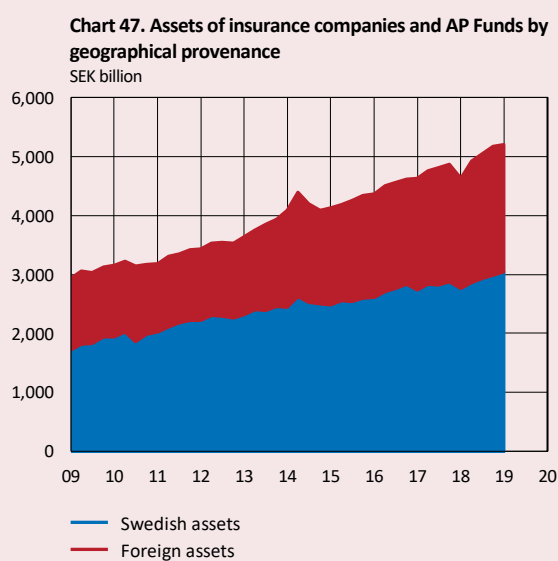
To reduce or avoid such exchange rate risks, the insurance companies and AP Funds can *hedge* their foreign investments, which is to say limit their exchange rate risk, through various financial transactions with banks.

### Regulations and internal guidelines aim to reduce exchange rate risk

Above all, the insurance companies hedge their investments in foreign bonds and only a smaller percentage of their investments in foreign equities.<sup>72</sup>

There is no regulation requiring the insurance companies to hedge a specific percentage of their foreign holdings. However, such currency hedging reduces the insurance companies' risks, thereby giving them lower capital requirements too. Many insurance companies have also taken the decision themselves to restrict such foreign currency exposure in their internal investment guidelines.

For the AP Funds, the situation is different, as they are subject to different regulations than the insurance companies. No more than 40 per cent of the assets of the AP Funds (First to Fourth AP Funds) may be exposed to exchange rate risk.<sup>73</sup> Consequently, unlike the insurance companies, they must restrict their foreign holdings to 40 per cent or hedge the excess percentage.



Note. The insurance companies' own fund holdings and the policyholders' unit-linked life insurance policies have been excluded for the reasons given in footnote 70. These holdings amounted to just over SEK 1,900 billion at the end of the fourth quarter of 2019 and cannot be separated by provenance in the underlying data. The AP Funds are defined in accordance with footnote 69.

Source: Statistics Sweden

<sup>68</sup> In addition, the Seventh AP Fund manages pension capital for the Swedish people within the framework of the premium pension system.

<sup>69</sup> Defined as 'social security funds', which is actually a broader concept. This includes the AP Funds in the public pension system (that is, the First to Fourth and Sixth AP Funds), but also the traditional insurance within the premium pension system, as well as certain other assets and liabilities that the Swedish Pensions Agency manages within the premium pension system (but not the funds marketplace or the Seventh AP Fund).

<sup>70</sup> This figure excludes unit-linked life insurance, as these assets are not usually currency hedged (the policyholders themselves choose in which funds they wish to invest from the range supplied by each insurance firm and thus bear the actual

investment risk), and own fund holdings, as these assets cannot be separated by geographical provenance (except for together with the unit-linked life insurance policies in the underlying data).

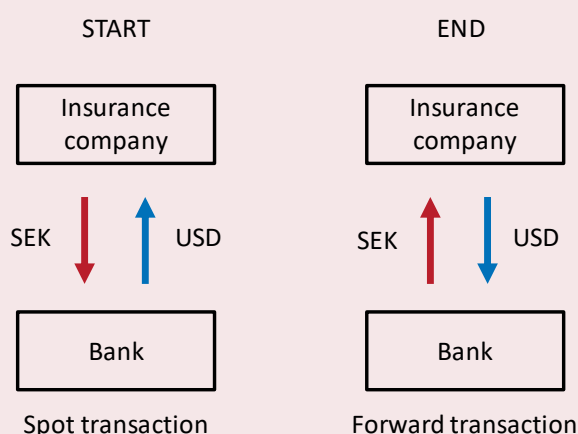
<sup>71</sup> Risk-adjusted return is return that considers how much risk has been taken to attain this return.

<sup>72</sup> This is because the exchange rate risk is considered high in relation to the return on the bonds. However, for equities, equity price risk is considered to be considerably higher than exchange rate risk, so many actors consider no or only low currency hedging to be necessary.

<sup>73</sup> National Pension Insurance Funds Act (2000:192).

transactions with the banks. A common derivative in such transactions is a *foreign exchange swap*.<sup>74</sup> A foreign exchange swap consists of both a purchase and a sale of the same currency pair (for example USD/SEK) but on two different occasions (see figure 1).

Figure 1. A foreign exchange swap consists of a spot transaction and a forward transaction



Source: The Riksbank

When an insurance company or AP Fund receives new premiums that it wishes to invest in foreign assets, it needs to enter into a foreign exchange swap if it wishes to avoid the exchange rate risk this investment will entail.<sup>75</sup> The insurance company first purchases foreign exchange, for example dollars, from a bank in exchange for kronor through a spot transaction. The insurance company then uses the foreign exchange to purchase a foreign bond, for example. At the same time as it executes this spot transaction, the insurance company also enters into a forward contract in which it commits, in the future, to sell the foreign exchange back to the bank in exchange for the kronor. When the forward contract matures, the insurance company thus returns the foreign exchange and the bank returns the kronor. It could be said that the foreign exchange swap in this example means that the insurance company has borrowed foreign exchange and the bank has borrowed kronor for a specific period against collateral in the other currency.<sup>76</sup>

<sup>74</sup> The term foreign exchange swap is used interchangeably with *FX swap* in this article. In addition to such swaps, there are also *cross currency basis swaps* (CCY swaps), which have longer maturities and also include interest payments over the maturity of the contract. CCY swaps are used to much less of an extent between the actors mentioned and consequently do not receive any more attention in this article.

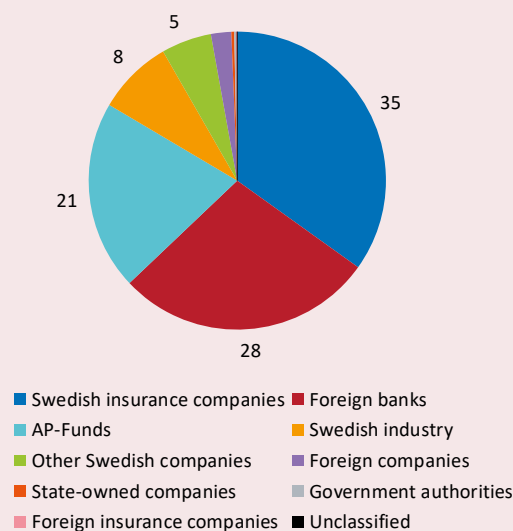
<sup>75</sup> Using foreign exchange swaps does not, however, remove all risks. If an actor wishes to currency hedge an asset's value of USD 100 with a foreign exchange swap, it is only the initial amount that is currency hedged through the swap; no rise in the asset's value is covered by the currency hedge. In addition, there is a *refinancing risk* linked to foreign exchange swaps, assuming that these are intended to be renewed when they mature, which is the risk of not being able to gain access to a new foreign exchange swap when it needs to be renewed or of the foreign exchange swap being more expensive to enter into at that point. The shorter the maturity of the foreign

