



The Riksbank and Financial Stability

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The Riksbank's role and tasks

The Riksbank is Sweden's central bank and a public authority under the Riksdag, the Swedish parliament. The Riksdag has delegated responsibility for monetary policy to the Riksbank and stipulated in legislation that the objective of the Riksbank's activities is to maintain price stability.¹ According to the Riksbank Act, the Riksbank shall also promote a safe and efficient payments system.² This brochure describes the Riksbank's work with the latter task.

The Sveriges Riksbank Act does not describe in detail what is meant by promoting a safe and efficient payments system. However, it is clear that the Riksbank has a responsibility for the supply of cash³ and for providing a central payments system.⁴ A safe and efficient payments system requires a stable financial system so that payments and the supply of capital can function smoothly. The Riksbank, like other central banks, must also be able to manage financial crises and other serious disruptions in the financial system to ensure that the payments system is safe and efficient. In this respect, the Riksbank plays a special role as Sweden's central bank, because it can quickly supply money to the financial system if the need arises.⁵

A stable financial system is also a prerequisite for the Riksbank to be able to conduct an effective monetary policy. This is because the financial markets and how they function affect the impact that monetary policy has through the interest rates that households and companies have to pay on their loans. Moreover, the economic consequences of a financial crisis have a direct impact on price stability, growth and employment.

"Promoting a safe and efficient payments system" thus has a fairly broad meaning. In practice, it entails a responsibility to promote stability in the financial system. But unlike the monetary policy task, the Riksbank is not alone in having responsibility for safeguarding financial stability. The Riksbank shares this responsibility with Finansinspektionen (the Swedish Financial Supervisory Authority), the Swedish National Debt Office and the Government, through the Ministry of Finance. All of these authorities have different roles in the work with financial stability.

1. Chapter 9, Article 13 of The Instrument of Government, Chapter 1, Article 2 of the Sveriges Riksbank Act (1988:1385). The document "Monetary Policy in Sweden" describes the Riksbank's monetary policy objectives and strategies. This document is available on the Riksbank's website (www.riksbank.se).

2. Chapter 1, Article 2, Sveriges Riksbank Act.

3. Chapter 9, Article 14 of The Instrument of Government, Chapter 5, Article 3, Sveriges Riksbank Act.

4. Chapter 6, Article 7, Sveriges Riksbank Act.

5. This is known as *lender of last resort*.

What does the task entail in practice?

The Riksbank's practical work on promoting financial stability consists of several different tasks, namely:

- issuing banknotes and coins,
- ensuring that there is a central payments system which banks and other agents can use to make payments,
- gathering, compiling and distributing information on the financial system,
- regularly analysing and supervising developments in the financial system and the economy as a whole,
- affecting the financial regulatory framework so that it contributes to stability and efficiency,
- preventing threats to financial stability by informing and warning of risks, and where necessary providing recommendations of measures to deal with these risks,
- managing a financial crisis if one should arise.

These different tasks are all connected. Banknotes and coins are needed so that we can make payments. But in a modern economy a large share of payments are made by various types of card and by transferring money between bank accounts. This means that the banks must be able to pay one another. The Riksbank therefore supplies a system – known as RIX – which the banks can use for their own payments and for the payments they make on behalf of their customers. The Riksbank offers overnight credit in this system to increase its efficiency.⁶ RIX also contributes to financial stability, as it reduces the risks the users take when making payments.

This brochure focuses in particular on the tasks stemming from the Riksbank's work on preventing and managing financial crises. It begins with a description of what the Riksbank means by financial stability, of the fundamental functions and qualities of the financial system, and of the requirements for regulations that set standards. This is followed by a description of the Riksbank's crisis prevention work and its crisis management work, the contents of this work and its practical application.

Macroprudential policy – a policy area under development

There is currently a comprehensive review of the financial stability area being made in Sweden and many other countries, partly with regard to the preventive work and partly with regard to work on crisis management. These reviews concern both what needs to be done in this area, and who

⁶ Chapter 6, Article 7, Sveriges Riksbank Act.

should do what. The reason for these reviews are the lessons learned from the global financial crisis 2007-2009, which revealed inadequacies in the way the financial system is constructed. There have also been deficiencies in important aspects of the supervision of the financial system and in crisis management.

One important conclusion is that microprudential supervision, which focuses on the state of health of individual financial institutions, needs to be supplemented with what is known as macroprudential policy. International discussions are focusing on exactly what should be included in macroprudential policy and which tools can be used for this purpose. But essentially, macroprudential policy concerns detecting, analysing and counteracting risks in the financial system *as a whole*. Although macroprudential policy is still a policy area under development, the lessons from the financial crisis show that its institutional structure needs a good dose of decision-making power and independence. This is because the body that is given responsibility for macroprudential policy should be free from external pressure, both from the political sphere and from the financial sector. There must also be clear forms of accountability. Finally, the institutional structure must ensure that there is a substantial and lasting capacity for analysis on which to base the decisions. A process is currently under way in Sweden, at the initiative of the Riksbank, to produce an institutional framework for macroprudential policy. At the same time, there are processes in both the EU and Sweden to improve the regulatory framework for crisis management. The on-going processes in Sweden and the international development work will probably lead to several decisions that affect the scope and design of the Riksbank's work with financial stability. This brochure will therefore be regularly reviewed and updated.

■ What is financial stability?

There is no simple measure of financial stability, and it is not easy to give a brief and precise definition of the concept of financial stability.⁷ However, financial stability essentially involves the extent to which the financial system can carry out its tasks.

The Riksbank has chosen to define financial stability as meaning that the financial system can maintain its fundamental functions and also has resilience to disruptions that threaten these functions.

