



# Financial Infrastructure Report

2013



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## ■ Foreword

The financial infrastructure consists of systems through which payments are made and payments and transactions with financial instruments are handled. The infrastructure makes it possible for individual households, companies and authorities to make and receive payments in a safe and efficient manner. It also makes it possible to safely and efficiently pay for and deliver shares, debt securities and other financial instruments traded on the financial markets.

The financial infrastructure thereby plays a central role in the financial system and forms a precondition for the functioning of the system. This means that problems arising in the financial infrastructure can have serious and negative consequences for the functions of the financial system with potentially large costs for society. It is thus of great importance for the stability of the financial system that the financial infrastructure functions in a safe and efficient way.

The Riksbank oversees the financial infrastructure with the objective of identifying and analysing the sources of risks and efficiency losses and acts to reduce these in various ways. The starting point for this work is the Riksbank's responsibility for safeguarding financial stability. The Financial Infrastructure Report is intended to enable the Riksbank to present its assessment of the stability and efficiency of Sweden's financial infrastructure. The report also describes the starting points for the Riksbank's oversight work and how this is conducted in practice.

By publishing its views, the Riksbank wishes to encourage continual improvements to benefit the financial infrastructure and thus the financial stability of Sweden. The report is issued once per year and is available on the Riksbank's website, [www.riksbank.se](http://www.riksbank.se). The report takes into account data available as of 31 March 2013.

Stockholm, 31 March 2013

*Mattias Persson*  
Head of Department,  
Riksbank's Financial Stability Department



## ■ Summary

*The Riksbank's overall assessment is that the financial infrastructure in Sweden is functioning well. However, there is room for improvements, both in the individual systems and in Swedish legislation, that may further strengthen the financial infrastructure.*

### THE SYSTEMS MUST COMPLY WITH NEW STANDARDS

The Riksbank employs international standards in its oversight of the financial infrastructure, namely the "*Principles for financial market infrastructures*" issued 2012 by the Committee on Payment and Settlement Systems (CPSS) and the International Organization of Securities Commissions (IOSCO). These include a number of different requirements with which the systems must comply in order to be considered safe and efficient.

The Riksbank expects the systems to comply with these principles and work is currently underway in which the Swedish systems themselves assess how well they are doing this. In conjunction with this, the Riksbank, together with Finansinspektionen (the Swedish Financial Supervisory Authority), makes its own assessment based on the systems' self-assessments.

The Riksbank also applies the principles to itself. This is because there are requirements in the principles aimed at central banks and other authorities conducting oversight and supervision of the financial infrastructure.

### A FRAMEWORK FOR RECOVERY AND RESOLUTION STRENGTHENS THE FINANCIAL INFRASTRUCTURE

The Riksbank considers that it would strengthen the resilience of the infrastructure if a legal framework was prepared for the recovery and resolution of companies that own and manage systems in the financial infrastructure. At present, negotiations are underway within the EU on a directive for banks. The European Commission has also been working for some time on a proposed directive for non-banks, in which certain financial infrastructure companies are included. This work is aimed at getting systems to set up recovery plans so that they can obtain further capital and liquidity when necessary. It is also intended to lead to appropriate legislation so that infrastructure companies can be restructured in an economically efficient manner.

The Riksbank considers it important that the Swedish systems develop recovery plans right away. This is also in line with the requirements set by the international principles of the CPSS and IOSCO.

### UNCERTAINTY AROUND FINALITY NEEDS TO BE REMOVED

The Riksbank considers it to be of great importance that a transfer in a designated settlement system is permanent. In this context, this is known as finality, in accordance with the Settlement Finality Directive. However, this Directive has only been partly incorporated into Swedish law. There is consequently uncertainty concerning finality in Swedish legislation. The Riksbank considers that Swedish

legislation needs to be changed so that market agents and participants can trust that transfers in designated settlement systems will be final. It also is important that the rules applied to this are clear.

## RIX – THE PAYMENT SYSTEM FOR LARGE VALUE PAYMENTS

RIX is run by the Riksbank and is Sweden's payment system for large value payments. The banks' RIX accounts are used to settle direct payments between the banks as well as payment orders from bank customers.