### Foreign exchange swaps with short maturities are common

The major banks in Sweden are often counterparties to the insurance companies and the AP Funds in foreign exchange swaps (see chart 48). Even though the insurance companies and AP Funds often invest in foreign assets with very long maturities<sup>77</sup>, they most often use foreign exchange swaps with maturities of 3-4 months to currency hedge such investments (see chart 49). There are probably several reasons for this preference for short term maturities. One is that it is often more expensive for customers to enter into foreign exchange swaps with longer maturities.<sup>78</sup> At the same time, the insurance companies and AP Funds want to have the flexibility to allow them to adjust their currency hedged foreign investments when necessary. They have this to a greater degree when they use shorter foreign exchange swaps.

Chart 48. The major banks in Sweden's counterparties in FX swaps

Percentage of total outstanding nominal amounts



Note. The term foreign exchange swaps here refers to both forward transactions and foreign exchange swaps (which combine a spot and a forward transaction). The chart is based solely on foreign exchange swaps where the major banks in Sweden sell dollars in exchange for kronor. The major banks' foreign exchange swaps with one another are excluded. "Unclassified" refers to counterparties that each have a small percentage of the total outstanding nominal amounts. Division into sectors is subjective. Based on outstanding contracts as per 30 September 2019.

Source: The Riksbank

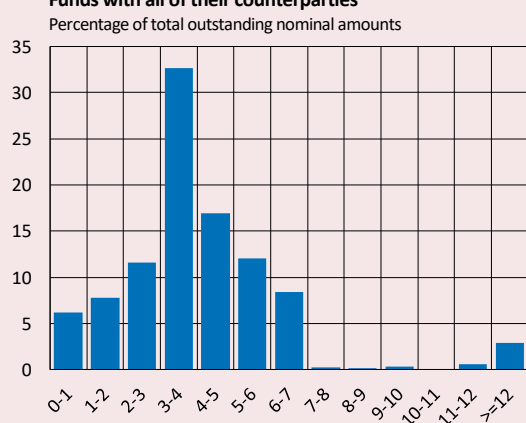
exchange swap, the more substantial the refinancing risk becomes, as refinancing must be carried out more often.

<sup>76</sup> As a foreign exchange swap is a financial derivative, the liability the contract generates is not included on the balance sheet. It therefore does not affect indebtedness.

<sup>77</sup> Swedish insurance companies' interest-bearing holdings consist virtually exclusively of bonds, i.e. not shorter debt securities.

<sup>78</sup> The cost/revenue for borrowing/lending foreign exchange through a foreign exchange swap depends on the relationship between the spot and forward rates for the currency pair in question. In turn, the forward rates are affected by factors such as yield differentials and supply and demand factors for the currencies over different maturities. It can often be simpler and cheaper for the banks to borrow foreign exchange for shorter maturities, which then leads to higher prices for foreign exchange swaps for longer maturities.

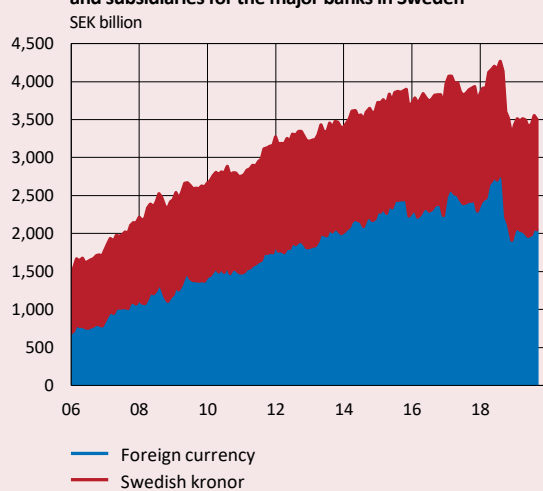
**Chart 49. Maturities measured in months for the foreign exchange swaps entered into by insurance companies and AP Funds with all of their counterparties**



Note. The term foreign exchange swaps here refers to both forward transactions and foreign exchange swaps (which combine a spot and a forward transaction). Foreign exchange swaps in all different currency pairs are included. The first bar refers to contracts that have an initial maturity of less than a month. Based on outstanding contracts as per 30 September 2019.

Source: The Riksbank

**Chart 50. Wholesale funding via Swedish parent companies and subsidiaries for the major banks in Sweden**



Note. The major banks' foreign subsidiaries are not included in the figure. Handelsbanken, Nordea, SEB and Swedbank are included in the chart. The volume of wholesale funding in foreign currency decreased from 1 October 2018 as Nordea relocated its parent company to Finland.

Sources: Statistics Sweden and the Riksbank

### The banks borrow foreign exchange that they convert to kronor

For the financial system as a whole, pension saving has led to that Sweden invests capital abroad over the long term (positive current account). Part of the capital thus flows out of the Swedish financial system. One reason that the Swedish banks borrow abroad may thus be that households' pension saving takes place, to a certain extent, in assets in foreign currency.<sup>79</sup>

In practice, the Swedish banks thus bring back the capital invested abroad when they obtain funding in foreign exchange. Part of this happens when the banks issue certificates in foreign currency that are often purchased by foreign money market funds. The banks can then offer their customers, such as insurance companies and AP Funds, the opportunity to borrow this foreign currency through foreign exchange swaps. As chart 50 shows, the banks' wholesale funding in foreign exchange is significant and has increased over the longer term.

Through these transactions, the banks can serve their major customers with the diverse services and products that they demand, such as foreign exchange swaps. In this way, they strengthen the business relations with their major counterparties. In turn, the foreign exchange swaps give the banks access to relatively favourable funding in kronor.<sup>80</sup>

### Foreign exchange swaps link together actors with opposing interests

Figure 2 summarises the flows and interconnections that arise between insurance companies and banks when they enter into the transactions described above.

For example, a bank issues a certificate in foreign exchange (FX) with a maturity of 3 months in which a foreign money market fund invests. The bank then gets foreign exchange that it converts to kronor (SEK) through a foreign exchange swap with an insurance company. The insurance company then obtains access to foreign currency that it can use to purchase foreign assets and the bank can use the SEK to fund SEK-denominated assets. When the foreign exchange swap is entered into, the parties also promise to repay both currencies in 3 months.