The term *financial system* refers not only to banks, insurance companies and other financial agents, but also to the financial markets and the financial infrastructure of technical systems, regulations and routines that is required to make payments and exchange securities. The system also includes the financial regulatory framework in the form of legislation, regulation and other standards.

The *fundamental functions* of the financial system are mediating payments, converting savings into funding, and managing risk. These are described in more detail later on in this section. When it says that the system must *maintain its fundamental functions*, we mean that any disruptions should not lead to poorer functioning that might involve large costs for society. This could involve, for instance, banks not being able to make payments to one another. Another example is a credit crunch, where access to credit is limited, for instance because the banks are unable to fund their lending.

The definition of resilience varies with regard to the different parts of the financial system. Moreover, what constitutes *resilience to disruptions* threatening the functioning of the system is a question of judgement that has many dimensions. This can involve, for instance, how much capital the banks have, and how good their liquidity is, as well as how vulnerable the financial payment infrastructure is. Later in the document we describe how the Riksbank assesses the resilience of the system in practice. A disruption can be, for instance, that the economy, or some part of it, suddenly weakens more than expected, or that a large bank suffers losses that threaten its survival.

⁷ For an account of different ways of defining the concept of financial stability, see for instance Garry J. Schinasi, "Defining Financial Stability", IMF Working Paper WP/04/187, 2004.

The fundamental functions of the financial system

The Riksbank has chosen to base its definition of financial stability on the functions supplied by the financial system. It is thus important what these functions are, how they are supplied and why they are important to the economy. They primarily concern the mediation of payments, converting savings into funding and managing risk.

Mediation of payments means that the financial system helps households and companies when they need to pay for goods or services. If wages are not paid on time and people are unable to pay their bills, this could soon result in chaos in the economy. In Sweden, it is mainly the banks that mediate various types of payment service and ensure that payments can be made. In addition to the banks, the technical systems used to transfer the payments are essential in ensuring that payments can be mediated. There are technical systems for securities transactions, where both the funds and the security change owner, which manage each stage in the transaction from the point in time when a customer places a buy or sell order to their bank until the deal is complete.

Converting savings into funding means that the financial system takes care of households' and companies' savings and contributes to funding, consumption and investment in, for instance, homes and production capital. Households and companies can save by depositing money with banks or by buying securities on a market. Households and companies that instead want to borrow can do so by taking out a loan from a bank. Larger companies usually also have the possibility of borrowing by issuing fixed-income securities, what is known as market funding. This supply of capital includes all forms of funding, with various types of credit being an important part. Moreover, the financial sector plays a central role in efficiently channelling savings into investment. Financial agents, who act as intermediaries between savers and investors, are specialists at assessing credit risk, that is, the risk that a borrower will be unable to meet his or her obligations according to the loan. They thus govern the access to, and price (interest) of, various investments, which in turn affects where the capital finally lands. If this is done efficiently, it means that the investments that are most socioeconomically efficient will be those that are carried out foremost, which promotes growth.

When the banks lend money, they convert short-term funding into long-term lending. This means that the banks' funding, the customers' deposits and the banks' market funding, must be repaid on demand or has a short time to maturity, while their lending is long-term. This maturity transformation, as it is known, is a very important service, as it gives households and companies the possibility to save at short fixed terms, so that they can use their deposits to make payments, at the same time

as they can borrow longer term, for instance, when buying a home or investing in a new factory.

The transformation of savings into funding and of short-term funding into long-term lending is thus extremely important to the economy. Households and companies may need credit to bridge over gaps between income and expenditure in the short term. A shortage of longer term credit could force companies to refrain from investment and many households would experience difficulty purchasing homes.

Management of risk means that the financial system helps households and companies to diversify and redistribute their risks to the parties best suited to bear them. Those who choose to bear risk receive compensation for this. The greater the risk a party takes, the higher the compensation. Risk management has become increasingly important as the financial markets have developed. Companies and banks that obtain funding on international securities markets can, for instance, insure themselves against interest rate risk and currency risk, that is, the risks caused by changes in interest rate levels and exchange rates, through the financial markets. For example, a pension fund manager investing in bonds may wish to reduce the risk of an interest rate increase by selling this risk on the market, at the same time as the fund manager wants to increase the potential for a rise in value by buying, for instance, the risk that the Swedish krona will increase in value. An efficient management of the risks in the economy also means that those who are best suited to bear the risks will be the ones to bear them. If risk management via financial intermediaries and on the financial markets does not function, however, many transactions may be obstructed and perhaps cannot be carried out.

■ The financial system and systemic risk

The three fundamental functions of the financial system – mediating payments, converting savings into funding and managing risk – are of central importance in ensuring that the economy functions and grows. Financial stability is simply a necessary condition for sustainable economic growth. At the same time, the financial system is sensitive. The sensitivity is due to central parts of the financial system, such as banks and financial markets, having built-in vulnerabilities. Moreover, the different parts of the system are closely linked to one another. This means that problems arising in one part of the system can quickly spread to other parts and threaten financial stability. The combination of built-in vulnerability and interconnection means that the financial system is to a large degree susceptible to systemic risk.

The financial system is sensitive

Banks are vulnerable as they convert short-term funding into long-term lending, which creates an imbalance between illiquid and long-term assets and short-term liabilities. As long as the general public and the market have confidence in a bank, this imbalance is not a problem. But if a bank's debt-servicing ability is questioned for some reason, for instance because the bank is suddenly expected to make larger losses, or because correct information is not available, then a bank may suddenly lose its funding. Then we may have what is usually called a bank run, that is, all of the depositors want their money back at the same time. But the increased element of market funding today means that the greatest risk now is that a bank may experience funding difficulties when market agents are unwilling to renew its loans or buy its securities. A bank with funding problems finds it difficult to pay its debts on time, as the bank's assets are difficult to sell. This can lead to the bank lacking sufficient liquidity to manage its daily operations and it may therefore need to suspend payments. If several banks suffer problems at the same time, a situation may arise where households and companies find it difficult to obtain loans. Such a situation can ultimately have serious consequences for the economy as a whole.