The Riksbank<sup>1</sup> considers that RIX has worked well on the whole in 2012. The system had a high degree of availability and the survey conducted by the Riksbank in 2012 showed that the participants are generally very satisfied with RIX.

However, according to the Riksbank, there are a number of areas that need to be managed. Considering that RIX is the hub of the financial infrastructure, the stability of RIX is of the utmost importance to financial stability. Over the last year, two major incidents have taken place, including one that forced RIX and its participants to transfer to manual routines. The Riksbank considers that RIX needs to work to avoid similar disruptions in the future. The Riksbank also considers that RIX should conclude its analysis of whether a third operating site is necessary. Furthermore, the upcoming outsourcing of the technical operation of RIX is placing requirements on the system's operation, function and development, which must continue to function well after outsourcing. The Riksbank therefore considers it important that RIX forms an effective client organisation.

## BANKGIROT – CLEARING OF RETAIL PAYMENTS

Bankgirocentralen BGC AB (Bankgirot) is the central player for the clearing of retail payments in Sweden. Retail payments are mediated through Bankgirot's payment system, either through its own Bankgiro system or through payment products and payment systems with other owners.

The Riksbank considers that the Bankgirot's payment system has worked well on the whole in 2012. The system had a high degree of availability and the survey conducted by the Riksbank and Finansinspektionen in 2012 showed that the participants are generally satisfied with Bankgirot. In 2012, Bankgirot completed a new alternative operating site, which the Riksbank found positive.

However, there is room for further improvement, primarily in the work to reduce operational risks. The Riksbank sees that Bankgirot, together with the participants, should find alternative ways to manage payments based on Bankgiro numbers since the contingency routines are not sufficient. There is also a need for Bankgirot, together with the participants, to work to ensure that there are contingency routines for all payment products and that these contingency routines are tested continually.

In 2012, Bankgirot launched a new payment system known as Betalningar i Realtid (BiR) (Payments in Real Time), which provides settlement of payments around the clock, seven days a week. The first service to use BiR is the banks' joint

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<sup>1</sup> The Riksbank owns and runs RIX and is also a participant. However, that part of the Riksbank's operations is organisationally separate from the Riksbank's oversight of the financial infrastructure. This means that the Riksbank's Asset Management Department is responsible for the operational activities of RIX, while the Financial Stability Department is responsible for the oversight of RIX. References to the Riksbank in this report relate to the oversight function.



mobile payment service Swish. The Riksbank considers that BiR promotes the efficiency of the Swedish payment system and thereby is a positive development.

#### EUROCLEAR SWEDEN – SYSTEM FOR SECURITIES SETTLEMENT

Euroclear Sweden AB (Euroclear Sweden) is Sweden's central securities depository (CSD) and the domestic system for the settlement of securities. This means that Euroclear Sweden's activities include clearing and settling transactions in Swedish equities and fixed income securities.

The Riksbank considers that Euroclear Sweden has worked well on the whole in 2012. The system had a very high degree of availability and the survey conducted by the Riksbank and Finansinspektionen in 2012 showed that the participants are generally satisfied with Euroclear Sweden and that the dialogue with the participants has changed for the better.

However, the Riksbank notes that the Euroclear Sweden's system (VPC-systemet) is comparatively old, which means that it may be difficult to adjust to the requirements that the market may have in the future. The Riksbank therefore considers that there is a need both to analyse how long it will be possible to conduct and develop securities settlement with the current system and to work out a clear strategic plan for how a modern and flexible system can be developed. The Riksbank also considers that Euroclear Sweden should perform regular continuity exercises with all participants. In addition, the possibility of introducing an automatic function for securities lending should be examined together with participants on the Swedish securities market.

#### NASDAQ OMX CLEARING – THE CENTRAL COUNTERPARTY FOR DERIVATIVES

The central counterparty within NASDAQ OMX Stockholm AB, hereafter referred to as NASDAQ OMX Clearing, clears derivatives contracts with equities, interest rates, indices or commodities as underlying assets, as well as repos. As central counterparty, NASDAQ OMX Clearing enters as counterparty to both buyer and seller in various transactions and thereby assumes the counterparty credit risk until the moment of settlement.