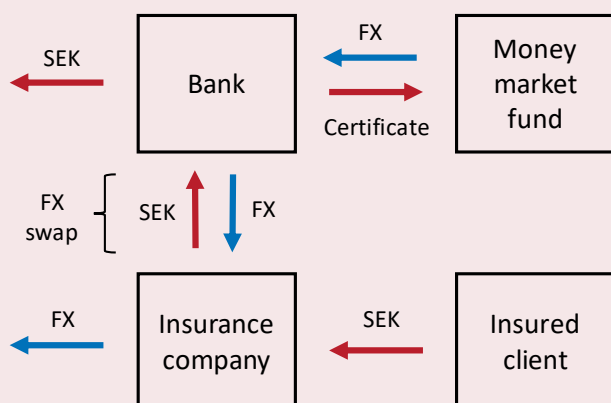
To sum up, one way of looking at it is that the banks, insurance companies and AP Funds, through foreign exchange swaps, interact with each other so that all actors get the currency they need. The policyholders and pension system receive the potential return from foreign investments without taking any exchange rate risk of their

<sup>79</sup> See Nilsson, C., Söderberg, J. and Vredin, A. (2014), The significance of collective pension saving for the Swedish financial system, *Economic Commentary* no. 3. Sveriges Riksbank.

<sup>80</sup> In, for example, chart 2 in the chart appendix and chart 30 in this report, it is clear that it has historically been cheaper for banks to obtain access to SEK by first borrowing USD and converting them to SEK via FX swaps compared with borrowing directly at the STIBOR 3-month rate.



Figure 2. Summary of the flows and interconnections that arise between insurance companies and banks when they enter into their typical foreign exchange rate swaps



Note. The arrows that represent the foreign exchange swap show the direction that the flows take when the foreign exchange swap is entered into. When the foreign exchange swap matures, the flows go back in the opposite direction.

Source: The Riksbank

own. The banks, in turn, gain the possibility of providing their customers with a product that they demand and, in addition, gain access to funding in kronor.

### The system is vulnerable when there is financial stress

In normal times, this interaction usually works without problems. Insurance companies, AP Funds and banks renew their foreign exchange swaps with each other, on average, every third or fourth month without the conditions changing particularly much. However, when shocks arise in global financial markets, the banks can have reduced access to dollars and this shortage can, in turn, spill over onto the foreign exchange swap market. This is because it is the USD, above all, that forms one of the currencies in swaps of this type.

In a stressed situation, the short maturity of the foreign exchange swaps and the banks' short-term funding in foreign exchange entails a risk and makes the system vulnerable.

### This spring's turbulence in financial markets has highlighted vulnerabilities

During the ongoing coronavirus pandemic and the stress in global financial markets, some US money market funds<sup>81</sup> have had large outflows, as investors chose to withdraw money from the funds as uncertainty increased. This led the funds to become unwilling to invest in the banks' dollar certificates.<sup>82</sup> The worldwide deterioration of access to dollars for the banks in turn affected those of the banks' customers needing dollars. This was evident, not least on the foreign exchange swap market, where prices for borrowing dollars against other currencies through foreign exchange swaps rose heavily.<sup>83</sup>

This was noticeable in Sweden when insurance companies and AP Funds turned over lower amounts per foreign exchange swap over this period. In addition, the maturities were shortened from the normal 3-4 months to only a few days or weeks, at the same time as the price for borrowing dollars via foreign exchange swaps rose. At the same time, several non-Nordic banks that are normally common counterparties to insurance companies in foreign exchange swaps reduced their activity on the Swedish foreign exchange swap market during the period of stress.

Due to the stress in global financial markets, the Federal Reserve chose to supply dollars to the financial system and to extend and set up swap agreements<sup>84</sup> between the Federal Reserve and other central banks, including the Riksbank. The swap agreements made it possible for other central banks to set up their own dollar facilities and, in the EU, it was the ECB's dollar facility, above all, that increased access to dollars. These measures allowed the most acute situation worldwide to be averted. These measures also contributed towards improving the conditions on the foreign exchange swap market in Sweden for Swedish insurance companies and AP Funds.

<sup>81</sup> The money market funds investing in short-term corporate securities, known as prime money market funds, have had major outflows. Other money market funds that primarily invest in government securities have experienced major inflows over the period.

<sup>82</sup> See, for example, Avdjiev, S, Eren, E and McGuire, P. (2020), Dollar funding costs during the Covid-19 crisis through the lens of the FX swap market. *BIS Bulletin*, No.1. 1 April 2020. Bank for International Settlements.

<sup>83</sup> The price of a currency swap reflects the difference between the forward and spot rate for a currency pair, as mentioned in footnote 78. The difference is affected in part by rate differentials (according to the so-called rate parity condition). For a time during this period, there were heavy deviations. See, for example, Avdjiev, S, Eren, E and McGuire, P. (2020), Dollar funding costs during the Covid-19 crisis through the

lens of the FX swap market. *BIS Bulletin*, No.1. 1 April 2020. Bank for International Settlements.

<sup>84</sup> By creating additional domestic currency the Riksbank can easily lend kronor. On the other hand, the Riksbank cannot create foreign currency. To lend US dollars, the Riksbank must first acquire them, for example by exchanging kronor for dollars, selling financial assets denominated in dollars or conducting repos. The Riksbank can also borrow via the Swedish National Debt Office. Another possibility is for the Riksbank to ask to borrow directly from the Federal Reserve through a swap agreement. A swap agreement means that one currency is exchanged for another over a predetermined period according to specific conditions.



### How are insurance companies affected when foreign exchange swaps can no longer be renewed?<sup>85</sup>

The foreign exchange swap market was never completely closed during the financial crisis and this has not happened during the coronavirus pandemic either. If the foreign exchange swap market had closed, the insurance companies would have been unable to enter new foreign exchange swaps or renew the existing ones and would therefore have been unable to gain access to dollars that way. Below, we describe, in simplified terms, three different alternatives with a more serious scenario like this as their starting point.

#### *Alternative 1: The insurance companies turn to non-Nordic banks to borrow foreign exchange*

In a situation of financial stress affecting Nordic banks in particular, the insurance companies could, instead, only turn to non-Nordic banks (mainly US banks if this concerns dollars) to renew their foreign exchange swaps and thus obtain foreign exchange.<sup>86</sup>

How such a situation would play out is difficult to know in advance, and it is not clear that it would be possible for the insurance companies to enter into new foreign exchange swaps with non-Nordic banks. When a non-Nordic bank conducts such a foreign exchange swap with an insurance company, it lends foreign exchange and receives kronor. But if the non-Nordic bank does not have any balance sheet of its own in kronor, for example a portfolio with lending in kronor, it is likely that the bank will want to get rid of the kronor it receives through the foreign exchange swap.

To get rid of the kronor, it would be natural for the bank, in turn, to enter into another foreign exchange swap with a Nordic bank.<sup>87</sup> In such a case, the non-Nordic bank would lend kronor to the Nordic bank and receive foreign exchange. However, in a situation where the Nordic banks are not able or interested in entering foreign exchange swaps with Swedish insurance companies, it is reasonable to assume that they will also have fewer opportunities to enter into foreign exchange swaps with non-Nordic banks. It is thus unclear how inclined non-Nordic banks would be to entering into swap agreements with Swedish insurance companies in this type of situation.