Financial markets are vulnerable for slightly different reasons. For a market to function properly it must have buyers and sellers so that an asset can be sold quickly and at the right price. If this is the case, the market has what is known as high market liquidity. One condition for this is that those trading in the markets, the market agents, have confidence in one another.

However, the information available in the financial markets regarding market agents and assets is often inadequate and unevenly distributed, which means that confidence can change easily and rapidly. If confidence between market agents declines, their willingness to trade with one another also declines, and market liquidity falls. It then takes longer to sell the assets and prices fluctuate more.

Market liquidity can also be disrupted in other ways. Agents may disappear from certain markets, because they wish to retain liquidity for themselves during times of turbulence. They can then choose to put their money in other types of asset, such as government securities, or in accounts with the central bank. Agents may also leave certain markets if the value of an asset suddenly becomes uncertain. Such uncertainty can be reinforced in times of turbulence when financial companies want to sell assets. Potential buyers may then believe that the seller is primarily trying to get rid of their worst assets. In times of turbulence, market prices may also fall sharply if many agents sell at the same time. If there are insufficient buyers in this situation, the price of the assets falls more than is warranted, and one can say that the assets are sold "at fire sales". A sharp fall in prices reduces the value of the companies' assets, which in turn can force them to sell off further assets. This can easily develop into a downward spiral with falling prices, further compulsory sales that in turn lead to falling prices, and so on.

Risks can spread throughout the financial system

The different parts of the financial system are closely linked to one another. These links take the form, for instance, of agents borrowing from, or trading with, one another to a very large degree. At the same time, they often obtain funding on the same markets. If a problem arises in one part of the financial system – among one or more agents, in a market or in some part of the financial infrastructure – it can thus easily and quickly spread to other parts of the system. The risk of this happening is called contagion risk.

The fact that problems spread between the banks is not simply due to having liabilities to one another. Banks also have similar operations and are thus exposed to the same types of risk. If one bank suffers problems, fears may therefore soon arise that other banks are also suffering problems. In other words, what starts as a problem in an individual bank may develop into a confidence crisis for the entire banking system. As some markets are central to, for instance, the banks' funding and risk management, there is also a risk that problems on a market may quickly spread through the financial system and to the banks.

Systemic risk and the concept of systemic importance

As the financial system is sensitive and subject to the risk of contagion effects, it is associated with what are known as systemic risks.

The Riksbank usually defines systemic risk as the risk that a disruption will occur in the financial system that could lead to substantial costs for society.

Examples of such disruptions could be that a company active in the financial markets suffers a crisis or that the banks' possibilities to obtain funding in the market are seriously impaired for some reason. The concept of systemically-important is closely related to systemic risk.

The Riksbank has chosen to define an actor, market or part of the financial infrastructure as systemically-important if problems arising in one such agent, market or infrastructure could lead to disruptions in the financial system that would result in potentially large costs to society.

An actor, market or infrastructure can be systemically-important if it is necessary for some other part of the financial system to be able to function, or if it is associated with large contagion risks. The definition of systemically-important varies over time, depending on how the financial system functions at the time in question and on the situation in the world and the Swedish economy in general. This means that even a small agent can be judged to be systemically-important under certain circumstances.

Externalities

The entire economy is affected by a financial crisis. Decisions made by participants in the financial system may have consequences for others, both within the financial system and outside. Such consequences that affect others are known as externalities. The agents themselves do not have sufficient incentive to fully take these externalities into account. For an individual bank that suffers problems or perhaps even defaults, the contagion effects in the financial system are an externality. The bank will thus not take these consequences into account, which means it may take excessive risks. This can cause the systemic risk in the financial system to be higher than is considered desirable from society's point of view.

Activities in the financial markets are also associated with externalities. However, these differ from the earlier-mentioned effects in that their impact is through pricing. For example, market agents have no reason to care about the consequences of their actions for market liquidity or for

other agents when they sell financial assets at “fire-sale” prices. Other agents are in turn affected by a fall in prices, as market prices are used to value companies. A large fall in prices could thus lead to a worsening financial position and a loss of confidence in agents other than the one(s) causing the fall. This effect of a particular action in the market is known as an externality. Such collective action in the market can thus lead to market liquidity disappearing or to confidence in a systemically-important bank or banks generally declining, which can in turn lead to a deterioration in the functioning of the financial system. This means that the agents’ actions in the financial markets can contribute to systemic risk.

Externalities can also arise when agents use the systems in the financial infrastructure. This can mean that the agents in the infrastructure for some reason choose to use a system in which the risks are too high, from society’s perspective, as the costs of a breakdown in the system would to a great extent affect others than the agents themselves.

The financial system is regulated in special arrangements

The financial sector’s great importance for the economy, combined with systemic risk and externalities, provides motivation for special regulation of the financial system. There are thus special regulations for companies that conduct financial operations or are active in the financial system, such as banks, financial companies, marketplaces, infrastructure companies and other financial companies. The regulations require that the companies have sufficient capital to reduce the risk of default, and that they have the capacity to manage other risks in their operations. It is the traditional form of financial supervision, microprudential supervision, which monitors whether the regulations are observed. The focus for this type of supervision is thus the state of health of the individual institutions. In Sweden it is Finansinspektionen that has responsibility for this supervision.