The Riksbank considers that NASDAQ OMX Clearing has worked well on the whole in 2012 and welcomes the improvement work that is currently underway in several areas. This work is leading to improved risk management, among other areas for financial risks, which are of the utmost importance to a central counterparty.

One example of an area in which deficiencies exist and where improvement work is currently underway is the default fund, the financial buffer that exists to cover any losses that may arise if a participant should default. The Riksbank considers that all counterparties giving rise to exposure should contribute to the fund, regardless of the type of membership. At present, NASDAQ OMX Clearing contributes for certain counterparties, but a more even allocation of potential losses is now being attempted. Another example is the separation of clearing operations from stock exchange operations into a distinct legal entity, which is welcomed by the Riksbank. This will eliminate the risk of losses in stock exchange operations spilling over on clearing operations. A further example is that NASDAQ OMX Clearing in the future will manage posted collateral on their own, which the

Riksbank considers will bring about better conditions for solid risk management and improved efficiency.

## ■ The Riksbank's oversight work

The Riksbank's work on the oversight of the financial infrastructure has its starting point in the Sveriges Riksbank Act (1988:1385) and the responsibility held by the Riksbank to promote a safe and efficient payments system. Promoting a safe and efficient payments system has a broad meaning and is, in practice, a matter of taking responsibility for safeguarding the stability of the financial system.<sup>2</sup>

### WHAT IS THE FINANCIAL INFRASTRUCTURE?

Put simply, the financial infrastructure consists of systems through which payments are made and transactions with financial instruments are handled. More precisely, the Riksbank defines the financial infrastructure as the systems which handle financial positions and/or process financial flows between various participants, the systems' legal frameworks and procedures and the participants' use of these systems.

The financial infrastructure thereby plays a central role in the financial system and forms a precondition for the efficient functioning of the system. It also means that weaknesses in the infrastructure may result in disruptions affecting one participant or system spreading to other participants and systems. It can thereby affect the functioning of both the payment market and the financial markets - with large costs for society as a potential result. It is thus of great importance for the stability of the financial system that the financial infrastructure functions in a safe and efficient way.

### THE RIKSBANK'S OVERSIGHT OF THE FINANCIAL INFRASTRUCTURE

With the Riksbank's task of safeguarding financial stability as a starting point, the Riksbank oversees the financial infrastructure. The Riksbank's oversight is based on the requirements placed by international standards on infrastructure companies, and focuses on monitoring and analysing systems and ensuring their compliance with these requirements.<sup>3</sup> The Riksbank presently oversees the following Swedish and foreign systems in the financial infrastructure:

- the Riksbank's large value payment system for the transfer of funds in accounts (RIX)
- Euroclear Sweden AB's securities settlement system (the VPC system)
- NASDAQ OMX Stockholm AB's central counterparty for financial derivatives, commodity derivatives and repos (NASDAQ OMX Clearing)
- Bankgirocentralen BGC AB's system for clearing retail payments (clearing and settlement service)
- the foreign systems CLS<sup>4</sup>, SWIFT<sup>5</sup>, EMCF<sup>6</sup> and SwapClear<sup>7</sup>

<sup>2</sup> See Sveriges Riksbank (2013), "The Riksbank and financial stability 2013".

<sup>3</sup> See Sveriges Riksbank (2012), "The Riksbank's oversight of the financial infrastructure" and [www.riksbank.se](http://www.riksbank.se).

<sup>4</sup> CLS is a global system for the settlement of foreign exchange transactions.

<sup>5</sup> SWIFT is a global network for financial messages.

<sup>6</sup> EMCF is a central counterparty for equities.

<sup>7</sup> SwapClear is part of LCH.Clearnet Ltd and is a central counterparty for interest rate swaps.

The aim of this oversight is to identify and analyse sources of risks and efficiency losses in the financial infrastructure and to act to reduce these in various ways. However, it is important to point out that the Riksbank's oversight does not in any way take away the individual system's responsibility for its own risk management. The ultimate responsibility for the activities being secure and efficient always lies with the system itself.