#### *Alternative 2: The insurance companies convert currencies on the spot market*

If the insurance companies do not manage to renew their foreign exchange swaps with the Nordic banks or non-

Nordic banks (alternative 1), they will mature. In this case, the insurance companies will get back the kronor they lent and will have to repay the foreign exchange they borrowed to the bank.

In such a situation, the insurance companies may exchange kronor for foreign exchange on the spot market and thereby repay the foreign exchange to the bank. The insurance company will thus fulfil the binding contract that a foreign exchange swap is and close its positions towards the bank. However, it is notable that such an exchange on the spot market could be very large in relation to the volumes that are normally traded there and this could lead to the krona depreciating. The exchange could thus have a great impact on price formation on the market, depending on which insurance companies - and how many of them - need to make such exchanges.

Once the insurance company has repaid the foreign exchange and closed the foreign exchange swap, the foreign investments will no longer be currency hedged. The insurance company thus has an *open currency position*, which is to say assets in foreign exchange and liabilities in kronor, and thereby risks making losses should exchange rates develop unfavourably in the future. How likely it is that the insurance companies would choose to have large open positions is difficult to say in advance and the choice is amongst other affected by capital requirements, the companies' own internal guidelines<sup>88</sup> and their risk appetite. How long the position would need to be open may also play a role.

#### *Alternative 3: The insurance companies sell foreign investments*

When the foreign exchange swap with the bank matures, the insurance company gets back the kronor it had lent and must repay the foreign exchange to the bank. The insurance company therefore needs to obtain foreign exchange to repay to the bank and, as an alternative to exchanging into foreign exchange on the spot market (alternative 2) the insurance company may, instead, choose to sell parts of its foreign assets.

In this case, which foreign assets the insurance company chooses to sell to be able to repay the foreign exchange to the bank depends on several different factors, for example the type of stress that has arisen in the financial markets and which asset types have been affected by the stress.

<sup>85</sup>This section investigates the various choices an insurance company faces when it becomes difficult to renew foreign exchange swaps. The same choice applies in principle to the AP Funds, with the exception that they cannot choose to leave foreign exchange exposure in excess of 40 per cent of the assets open, according to the legislation that applies for them.

<sup>86</sup> Some of the Swedish insurance companies regularly agree some of their foreign exchange swaps with foreign banks in times without financial stress.

<sup>87</sup> The foreign bank may also choose to deposit the kronor with the Swedish bank where it has its account for Swedish kronor.

<sup>88</sup> The insurance companies' internal guidelines may limit how much exchange rate risk their investments may have and thus also affect the insurance companies' actions in such a situation.

If these unplanned sales have been preceded by falling prices for assets, this could entail significant realised losses for the insurance companies.<sup>89</sup> For an insurance company that already had low solvency or traffic light ratios<sup>90</sup> before the stressed scenario, this could have particularly negative effects. Large sales of assets from a broad group of players could also contribute to a negative spiral with further price falls, especially in smaller markets or where liquidity is low, and thereby aggravate financial unease.

### **How would Swedish banks be affected by such a scenario?**

As described above, Swedish banks receive access to financing in kronor that is lent by insurance companies and AP Funds through foreign exchange swaps. If these swaps are no longer entered into, the insurance companies and the AP Funds will instead hold these kronor, and the banks will no longer obtain kronor through this channel. As there is on each occasion a given amount of kronor in the Swedish payment system, the kronor will be placed in the banks through other channels instead, that is, the banks will in total have access to the same amount of kronor. However, the access to kronor may be redistributed between the banks. How the different banks are affected will depend on the amount of kronor they receive, from whom and at what price, and also how well the liquidity can be distributed between the banks.<sup>91</sup>

### **Foreign exchange swaps with longer maturities would be positive for financial stability**

This article is not intended to investigate either which ratio of Swedish to foreign assets would be optimal for the insurance companies and AP Funds or the optimal degree of currency hedging. Instead, it has proceeded from how the situation looks today with current balance sheets as a starting point. We have described how the insurance companies and AP Funds have long-term foreign assets that they wish to currency hedge by entering into foreign exchange swaps with short maturities. The Swedish and Nordic banks are large counterparties in these swaps, which, in turn, are based on the ability to borrow foreign exchange regularly in financial markets. Entering into the transactions described here creates economic gain for the participants in the transactions, at the same time as it creates vulnerabilities in the Swedish financial system.

In March, the situation in global financial markets became strained, which also affected the Swedish foreign exchange swap market. Despite this, the Swedish insurance companies and AP Funds still essentially had access to the dollars they needed and thus did not need, to any great extent, to sell their foreign assets or take more exchange rate risk. The banks could thereby provide their customers with these services during the period. However, as financial markets functioned less well globally, the terms for the Swedish foreign exchange swaps became less favourable than under normal circumstances, for example with higher prices and shorter maturities. During the spring, the Federal Reserve offered swap agreements with other central banks, with the purpose of providing central banks with the possibility of supplying reasonably priced dollars to the financial system. However, even though the Riksbank, over the spring, has offered its monetary policy counterparties loans in dollars, at interest rates most of the period lower than those in financial markets, the dollars have so far not benefited the Swedish financial system.

When the turbulence linked to the coronavirus pandemic has passed, it would be positive for the financial system as a whole to have a situation in the future in which insurance companies and AP Funds enter into foreign exchange swaps with longer maturities. Foreign exchange swaps with longer maturities would give the insurance companies and AP Funds more breathing space in a stressed situation as they would then not have to renew their foreign exchange swaps as frequently. The banks, which are counterparties in the swaps, would also have greater incentive to extend the maturity of their foreign financing, with the corresponding positive effect as a result.

Different types of measure could lead to it becoming more common to have longer maturities. For instance, increased transparency requirements, where the actors must openly report their maturities, could contribute to increased awareness of the risks of shorter maturities and thereby can create incentives to extend them. Another measure could be to regulate the insurance companies and AP Funds with the aim of limiting their maturity risks in different currencies. In addition to direct requirements, it is also possible to use the regulations to create incentives. The insurance companies currently benefit from currency hedging with regard to capital adequacy

<sup>89</sup> The insurance companies report their assets at *real value*, that is to say, market valued at the time of each report. However, as long as they are not sold, no potential losses are realised.

<sup>90</sup> Solvency ratio is a measure aimed at measuring how well insurance companies are meeting their commitments to policyholders. The traffic light is a supervisory tool that places the capital buffer held by an insurance company (assets minus liabilities)

in relation to a calculated capital requirement that depends on the insurance company's exposure to various risks.

<sup>91</sup> Hilander, I. (2014), Short-term funding in foreign currency by major Swedish banks and their use of the short-term currency swap market, *Economic Review*, 2014:1. Sveriges Riksbank.

requirements. In these regulations greater incentives for longer hedging could be built in.

Measures of this nature could mean that actors build up greater safety margins during normal times to face periods of financial stress.