Another important reason for regulating the financial sector is that the consumers’ assets with, and interests in, the financial companies need to be protected. Although consumer protection and protection of the financial system’s functions can be regarded as different motives for regulation, measures intended to strengthen one of these often entail consequences for the other. One such measure is the deposit insurance, which is an important part of the consumer protection. A deposit insurance means that the state or another agent reimburses deposits in accounts if a bank defaults. However, the deposit insurance scheme does not just provide protection for consumers. It also reduces the risk of a bank run and thus contributes to the stability of the system. The Swedish National Debt Office is responsible for the deposit insurance scheme.

The deposit insurance can also have a negative effect on the stability of

the system, as it can reduce the depositors' incentive to choose banks with a low risk level over banks with a high risk level, particularly if the latter offer higher interest. Such problems can also arise with other government measures, which in one way or another protect the agents from the consequences of their risk taking. This can lead to excessive risk taking in the financial system.⁸ It is therefore important that this type of problem is reduced as far as possible when designing the safety net. One important consideration here is that there is an appropriate regulatory framework that provides the right conditions for being able to manage banks in distress without this leading to disruptions in the financial system or to large costs for tax-payers.

8. This phenomenon is usually called *moral hazard*.

■ Financial stability – preventive work

In addition to issuing banknotes and coins and providing a central payments system, the Riksbank supports the stability of the financial system in several other ways. Under normal conditions, the Riksbank works on preventing financial crises. It does this by identifying, analysing and counteracting risks in the financial system as a whole. However, the Riksbank does not have any binding tools to influence the participants in the financial system. Instead, it must first and foremost, publicly and in a dialogue with the participants, draw attention to the risks identified and warn against them.⁹ The Riksbank also gives recommendations to banks and other agents regarding measures that should be taken to manage the risks identified. The aim is for participants to reduce their risk taking and/or reinforce their resilience to disruptions. The Riksbank's work on prevention of crises entails:

- gathering information on the financial system,
- analysing and monitoring the financial system on an on-going basis,
- preventing threats to financial stability by informing and warning of risks, and where necessary, providing recommendations of measures to deal with these risks,
- cooperating with other authorities in Sweden and abroad,
- affecting the financial regulatory framework so that it contributes to stability and efficiency.

Gathering information

The Sveriges Riksbank Act gives the Riksbank the right to request the information the Riksbank considers necessary to oversee the stability of the payments system.¹⁰ The Riksbank collects data from several different areas for this purpose.

Statistics Sweden (SCB) compiles financial market statistics on the Riksbank's behalf. This consists of statistical data on Swedish financial institutions and the financial markets.¹¹ Statistics are gathered monthly and include information on debts and assets held by companies in the financial sectors, as well as current lending and deposit rates.

9. The objectives of the Riksbank's communication are described in the Riksbank's communication policy and the communication policy for financial stability, which can both be found on the Riksbank's website, www.riksbank.se.

10. Chapter 6, Section 9 of the Sveriges Riksbank Act.

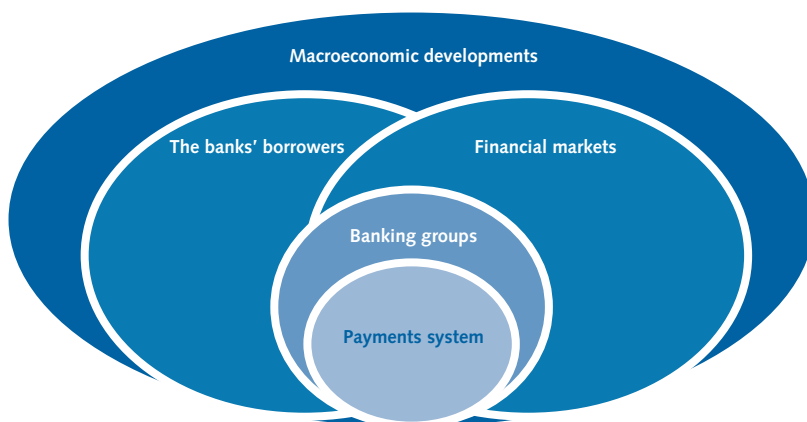
11. Financial market statistics are available at Statistics Sweden's website, www.scb.se.

The Riksbank also directly gathers statistics from banks and infrastructure companies, such as information on the banks' exposures towards one another in the form of various commitments, the number of transactions in the infrastructure system, and other factors relevant to the functioning of the system. When necessary, the Riksbank also conducts its own surveys, aimed in various ways at highlighting conditions on the financial markets. For example, twice a year the Riksbank conducts a risk survey. The purpose of this survey is to obtain an overall picture of the view of risk in the Swedish fixed-income and foreign exchange markets as well as to provide an idea of the views on the functioning of the markets.¹² There have also been studies, using questionnaires, which show how the general public in Sweden makes payments.¹³ Moreover, the Riksbank actively participates in international events, which is also an important element in gathering information.

On-going stability analysis

The Riksbank continuously analyses the risks that comprise a threat to the financial system as a whole. Figure 1 illustrates the areas included in the Riksbank's stability analysis. The payments system forms the core of the analysis, as this is where all transactions between participants take place. The banking groups are the main participants in the payments system. These, in turn, are dependent upon developments in the financial markets and also their borrowers. In turn, macroeconomic developments are highly significant for both the financial markets and the banks' borrowers.

Figure 1. What does the Riksbank monitor?



¹² The results of the risk survey are published both on the Riksbank's website, www.riksbank.com and in the Financial Stability Report.

¹³ The results of this are discussed (for example) in Lars Nyberg's speech "Time to change cash to cards?" from January 2010. The speech is available at the Riksbank's website, www.riksbank.se.