#### THE RIKSBANK AND FINANSINSPEKTIONEN (THE SWEDISH FINANCIAL SUPERVISORY AUTHORITY) PLAY DIFFERENT ROLES IN THE WORK ON THE FINANCIAL INFRASTRUCTURE.

The Riksbank oversees the financial infrastructure with the aim of safeguarding the stability of the entire financial system. Finansinspektionen also takes responsibility for financial stability through its supervision of the individual companies in the financial infrastructure. Finansinspektionen also grants licenses to engage in such activities as clearing and settlement, as well as clearing services as a central counterparty. The areas of responsibility of the two authorities occasionally overlap. In these cases, they endeavour to develop an efficient form of contact and cooperation. Formalised cooperation exists between the two authorities aimed at achieving this.<sup>8</sup>

#### STARTING POINTS FOR THE RIKSBANK'S ASSESSMENT OF WHICH SWEDISH SYSTEMS SHOULD BE INCLUDED IN ITS OVERSIGHT

The Riksbank oversees the systems that are deemed to be important for the functioning of the Swedish financial system. To assess this, the Riksbank employs the following criteria:

- the number and value of the transactions handled by the system
- the size of the system's market share
- the markets on which the system is active
- the available alternatives that could be used at short notice
- how closely the system is interlinked with other systems and financial institutions
- the system's significance for the implementation of monetary policy

#### OVERSIGHT IS BASED ON INTERNATIONAL STANDARDS

The Riksbank's oversight of the financial infrastructure is based on the requirements for security and efficiency set in accordance with international standards. For infrastructure companies, there are standards issued by the Committee on Payment and Settlement Systems (CPSS)<sup>9</sup> and the International Organization of Securities Commissions (IOSCO)<sup>10</sup> - Principles for financial market infrastructures. These principles are aimed at strengthening the financial infrastructure. The principles are minimum requirements, and the specific characteristics of the Swedish market may

<sup>8</sup> In 2012, the Riksbank and Finansinspektionen have together reviewed and formalised this cooperation and informed the systems accordingly.

<sup>9</sup> The CPSS is a committee within the Bank for International Settlements (BIS).

<sup>10</sup> The IOSCO is a global cooperative of securities regulators.

mean that the Riksbank needs to place higher requirements than those provided for by the principles.

The principles also include requirements aimed at central banks and other authorities overseeing or supervising the financial infrastructure. The Riksbank therefore also applies the international principles to its own oversight work.

#### THE SYSTEMS ASSESS THEMSELVES

The Swedish systems themselves assess how well they comply with the requirements set by the principles. This takes place at least every third year, or more frequently if the Riksbank sees reason for this, for example if a system has undergone major changes. Using the systems' assessments as a starting point, the Riksbank makes its own assessment of how well the systems comply with the principles. For Bankgirot, Euroclear Sweden and NASDAQ OMX Clearing, these assessments are made in close cooperation with Finansinspektionen.

#### COMMUNICATION CONCERNING DEFICIENCIES IN THE SYSTEMS

The Riksbank has no binding tools to influence participants in the financial system. Instead, the Riksbank primarily exerts influence by communication. In cases where the Riksbank's analysis points to deficiencies in safety or efficiency, the Riksbank encourages the systems to remedy these. This takes place in the form of public statements, speeches and publications, as well as in dialogue and meetings with the systems ('moral suasion').

The Riksbank's assessments of the financial infrastructure are communicated via this report, the Financial Infrastructure Report. The Riksbank may also need to give clear suggestions for appropriate measures to counteract the risks, and may then publish recommendations to the systems and their participants in the Financial Stability Report. One further way of communicating a deficiency in a system is to discuss it in the council for cooperation on macroprudential policy established by Finansinspektionen and the Riksbank.