## ARTICLE – A new reference rate – the way forward

Reference rates fulfil an important function in the financial system in Sweden and in other countries. They make it possible to standardise the pricing of financial products and are used by a number of different agents in financial markets. But in light of the global financial crisis which broke out in 2008 and the manipulation of the British reference rate LIBOR uncovered in 2012, the confidence in traditional reference rates has been damaged. This marked the start of comprehensive international reforms. In this article, we describe why the Riksbank has decided to start publishing a new reference rate for the shortest maturity in Swedish kronor. It also looks at international regulations and the work of other central banks in the area. Furthermore, we present outstanding issues which are being discussed internationally and which the Riksbank also needs to consider going forward. These issues include whether the new reference rates can also be created for longer maturities – and if so how that could be done, and how a transition from traditional to new reference rates could be effected.

### Reference rates fulfil an important function in the financial system

A reference rate functions as a benchmark, or a basic value, when financial contracts are priced. Among other uses, reference rates are used in the pricing of interest derivatives, FX derivatives and bonds.<sup>92</sup> They are also used in the pricing of variable-rate loans aimed at households and companies. For example, a mortgage customer's contract terms can, in some countries, be designed as the reference rate at three months' maturity with an add-on for risk that is specific to the contract and which depends on, among other things, the size of the mortgage and the customer's income. The customer's costs for the loan go up if the reference rate rises, and down if the reference rate falls.

Traditionally, so-called interbank rates (Interbank Offered Rates, IBOR) are used as reference rates. IBOR are the rates that banks demand from each other for short-term uncollateralised loans. They therefore reflect the costs for banks of borrowing money. As banks need to fund their lending, it is reasonable that their costs for obtaining loans act as a base when pricing credit, and these costs are reflected in reference rates. However, traditional reference rates have been calculated based on offers made by banks or judgements of interest rates and not on actual transactions. Over time, banks have borrowed from each other (without collateral) to a lesser degree, which has led to fewer transactions on which to base offers on.<sup>93</sup>

In Sweden, the interbank rate STIBOR, Stockholm Interbank Offered Rate, is currently used as the reference rate. STIBOR is defined as the rates that the STIBOR banks<sup>94</sup> on average state that they can offer each other for uncollateralised loans in Swedish kronor. STIBOR is published for six different maturities within a time span of 24 hours (T/N) to six months. In total, STIBOR was in 2017 used as a basis in loans and financial contracts to an outstanding gross amount of about SEK 60,000 billion.<sup>95</sup> As reference rates have such a key function in financial markets, it is important that they are credible and transparent.

### Reduced confidence globally for reference rates after the financial crisis of 2008-09

During the global financial crisis that broke out in 2008, liquidity on the interbank market was further impaired and this led to uncertainty among agents as to whether reference rates really did reflect market conditions. When transactions are few, the banks contributing input data need to make a judgement of what would be a reasonable interest rate for uncollateralised loans at the relevant maturity in the prevailing market situation. This judgement becomes the bank's reported offer, which later forms the basis of the calculation of the reference rate.

When reference rates are calculated based on reported offers, there is also a risk of manipulation. During the LIBOR scandal of 2012, it was revealed that several international banks had manipulated the LIBOR reference rate for their own benefit, or for the benefit of individual

<sup>92</sup> A derivative instrument is a security whose value is linked to the value of an underlying asset, such as currencies, interest rates or commodities.

<sup>93</sup> When there are few interbank transactions, banks that are to submit offers must instead use the costs for their other sources of funding as a basis for their assessment of what would be a reasonable interbank rate.

<sup>94</sup> The STIBOR banks are Danske Bank, Handelsbanken, Länsförsäkringar Bank, Nordea, SBAB Bank, SEB and Swedbank.

<sup>95</sup> Around SEK 4,000 billion of this comprised loans to households and companies in 2017. Source: Finansinspektionen, Reference rates are changing, *FI Analysis*. 14, Nov 2018. Today, however, STIBOR is not used as a base in lending to households; on the other hand it is often used in corporate loans and loans to tenant owner associations.

employees. LIBOR is not just a reference rate for the British pound but is also calculated for several other currencies, including the US dollar (USD LIBOR). British and US authorities fined several banks as a result of the LIBOR scandal. This scandal, as well as the fact that the number of interbank transactions had decreased over time, damaged confidence in traditional reference rates globally.

### International principles and regulatory frameworks to promote the reliability of reference rates

Several international initiatives have been taken to strengthen confidence in and the reliability of reference rates. The International Organization of Securities Commissions (IOSCO) issued a report in 2013 that include 19 principles.<sup>96</sup> The principles cover, among other aspects, the data that should form the basis of reference rate calculations, documentation and transparency of the calculations, and requirements for administrators to monitor and oversee control systems and routines. Later the same year, the Financial Stability Board (FSB) was tasked with continuing the work to review the reference rates. The FSB made two main recommendations: firstly that IBOR should be reformed (so that actual transactions were used to a higher degree as a basis for the calculations), and secondly that alternative (entirely transaction-based) reference rates would be developed as a complement to IBOR.

IOSCO's principles and the FSB's recommendations on reforming IBOR later formed the basis of the regulatory framework for reference rates that Swedish market agents are obliged to follow, namely the EU's Benchmark Regulation (BMR)<sup>97</sup>, which came into force in 2018. This regulation imposes requirements on both the banks contributing input data and the agents who calculate and publish a reference rate based on the contributed input data. Under the regulation, the agent appointed to administrate the reference rate should, where possible, use transaction-based data as a basis when calculating the rate. However, the regulation points out that this is sometimes not possible or appropriate, especially if there are few actual transactions at the maturity in question. Expert judgements are therefore still permitted, but the regulation imposes special requirements on contributors who use this method when IBOR is calculated.

### Other central banks have undertaken to publish new reference rates

In line with the FSB's recommendation to develop transaction-based alternative reference rates, several central banks have taken on the responsibility of publishing new reference rates at the shortest maturity. Such rates have been judged to be the most reliable as more interbank transactions are made with short maturity than with long maturity (or, in other words, banks borrow money from each other at short rather than at long maturity). Since the spring of 2018, for example, the central banks in the United Kingdom and the United States have published new transaction-based reference rates called SONIA (Sterling OverNight Indexed Average) and SOFR (Secured Overnight Financing Rate) respectively. Since the autumn of 2019, the ECB also publishes a transaction-based reference rate called €STR (Euro Short Term Rate). The central banks in Japan and Canada also calculate and publish a new transaction-based reference rate, see table 6.

Table 6. International reference rates; old and new

Old reference rate	New reference rate	Maturity	Administrator
CORRA	Enhanced CORRA	O/N	Bank of Canada
GBP LIBOR	SONIA	O/N	Bank of England
JPY LIBOR & TIBOR	TONAR	O/N	Bank of Japan
EURIBOR & EONIA	€STR	O/N	The ECB
USD LIBOR	SOFR	O/N	Fed New York
STIBOR	"Name"	O/N	The Riksbank

Note. The Riksbank's new reference rate has not yet been given a name.