The focus for the Riksbank's analysis and supervision is the parts of the system that are or may be systemically important. The main focus for monitoring is currently on the four Swedish major banking groups¹⁴, as they play such a central part in payment mediation, credit supply and the management of financial risk. Together, these banks account for about three-quarters of the deposits from and loans to the Swedish public.

The financial markets are also significant to the Riksbank's analysis, as they are important to the funding and risk management of banks and companies. In an international comparison, Swedish banks have a large element of market funding – they fund about half of their lending via securities and half via deposits. Furthermore, about two-thirds of their market funding is in foreign currency.¹⁵

As regards the financial infrastructure, the Riksbank's analysis is focused on those parts that are important to payments by the public and to the smooth functioning of the financial markets. The participants in these systems and the manner in which they use the systems are also significant to the analysis.

Assessment of financial stability

Schematically, the Riksbank's stability assessment and analysis can be split into three stages: identifying and assessing risks, assessing resilience, and stress testing the banks' resilience to risks. These three stages form the basis of the Riksbank's assessment of financial stability. This is illustrated in Figure 2.

Figure 2. The Riksbank's stability assessment



Identifying and assessing risks

The first stage in the Riksbank's stability assessment involves identifying and assessing risks and threats to financial stability. As a part of this work, the Riksbank monitors and analyses international developments. In addition, the levels of pricing and activity on the financial markets can provide early indications of the general mood, willingness to take risks, where risks exist, and how these may change over time. The Riksbank also

14. These are Handelsbanken, Nordea, SEB and Swedbank.

15. See Financial Stability Report 2012:2.

monitors more specifically the risk that financial agents, and in particular the major banks, may suffer losses. When the risk of substantial losses increases, confidence in the banks may decline, which can in turn lead to the banks experiencing difficulty in obtaining funding. Difficulties for the banks can in turn lead to a decline in lending and ultimately to default.

For banks and other financial companies that lend money, credit risk (the risk that a borrower will be unable to pay interest and the principal in time) is a significant loss risk. About 60 per cent of Swedish banks' assets consist of lending to the public. Analyses of the banking groups' borrowers are therefore important. The Riksbank pays particularly close attention to large borrower groups, such as real estate companies, and monitors developments on markets that are significant to lending, such as the commercial property market and the housing market.

Banks convert short-term savings into long-term lending. By doing so, they assume liquidity risk. To assess liquidity risk, the Riksbank monitors both differences in maturities between assets and liabilities, and the banks' ability to fund themselves on the financial markets. These possibilities are affected by the level of confidence a bank has on the market, and by how well the markets are working. Consequently, the Riksbank analyses the current liquidity risk on the most significant markets.

The Swedish banks are becoming increasingly international in their operations, and about half of the assets and liabilities reported on the Swedish banks' balance sheets come from operations abroad. This means that debt-servicing ability among the banks' foreign borrower groups and developments in the international financial markets, upon which the banks are dependent for funding, now form important parts of the Riksbank's analysis.

With regard to the financial infrastructure, there are also other types of risk than those listed above, which the Riksbank analyses in its assessment of financial stability. Operational risk is one such example. The Riksbank gives priority to risks in and between the Swedish infrastructure systems when monitoring the financial infrastructure. For each infrastructure system the risks are assessed on the basis of the probability that they will materialise and their potential consequences for financial stability in Sweden. The Riksbank then draws up a plan for the monitoring work, describing which risks are given priority, that is, analysed in greater depth and managed in the short run, and which are considered less acute and can be managed in the long run. The infrastructure, like the banks, has become international in recent years. For example, some of the infrastructure systems used by Swedish agents are not based in Sweden. This makes greater demands on the co-operation between the authorities in different countries, and the Riksbank therefore cooperates in monitoring several Swedish and international infrastructure systems.

Assessing resilience

The next stage of the Riksbank's stability assessment is to assess the resilience of various parts of the financial system. Resilience is the financial system's ability to cope with a disruption, without this having a negative impact on a function. It concerns the ability to handle disruptions when they occur, as well as limiting their contagion. Put simply, the higher the resilience, the less sensitive the financial system becomes. The analysis of resilience must also be seen in relation to the risks that have built up and been analysed in the individual banks, on the markets and in the infrastructure.

Resilience has different components in different parts of the financial system. For a bank, resilience is largely a matter of its capital and liquidity situation. If a bank incurs credit losses, it can keep or lose the confidence of the markets and the public, depending on how much capital the bank has to cover the losses. Decreased confidence can, in turn, lead to the bank's liquidity situation rapidly becoming strained. Consequently, the Riksbank analyses the banks' capital strength on an on-going basis. The Riksbank also studies the banks' profitability to assess their competitiveness and their long-term ability to build up capital strength and meet credit losses. The banks' liquidity situation is dependent on how they decide to fund themselves, and how sensitive their funding is to disruptions on various markets.

As regards the financial markets, resilience depends on how much confidence the market participants have in one another. This means that any risk that market agents may make sudden and unexpected losses also forms a threat to the functionality of the market. Market resilience is also affected by factors such as the number and size of buyers and sellers, how transparent and understandable the assets on the market are, and the risks associated with the infrastructure in which the transactions are carried out.

The Riksbank's assessment of the resilience of the financial infrastructure is focused on ensuring that these systems, their regulatory frameworks and their routines function in a secure and efficient manner. It is important that the infrastructure systems can manage operational risks so that payments and securities transactions can be implemented without any major interruptions.

Resilience is also a matter of whether problems affecting individual participants, markets or the infrastructure can be kept in isolation, avoiding contagion. The resilience of the financial system is thus also a matter of the contagion risks in various parts of the system. Consequently, the Riksbank continually analyses the contagion risks associated with each bank by examining information on the banks' greatest exposures towards each other and towards other major financial system participants – their counterparty

exposures. With regard to financial infrastructures, it is important that the systems do not entail any credit risk or liquidity risk for the participants, and that they minimise the contagion risks between the participants.

Stress testing resilience

Having identified the risks and estimated the financial system's resilience, the Riksbank then assesses whether the banks that comprise an important part of the financial system will be able to maintain their functions in the scenario that the Riksbank deems most likely a couple of years ahead. However, according to the Riksbank's definition of financial stability, the financial system should also be able to maintain its functions in the event of an unexpected disruption. To assess whether the financial system has satisfactory resilience to unexpected disruptions, the Swedish banks' resilience is tested further in what are known as stress tests. These test how the banks will cope with difficult, but not unlikely, scenarios over a certain period of time. Both the banks' capital situation and their liquidity situation are tested.

Stress tests entail a shift of focus, for the banks, from speculating on what could go wrong (the number of scenarios here is, in principle, unlimited) to what would happen if something were to go wrong. The aim of this is to bring the banks' attention to the consequences of disruptions, as well as to encourage them to ensure that they have sufficient resilience to disruptions that may be difficult to predict, but are still possible.

To carry out these stress tests, the Riksbank uses public data and a model that is also available to the public. This means that the results of the stress tests can be made public and can be replicated. Individual test results for the four major Swedish banking groups are published in the *Financial Stability Report*.

Overall assessment

Using these analyses and tests as a background, the Riksbank makes an overall assessment of financial stability in Sweden. If the Riksbank finds that, in relation to the risks, the financial system has the resilience to cope with an unexpected disruption, without any serious deterioration in the system's functions, then the Riksbank's assessment, on the basis of its definition, is that the financial system is stable. This overall assessment is published twice a year in the *Financial Stability Report*. In addition to this, the Riksbank highlights and communicates its assessment of the financial infrastructure in various other ways.

Communication to promote financial stability

The Riksbank does not have any binding tools to influence the participants in the financial system. Instead, the Riksbank primarily induce change through communication. The Riksbank draws attention to the risks identified and warns against them, publicly and in a dialogue with the participants.¹⁶

The Riksbank's views on financial stability are communicated in several different ways. The results of the analysis of financial stability are published in the Riksbank's *Financial Stability Report*. In this report, the Riksbank presents its assessment of financial stability in Sweden and draws attention to risks that may develop into threats to financial stability. In addition, the Riksbank publishes reports on the Swedish financial infrastructure.¹⁷ The Riksbank also communicates through other channels, such as various types of publication, and at bilateral meetings with agents in Sweden and abroad. The members of the Executive Board also hold speeches giving their views on financial stability issues. Communication is an important part of the Riksbank's work on influencing the financial regulatory framework (see the section on standard-setting work).

A further means for the Riksbank to disseminate knowledge, based on the information gathered, is through the annual publication *The Swedish Financial Market*.¹⁸ This publication describes how the Swedish financial system is structured and functions, and details the participants active in it.

However, experiences from the financial crisis 2007-2009 showed that it is not always enough to merely draw attention to financial risks.¹⁹ The Riksbank may also need to make clear proposals for suitable measures to counteract the risks. Therefore, the Riksbank has begun to publish recommendations in its Financial Stability Report to try to more clearly induce change.²⁰ The recommendations can be aimed at banks and other market participants, as well as at legislators and other authorities, and concern measures the Riksbank considers they should take to reduce the risks that have been identified. These can be based on economic developments, or on more structural imbalances.

The Riksbank endeavours to be as open, clear and predictable as possible in its communication. At the same time, the Riksbank must take into account the fact that openness about risks in the financial system could in some

16. The objectives of the Riksbank's communication are described in the Riksbank's communication policy and the communication policy for financial stability, which can both be found on the Riksbank's website, www.riksbank.se.

17. For instance, the Riksbank has published the report *The Riksbank's oversight of the financial infrastructure*, which is available on the Riksbank's website, www.riksbank.se.

18. This publication is available at the Riksbank's website (www.riksbank.se).

19. The Riksbank had detected at a relatively early stage that the Swedish banks' lending in the Baltic region was not sustainable and that it would lead to significant risks. However, it was later revealed that the measures taken by the Riksbank were not sufficiently strong and therefore they failed to have the intended effect.

20. Financial Stability Report 2010:2 was the first report to contain recommendations.

cases lead to greater uncertainty and financial concerns. It is therefore always necessary to carefully consider the consequences.

International and national cooperation and standard-setting

There is extensive international cooperation between authorities. The Riksbank actively participates in a number of international organisations, which are important forums for this cooperation. The international cooperation concerns exchanging information, discussing potential risks and developing the work on preventing risks and managing crises. In addition, more and more of the financial regulations are being determined in international forums before being incorporated into Swedish legislation through EU legislation. This may concern, for instance, regulations regarding how much capital and liquid assets banks should hold, efficient regulations for managing banks in crisis and standards for financial infrastructures. The international process of standard-setting is therefore an important part of the Riksbank's work with financial stability. The Riksbank influences the design of financial regulations both at international level, via international organisations, and at national level through the Riksbank commenting regularly on a large number of proposals for Swedish laws, regulations and general recommendations.

An important forum for the international cooperation is the Bank for International Settlements, BIS, whose main task is to promote international monetary and financial cooperation. The BIS is a public limited company that is owned by around fifty central banks, including the Riksbank, which is represented on the board. The BIS incorporates the Basel Committee on Banking Supervision, which sets international standards for banks. These international agreements are incorporated via the EU in laws and directives that then also become valid in Sweden. The Riksbank is represented on the Basel Committee and participates in a large number of its working groups. In addition to the Basel Committee, the Riksbank also takes part in the Committee on the Global Financial System (CGFS), the Committee on Payment and Settlement Systems (CPSS) and the Markets Committee (MC). Within these four committees there is continuous discussion and analysis of systemic risk, crisis management and development of regulation.