Source: Central bank websites

The new reference rates have started to be used in derivative contracts and on securities markets, and their use is increasing. On the UK derivative market, for example, the share of swaps already using SONIA as a base is broadly equivalent to the share using LIBOR as a base. Use of the new reference rate is also increasing in the United States. A notable example is the first SOFR-based securitisation of mortgages issued by Ginnie Mae in the spring of 2019 (*Real Estate Mortgage Investment Conduit, REMIC*). SOFR is also used in variable-rate bonds. The total value of such bonds exceeds USD 300 billion.<sup>98</sup>

<sup>96</sup> The principles were adopted by both the FSB and the G20 in the autumn of 2013.

<sup>97</sup> Regulation (EU) no. 2016/1011 of the European Parliament and of the Council of 8 June 2016 on indices used as benchmarks in financial instruments and financial

contracts or to measure the performance of mutual funds and amending Directives 2008/48/EC and 2014/17/EU and Regulation (EU) No 596/2014.

<sup>98</sup> FSB Reforming major interest rate benchmarks: Progress report, December 2019. Financial Stability Board.

However, the transition to new reference rates is proceeding more slowly in lending markets. For example, LIBOR is still the main rate used for loan products in the United Kingdom.

### **Going forward, the Riksbank will start to publish a new reference rate for the shortest maturity**

In December 2019, the Riksbank decided to start calculating and publishing a new reference rate in Swedish kronor. The preliminary timetable announced at that time was that a new provisional reference rate would start to be published during the first half of 2020, and then start to publish the final reference rate during the second half of 2020. As a result of the effects of the coronavirus pandemic on the Swedish economy and in Swedish financial markets, the trial period and publication of the reference rate has been postponed. The new reference rate will instead be introduced when the conditions are better for it to be afforded the necessary commitment from and scrutiny by the market during the trial period. The Riksbank will give plenty of notice before starting to publish a provisional rate.

The new reference rate will be for the shortest maturity, i.e. the rate paid by participants when they borrow from each other on the overnight market (O/N). The Riksbank's decision to start calculating and publishing a new reference rate had been preceded by a consultation round which provided positive responses from all respondents.<sup>99</sup>

The reason why the new reference rate will refer to the shortest maturity is because it needs to be based on as many transactions as possible in order to be credible. The Riksbank wants to avoid a situation where only a few transactions or participants dominate the entire rate-setting process. In Sweden, the most transactions and the largest loan volumes occur on the overnight market, where banks and other participants borrow from each other. As mentioned above, it is also the international standard for central banks that have started to publish reference rates to do so for the very shortest maturity.

The Riksbank's new reference rate corresponds most closely to STIBOR's shortest rate that has the maturity next banking day to the day after (*tomorrow/next*). An important difference is that the STIBOR rates are still calculated based on the banks' offers, which, when there are no transactions, consist of the banks' judgements, whereas the Riksbank's new reference rate will only be calculated based on actual transactions.

### **A short reference rate does not fully meet the needs**

The advantage of the new reference rates is that they are fully transaction-based and that there is therefore no need for judgements. But as the new reference rates are transaction-based, they have very short maturities. As previously mentioned, not enough transactions are currently made for it to be possible to calculate the new reference rate for maturities longer than the very shortest. This applies not only in Sweden, but also in many other countries. This means that the new reference rates cannot directly replace traditional reference rates, as the latter also exist for longer maturities.

If new reference rates are to be able to fully replace current reference rates (IBOR) in the future, the new rates will probably also need to be developed for longer maturities. Considerable work is being done on this issue internationally. As far as Sweden is concerned, the STIBOR reference rate is used primarily with a three-month maturity, the rate that occurs in most financial contracts.<sup>100</sup> In the future, therefore, requests may also be made in Sweden for the new reference rate to be provided for longer maturities. In that case, a Swedish method for this should, if possible, be in line with the international practice being developed.

### **Different methods for creating longer reference rates**

Creating longer transaction-based reference rates is not exactly straightforward, however. For them to be reliable, they not only have to be based on actual transactions, but also on *a sufficient number of* actual transactions. International discussions on how the new short reference rates can be used to create reference rates for longer maturities have resulted in two main tracks: compounded rates and forward-looking rates based on traded derivative contracts.

#### *Compounded rates*

One way of creating longer reference rates is to calculate *compounded rates* based on short reference rates. This involves calculating a composite rate (also called compound interest) of, for example, the last three months' interest rate outcomes. The advantage of this method is that it is easy to calculate such an interest rate. However, there are different ways of doing the calculation. The result can vary, for example, due to rounding-off or different ways of dealing with public holidays. This could indicate that the administrator who provides the overnight rate should also provide a common method for the market in order to calculate compounded rates based on interest-rate history.

<sup>99</sup> A consultation from Sveriges Riksbank, *The Riksbank's role in providing a reference rate*, Document no. 2019-00912.

<sup>100</sup> STIBOR's annual report 2019. Financial Benchmarks Sweden.



The disadvantage of compounded rates is that someone borrowing money with, for example, a maturity of three months only finds out their financing costs on the due date three months later. This can be compared with someone who takes a loan with three months' IBOR as its base. They already know from the start the total amount to be repaid in three months' time, as the interest rate is known in advance.

#### *Forward-looking rates*

The other way of creating longer reference rates is to use traded derivative contracts in the calculation. In such a derivative contract, one party pays the short-term interest and the other pays a fixed rate with a longer maturity, for example three months' interest.<sup>101</sup> The price (the interest) for giving a three-month loan reflects market expectations of how the shortest interest rate will develop over the next three months. To be able to calculate a reliable forward-looking rate, there must be a sufficient volume of trading in derivatives.

The advantage of forward-looking instead of compounded rates is that the payment flows are known in advance. A new forward-looking reference rate would thereby have maturities that correspond better to currently used reference rates (including STIBOR). The disadvantage is that the derivative markets both in Sweden and in most other countries are not currently large enough to be able to form the basis of reliable forward-looking reference rates.

As use of the new reference rate for the shortest maturity becomes more widespread, it may increase the demand for new derivatives. It cannot be ruled out, therefore, that a future derivative market, with its base in the Riksbank's new reference rate, could be bigger than today's derivative market. If demand is sufficiently large, it may be possible in the future to calculate and publish forward-looking reference rates for longer maturities based on these derivatives.