Another important forum is the International Monetary Fund, IMF, in which almost every country in the world is a member. The Riksbank participates here together with other central banks and finance ministries. Sweden cooperates with the Nordic and Baltic countries, which comprise a joint constituency in the IMF.

The central forum for economic issues at European level is the European Union, EU. The Riksbank is also a part of the European System of Central Banks, ESCB, and contributes to the preparations for the ECOFIN Council's

meetings through its participation in the Economic and Financial Committee (EFC). The Governor of the Riksbank also participates in the semi-annual informal ECOFIN meetings. Through its participation in these forums, the Riksbank takes part in the coordination of measures that can promote a balanced long-run development. Moreover, the Riksbank regularly expresses opinions on consultations regarding proposals for EU directives and other matters.

Following the international financial crisis, the cooperation on macroprudential policy has been formalised at European level through the establishment of the European Systemic Risk Board, ESRB.²¹ The Riksbank also cooperates with the Nordic and Baltic countries on matters concerning macroprudential policy, for instance in the Nordic Baltic Macroprudential Forum, NBMF.

Cooperation with other authorities at national level is also important in the preventive work. According to the Sveriges Riksbank Act, the Riksbank has the possibility of consulting with Finansinspektionen on important issues dealing with financial stability and Finansinspektionen's supervisory activities.²² Recently the cooperation between Finansinspektionen and the Riksbank regarding macroprudential policy has taken on a firmer structure since the two authorities initiated a Council for Cooperation on Macroprudential policy in January 2012.²³ The council meets at least twice a year to consult and exchange information on assessments of risks that could threaten the financial system as a whole, and to discuss appropriate preventive measures. The results of the discussions are communicated in joint minutes of the meeting published afterwards.²⁴ The agreement regarding the council will cease to apply if responsibility for macroprudential policy is regulated in law in a different way.²⁵

In addition, the Riksbank contributes to national and international standard-setting through analyses, speeches and other forms of communication.

21. Following the global financial crisis 2007-2009, the EU decided to reinforce monitoring and supervision within the union by establishing three authorities for microprudential supervision (the EBA, the EIOPA and the ESMA), and also the macroprudential policy body ESRB.

22. Chapter 4, Section 3 of the Sveriges Riksbank Act.

23. The forms for the council are set out in a *Memorandum of Understanding*, which can be found on the Riksbank's website, www.riksbank.se.

24. Minutes from the council for cooperation on macroprudential policy's meetings are published on the Riksbank's website, www.riksbank.se.

25. See Committee Directive 2011:6.

■ Financial crisis – preparedness and management

Any crisis in the financial system is serious and may lead to economic decline, bankruptcies and unemployment. Households and companies may be forced to see their assets, for example property or equity funds, fall dramatically in value or disappear altogether, while public finances may also deteriorate drastically. It often takes a long time for the economy to recover, and it is not certain that the losses can be entirely recouped.²⁶ It is therefore important to reduce these economic costs by exercising good crisis management.

Crisis preparedness

If the Riksbank is to be able to manage a crisis, it must be well prepared. Maintaining a good level of preparedness is an important part of the Riksbank's work on promoting financial stability under normal conditions. Crisis preparedness entails several components. One condition for the Riksbank to be able to manage a crisis is that there is a regular analysis of the stability of the financial system that is of a high quality and offers a good insight into the financial system (see the section on the assessment of financial stability). It is also necessary for the Riksbank to maintain an operational capacity to manage crises. This requires that the Riksbank has an efficient crisis organisation, with well-prepared routines for decision-making and various types of support measures.

As the Riksbank shares the responsibility for managing a financial crisis with the government, the Swedish National Debt Office and Finansinspektionen, this requires close cooperation between the authorities. The Riksbank is responsible for maintaining liquidity in the system. The Swedish Government and the Swedish National Debt Office, as a supporting authority under the Support to Credit Institutions Act²⁷, have a responsibility for more long-term forms of support. This may include, for example, guaranteeing the banks' long-term borrowing or injecting risk capital. Finansinspektionen is responsible for microprudential supervision of the financial companies as described earlier. Within the framework of the authorities' distribution of responsibility, they have built up forms for cooperation with regard to exchanging information and consulting one another. Swedish authorities

26. Read about this in more detail in, for instance, Haldane, A (2010): "The \$ 100 Billion dollar question", The Effect of Financial Crises on Potential Output: New Empirical Evidence From OECD Countries, OECD Economics Department Working Papers No. 699, 2009 and in the World Economic Outlook 2009, IMF, 2009.
27. 2008:814.

consult one another, for instance, when they assess whether any part of the financial system is systemically important, as support can only be given to the credit institutions that are assessed as systemically important. The cooperation between the authorities is defined, for instance, in a written agreement, a *Memorandum of Understanding*.²⁸ This four-party agreement stipulates which information the authorities should exchange and how information should be exchanged. Moreover, it stipulates how the authorities can establish a consultation group that works both to prevent crises and to manage crises.

As the major Swedish banks have extensive operations abroad, agreements and routines for cooperation with authorities in other countries are needed, too. The same applies to the financial infrastructure, where Swedish infrastructure systems are a part of a foreign group and/or handle other currencies, and when foreign systems act in Sweden and/or handle the Swedish currency. The extensive cross-border operations mean that the cooperation between Swedish and foreign authorities becomes important in crisis management. The forms for the authorities' cooperation are specified in Memorandums of Understanding.²⁹

Within the EU there is an overall agreement on cooperation on cross-border issues. Under the umbrella of this, the Ministries of Finance, central banks and financial supervisory authorities in the Nordic and Baltic countries have signed an agreement on more in-depth cooperation to manage issues relating to financial stability and crisis management in the region. Moreover, the Riksbank has separate agreements with the central banks in the Nordic and Baltic countries respectively regarding cooperation in the event of problems in a cross-border bank.