#### **Several central banks are working on developing new reference rates for longer maturities**

The US Federal Reserve started in March 2020 to publish compounded reference rates for maturities of one, three and six months and an index (30-, 90-, and 180-day "SOFR averages" and a "SOFR index").<sup>102</sup> At the same time, the

United States and other countries have expressed plans to promote growth in derivative markets that would enable a forward-looking rate to be calculated in the future.<sup>103</sup>

In the United Kingdom, the Bank of England's assessment is that the derivative market will be large enough to enable a forward-looking rate to be calculated. But the bank also points out that there are indications from the market that a forward-looking rate is nevertheless not the most desirable option. The use of compounded rates is seen as a simpler solution which provides a sufficient degree of certainty about future payments in the vast majority of cases. As from July 2020, the Bank of England will start publishing an index that will enable market participants to calculate compounded rates for various selected maturities based on historical rates.<sup>104</sup>

To sum up, a standard is starting to emerge among central banks whereby they will also calculate and publish compounded rates based on the new reference rate.<sup>105</sup>

#### **The future for traditional reference rates is uncertain**

One outstanding issue under discussion internationally is what the future looks like for traditional reference rates, that is STIBOR and other IBOR, in light of the advent of the new reference rates. Part of this issue is how IBOR can be phased out in practice in light of their use in many long-term contracts, and the large volumes involved. The transition needs to take place in a controlled way.

The responsible authorities in the United Kingdom have stated that the new reference rate is not just a complement to LIBOR but will replace it entirely. The UK authority that exercises supervision over LIBOR, the Financial Conduct Authority (FCA), has announced that it will require banks to submit offers for the LIBOR calculation after 2021. This announcement probably means that LIBOR will not be published after 2021 (as several of the banks that submit offers to LIBOR have been fined, the incentive to contribute offers has declined). The Bank of England has also acted to support the transition from LIBOR. As from the start of the third quarter of 2021, for example, the Bank of England, in its lending to commercial banks, will apply higher haircuts on collateral that is linked to LIBOR.<sup>106</sup> As from the end of 2021, the Bank of England will no longer accept LIBOR-linked collateral.<sup>107</sup> The Bank of England has also announced that it will consider using supervisory tools to

<sup>101</sup> There are currently what are known as STINA swaps, where the parties replace the base STIBOR tomorrow/next with, for example, a fixed three-month rate. In the future, such a swap contract could be established but with the base replaced with the Riksbank's reference rate with maturity overnight.

<sup>102</sup> Federal Reserve Bank of New York's website, 12 February 2020. See the link: [https://www.newyorkfed.org/markets/opolicy/operating\\_policy\\_200212#footnote1](https://www.newyorkfed.org/markets/opolicy/operating_policy_200212#footnote1).

<sup>103</sup> See, for example the link:

<https://www.federalreserve.gov/newsevents/speech/quarles20180719a.htm>.

<sup>104</sup> Bank of England, Andrew Hauser (Executive Director, Markets), *Turbo-charging sterling LIBOR transition: why 2020 is the year for action – and what the Bank of England is doing to help*, 26 February 2020.

<sup>105</sup> The local working group for new reference rates in Switzerland has also recommended the creation of longer rates by calculating the compounded rates, and, wherever possible, to use these instead of CHF LIBOR. The administrator of the reference rate states on its website that it will publish an index to calculate the SARON reference rate for longer maturities, compounded for longer maturities.

<sup>106</sup> Bank of England website, updated 7 May 2020. See the link: <https://www.bankofengland.co.uk/markets/eligible-collateral>.

<sup>107</sup> Bank of England, Andrew Hauser (Executive Director, Markets), *Turbo-charging sterling LIBOR transition: why 2020 is the year for action – and what the Bank of England is doing to help*, 26 February 2020.

encourage the transition from LIBOR if it is progressing too slowly. In mid-March 2020, the FCA, the Bank of England and the local UK working group for alternative reference rates announced that the overall timetable for phasing out LIBOR remains in place, which means that participants cannot rely on LIBOR being published after 2021.<sup>108</sup> On the other hand, the spread of the coronavirus has means that various elements in this phasing out process have been delayed.<sup>109</sup>

Representatives of the US Federal Reserve have also pointed out the importance of the use of LIBOR in dollars being replaced by new reference rates in good time before the end of 2021.<sup>110</sup>

In the euro area, the traditional reference rate for longer maturities (EURIBOR) will remain but will be calculated using a new method. However, the existing reference rate for the shortest maturity (EONIA) will disappear and be replaced by the new €STR reference rate.<sup>111</sup> Other countries where the authorities currently consider that traditional rates should not be replaced but remain in parallel with the new rates include Australia, Canada and Japan.<sup>112</sup>

In Sweden, no decisions have currently been taken to stop publishing STIBOR. Under the Benchmarking Regulation (BMR) and in its capacity as a critical reference rate, STIBOR must be authorised before the end of 2021. FI decides whether STIBOR and its administrator fulfil the requirements of the BMR and can thereby be authorised.

To sum up, IBOR and the new reference rates will probably exist side by side in the coming years.

### The way forward in Sweden

Internationally, confidence in traditional reference rates has been damaged and in response to this, work is ongoing in many countries to replace, or complement, these rates with new transaction-based reference rates. Swedish financial markets have a substantial amount of cross-border trade and are therefore very dependent on how foreign markets function. Sweden cannot ignore the global trend of using new transaction-based reference rates. The framework for Swedish reference rates must instead be adapted to the changes abroad. One such adaptation is the Riksbank publishing a new reference rate for the shortest maturity in the future, similar to several other central banks around the world. The new reference rate is based entirely on transactions in contrast to STIBOR, which is based on offers.

Once the Riksbank starts to calculate and publish the new reference rate, it will have taken a first step to complementing STIBOR. It should be possible to use the new reference rate in all contracts where a reference rate for the shortest maturity is a suitable base. If the new reference rate is considered more credible and robust, it can thus replace STIBOR on the shortest maturity.

To begin with, it is primarily market demand that will dictate how broadly the new reference rate is used. One immediate area of use in the near term is as a “fall-back rate” in contracts. The Benchmarking Regulation requires a plan in case the reference rate used in the contract (for example STIBOR) stopped being produced; a means of observing the requirement to have another interest rate to fall back on.

Another area of use is in trade in foreign exchange instruments. If a bank trades in FX instruments where one payment leg in the transaction is linked to a new foreign reference rate, it is probable that the counterparty will demand that the Swedish leg in the transaction is also linked to a corresponding new Swedish reference rate. The Swedish Bankers' Association working group for alternative interest rates takes a positive view of Sweden also having a transaction-based reference rate so that Sweden can still do business with parties in the major currency areas, where new reference rates have been developed.<sup>113</sup> STIBOR is not comparable with, for example, SONIA or SOFR, but the Riksbank's new reference rate will be.

Going forward, the Riksbank will need to consider two outstanding issues: firstly, longer maturities for the new reference rates, and secondly, how the transition to the new reference rates will take place. The Riksbank will constantly follow and participate in international discussions on the development of international practice in these areas. If, going forward, there is considered to be a need for a longer reference rate for the market in Swedish kronor, it appears that a pragmatic solution would be to start by publishing compounded rates, as the central banks in the United Kingdom and the United States do.

<sup>108</sup> See <https://www.fca.org.uk/news/statements/impact-coronavirus-firms-libor-transition-plans>.

<sup>109</sup> See <https://www.bankofengland.co.uk/-/media/boe/files/markets/benchmarks/rfr/rfrwg-further-statement-on-the-impact-of-coronavirus-on-timeline-for-firms-libor-transition-plans.pdf>.

<sup>110</sup> New York Fed, John Williams (Chief Executive Officer), Remarks at Securities Industry and Financial Markets Association (SIFMA), 15 July 2019.

<sup>111</sup> EONIA is the traditional reference rate for the shortest maturity (overnight). EURIBOR is the traditional reference rate for slightly longer maturities, it is published for the maturities of one and three weeks respectively and six and twelve months respectively.

<sup>112</sup> FSB, *FSB Reforming major interest rate benchmarks, progress report*, December 2019.

<sup>113</sup> See the Swedish Bankers' Association website, the AGAR (Working group for alternative interest rates) tab.

## GLOSSARY

**Capital requirements:** Rules for the minimum amount of loss-absorbing capital a financial undertaking must hold to cover its risks.

**CCP, central counterparty:** An agent that acts as intermediary in financial transactions and thus goes in as buyer to all sellers and seller to all buyers, respectively. This means that the original parties in a transaction have a claim on, or debt to, the central counterparty instead of each other.

**CDS, Credit Default Swap:** Contract between participants in the credit market aimed at transferring the credit risk in an underlying asset from one participant to another. The annual cost in basis points of buying such a contract is called the CDS premium. CDS premia are often used as an indication of banks' costs for un-secured funding.

**Commercial paper:** Securities issued by non-financial corporations in order to borrow money. The maturity of these instruments is usually shorter than one year.

**Commercial property:** Commercial property is real estate owned in order to generate income via letting.

**Common Equity Tier 1 (CET 1):** Tier 1 capital with a deduction for capital contributions and reserves that may be included in the capital base as Tier 1 capital in accordance with the Capital Adequacy Directive.

**Common Equity Tier 1 (CET 1) ratio:** Common Equity Tier 1 in relation to risk-weighted assets.

**Corporate bond:** Securities issued by non-financial corporations in order to borrow money. The maturity is usually longer than one year.

**Countercyclical capital buffer:** A time-varying capital requirement aimed at protecting the banking sector from future losses and helping to reduce procyclicality in credit growth by softening excessively volatile fluctuations in the credit market over time.

**Covered bond:** A bond whose holder has a special benefit right in the event of a bankruptcy. Covered bonds normally entail a lower credit risk than unsecured bonds, which means that the borrowing costs are lower.

**Credit facility:** An agreed borrowing limit with credit up to a specific amount, for which the borrowing company normally pays a fee.

**Credit guarantee:** A guarantee commitment by, for example, the state to guarantee repayment of a loan amount.

**Credit loss:** Loss made by credit institutions and banks when borrowers cannot pay interest or amortisation on their loans.

**Credit risk:** The risk of a borrower failing to meet commitments.

**Currency swap:** An agreement to buy or sell a currency at the spot rate and then sell or buy back the same currency on a later date at a pre-determined rate.

**Debt-to-income ratio:** Total household debt in relation to disposable income.

**Disposable income:** The total of a person's or a household's incomes less taxes and charges.

**Equity:** Item in a company's balance sheet showing the difference between assets and liabilities, including capital provided by owners, retained profits and reserves.

**Interbank rate:** The interest rate on unsecured loans that the banks offer other banks. STIBOR (Stockholm Interbank Offered Rate) is usually used to measure the Swedish interbank rate. STIBOR is used as a reference for rate setting or pricing of derivative contracts.

**LCR, Liquidity Coverage Ratio** Liquidity measurement defined by the Basel Committee that measures a bank's ability to deal with a stressed net cash outflow for 30 days. In simple terms, an LCR of 100 per cent means that a bank's liquidity reserves are adequate to enable the bank to manage an unexpected liquidity outflow for 30 days.

**Leverage ratio:** A measure that specifies the bank's capital in relation to its total assets and off-balance-sheet commitments. The measure is used as a complement to the risk-based capital adequacy requirements.

**Liquidity:** Measure of the ability of a company or organisation to meet its payment obligations in the short term.

**Liquidity buffer:** Funds an institution holds to ensure its short-term debt-servicing ability.

**Liquidity risk:** The risk of not being able to meet payment commitments due to a lack of liquidity.

**Loan-to-value limit:** A loan restriction which sets a limit on the size of a borrower's mortgage in relation to the value of the home.

**Loan-to-value ratio:** A borrower's debt in relation to the market value of the collateral for the loan. For a household with a loan where the home is pledged as collateral the loan-to-value ratio corresponds to the debt divided by the market value of the home.

**Money market:** A market consisting of banks and other financial institutions that receive short-term deposits and grant short-term loans for a period of one day up to one year.

**Money market fund:** Fund that invests in short fixed-income instruments, that is instruments with a remaining maturity shorter than one year.

**MREL, Minimum Requirement for own funds and Eligible Liabilities:** A regulatory framework aimed at ensuring that banks and institutions have a sufficiently large share of bail-in-able liabilities that can be turned into capital if they become distressed.

**Net interest income:** Interest income from lending less interest expenditure for funding and deposits.

**NSFR, Net Stable Funding Ratio or structural liquidity ratio:** Measure of how much stable funding a bank has in relation to its illiquid assets.

**Orderly Wind Down (OWD) ratio:** The OWD ratio measures a company's financial conditions to continue operating in a situation with no income, based on historical costs. It is calculated as the ratio between a company's liquid net assets and average six-monthly costs (operational costs including interest) for the past 3 years. An OWD ratio of 1 means that operations can continue for 6 months without income.

**Risk premium:** The additional return an investor requires as compensation for an additional risk.

**Risk weight:** In simplified terms, to calculate a bank's risk-weighted assets, the amount lent is multiplied by a risk weight. The risk weights are determined on the basis of how likely it is that the borrower will be unable to fulfil its loan obligations and thus varies from borrower to borrower – a high risk weight implies a greater risk than a low risk weight.

**Risk-weighted exposures or risk-weighted assets:** Assets recorded in the balance sheet and off-balance sheet obligations valued by credit, market and operational risk in accordance with the capital adequacy regulations.

**Securitisation:** A technique for converting illiquid loans into bonds.

**Solvency:** Financial measure of a company's ability to fulfil its commitments. Also a measure of an insurance company's financial position that measures how large the companies' assets are in relation to their debts, which mainly consist of their total commitments.

**Systemically important:** An agent, market or part of the financial infrastructure is regarded as being systemically-important if problems that arise there could lead to disruptions in the financial system that would result in potentially large costs to society.

**TIBER-SE:** The Swedish adaptation of the European Central Bank's TIBER-EU framework. The framework enables the standardised testing of resilience to cyber risks among critical participants in the financial system.

**Tier 1 Equity:** Equity less proposed dividends, deferred tax assets and intangible assets, such as goodwill. Tier 1 equity may also include some types of subordinated loan.





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