The Riksbank regularly conducts crisis exercises to maintain and further develop its own crisis organisation, staff competence and routines. Moreover, the Riksbank takes part in crisis exercises together with other Swedish and foreign authorities, as well as private agents.

Crisis management

Crisis management is a part of the Riksbank's task of promoting financial stability. It is therefore necessary to be well-prepared for a crisis. The Riksbank's crisis management can be divided into two main elements:

- supplying liquidity to the financial system,
- communicating the Riksbank's assessments, both openly and in contacts with market agents.

28. This agreement is published on the Riksbank's website (www.riksbank.se).

29. The international agreements the Riksbank has entered into are published on the Riksbank's website, www.riksbank.se.

Supplying liquidity

In a crisis, liquidity is often in short supply, as the financial markets that offer funding may not be functioning properly. At the same time, confidence between market participants declines and this uncertainty means that the liquidity still remaining in the financial system is not distributed in the same way as under normal conditions. In such a situation, the Riksbank has several ways of quickly adding liquidity to the system. This could entail liquidity assistance to individual institutions, or general measures to improve liquidity.

The Riksbank can provide liquidity assistance to individual institutions under special conditions.³⁰ The aim of such assistance is to prevent a situation in which a bank is forced to suspend payments and to prevent the effects of such an event from spreading throughout the system. The special conditions may, for example, entail the Riksbank accepting forms of collateral other than those normally accepted in the Riksbank's lending. Banking institutions and Swedish companies that fall under the supervision of Finansinspektionen may receive such assistance under exceptional circumstances. One such exceptional circumstance is if the Riksbank believes that the institution concerned is systemically important in the situation prevailing.³¹

General measures to improve liquidity aim to ease a situation where there is a shortage of liquidity. Such a situation affects interest rates and could mean that it becomes difficult for companies and households to borrow, which creates problems for both the stability of the financial system and monetary policy. General measures include various measures that make it easier for banks to borrow from the Riksbank.³² These measures may take several different forms. During the global financial crisis that began in the autumn of 2008, the Riksbank added liquidity to the system by:

- offering loans in Swedish kronor at longer maturities than normal,
- increasing access to credit, for example by accepting more types of collateral than previously and widening the circle of financial institutions permitted to borrow from the Riksbank,
- offering loans in other currencies than Swedish krona.

The need to offer loans in other currencies arises because the operations of the banks have become increasingly international, and their dependence on international securities markets has increased. This means that the Riksbank may need to supply liquidity in foreign currencies to safeguard the stability of the Swedish financial system. One example of this is the loans in US dollars that the Riksbank offered the Swedish banks in 2008 and

30. Chapter 6, Section 8 of the Sveriges Riksbank Act.

31. During autumn 2008, the Riksbank provided exceptional liquidity assistance to two financial institutions,

Kaupthing Bank AB and Carnegie Investment Bank AB.

32. Chapter 6, Section 5 of the Sveriges Riksbank Act.

2009.³³ Likewise, the Riksbank offered short-term funding through swap agreements to central banks in neighbouring countries to make it easier for them to take measures to stabilise their own financial systems.³⁴

The Riksbank's possibility to lend foreign currency is limited, however. In this context, the currency reserve managed by the Riksbank is an important means of being able to quickly supply liquidity in foreign currencies. Central banks can also help one another by lending currency to one another. By using these measures during crises, the Riksbank temporarily plays the role normally played by financial markets or other sources of funding and thus eases the funding situation for individual banks and for the economy as a whole. The knowledge that the Riksbank offers funding, or is prepared to offer funding, can in itself strengthen confidence in the financial system.

Communication and contacts with market agents

Communication and information are an important part of the Riksbank's crisis management. An open and clear communication regarding problems and measures can enable the Riksbank to help create confidence in the financial system in the event of a crisis.

At the same time, the deliberations regarding what should be communicated are particularly important in a crisis, as is the timing of the communication and the way it is done. When a measure or a risk is to be communicated, the Riksbank must, on the one hand, take into account that this message may itself increase unease in the financial system, which in turn may make a crisis worse. On the other hand, too little information and communication in a financial crisis can also increase uncertainty and unease. The Riksbank's overall assessments of financial stability need to be communicated much more quickly and much more often in a crisis, as the situation in the financial system can change drastically in a very short space of time. For the same reason, it is important that market participants keep the Riksbank continuously informed of their perception of the financial environment and, more specifically on the situation in the individual institution. The Sveriges Riksbank Act also gives the Riksbank far-reaching powers to require the information it considers necessary from companies that are subject to the supervision of Finansinspektionen.³⁵

In a crisis, there is also a need to coordinate information and communication to a greater extent than otherwise, to reduce the risk of unclear or conflicting messages. This applies both internally within the Riksbank and between the Riksbank and other authorities with responsibility for financial stability, as well as between the Riksbank and financial-market participants.

33. The Riksbank entered into swap agreements with the Federal Reserve and the ECB, which gave the Riksbank the possibility to borrow US dollars and euro to maintain the Riksbank's capacity to supply liquidity in foreign currencies.

34. During the most recent financial crisis the Riksbank signed swap agreements with Iceland's, Estonia's, and Latvia's central bank. A swap in this respect refers to an agreement between two parties to receive one currency in exchange for another.

35. Chapter 6, Section 9 of the Sveriges Riksbank Act.

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