#### THE RIKSBANK'S OVERSIGHT AND OPERATION OF RIX ARE ORGANISATIONALLY SEPARATE

The Riksbank owns and runs RIX and is also a participant in the system. That part of the Riksbank's operations is organisationally separate from the Riksbank's oversight of the financial infrastructure. The Riksbank's Financial Stability Department is responsible for the oversight of RIX, whereas the Asset Management Department is responsible for the ownership and operation of RIX. RIX is treated and assessed on the same basis as other systems. However, one difference is that the Riksbank does not cooperate with Finansinspektionen as regards the oversight of RIX, as RIX does not fall under the supervision of Finansinspektionen.



## ■ 1. Current issues

*In this chapter, the Riksbank describes current issues that the Riksbank considers are important for the stability and efficiency of the financial infrastructure in Sweden. The chapter starts with a review of the new international standards drawn up for the financial infrastructure and how these are applied to oversight. This is followed by a discussion of the upcoming framework for recovery and resolution that is partly aimed at enabling infrastructure companies to extricate themselves from financial problems and partly at enabling authorities to manage bankruptcies of such companies in an economically efficient manner. The third and final current issue to be discussed is the finality directive that has not been fully incorporated into Swedish law.*

### New international standards are strengthening the financial infrastructure

In 2012, the CPSS and IOSCO published new international standards for the stability and efficiency of the financial market infrastructure in "*Principles for financial market infrastructures*". These principles replace previously issued recommendations and standards from the CPSS and IOSCO. The Riksbank welcomes these new principles, which are aimed at strengthening the financial infrastructure.

The principles specify the requirements that must be placed on a system in order for that system to be considered safe and efficient in its organisation and governance. These requirements concern the systems' general organisation, management of credit and liquidity risks, conditions for settlement, management of defaults, awareness of business risk, operational risk management procedures, conditions for fair access for users, efficiency and transparency.

The new principles place higher demands than previously and additionally cover more areas and types of system. They are applied to payment systems, central securities depositories, securities settlement systems, central counterparties and trade repositories.

The principles are listed as one of 14 important international standards for healthy financial systems.<sup>11</sup> The specific characteristics of the Swedish market mean that the Riksbank may need to set higher requirements than those specified by the principles.

The Swedish systems are expected to assess themselves when the Riksbank considers this to be necessary, but at least once every three years.<sup>12</sup> The Riksbank then uses the self-assessments as a starting point for its own assessment of the systems. At present, the systems are doing such self-assessments on the basis of the principles. In Sweden, the systems intend to publish these self-assessments on their

<sup>11</sup> See [www.financialstabilityboard.org/cos/key\\_standards.htm](http://www.financialstabilityboard.org/cos/key_standards.htm).

<sup>12</sup> The Riksbank and Finansinspektionen jointly review these self-assessments to control how well Bankgirot, Euroclear Sweden and NASDAQ OMX Clearing are complying with the principles. As regards RIX, the Riksbank reviews the self-assessment itself, as RIX does not fall under the supervision of Finansinspektionen. The Riksbank will return to the results of this review and any deviations from the principles in next year's report.

websites. In addition, according to the disclosure framework accompanying the principles, they are to continuously publish certain information on their operations.

The principles also place requirements on authorities. Central banks, supervisory authorities and other relevant authorities have a clearly defined responsibility towards the overseen systems. The Riksbank thus applies the international principles of the CPSS and IOSCO also to its own oversight work.

## Framework for recovery and resolution

During the financial crisis that broke out in 2008, it became apparent that certain financial participants have a socio-economically important function for the financial system and the real economy that means that the failure of one participant can have very serious consequences for the economy as a whole. This also applies to participants who carry risks that can spread through the financial system and thereby threaten socio-economically important functions.

One problem in this context is that the participants frequently have no clear plans for how to emerge from financial problems that may arise and that there is little incentive for the participants to draw up such plans.<sup>13</sup> Another problem is that the bankruptcy legislation currently existing is not intended to handle participants of this kind.

The Financial Stability Board (FSB) has therefore drawn up key attributes that form international standards for the effective resolution of financial institutions. And, within the EU, negotiations are underway over a directive for the banks' recovery and resolution.<sup>14</sup>

The European Commission has been working for some time on a corresponding proposed directive for non-banks, for example for companies owning and operating systems in the financial infrastructure. CPSS and IOSCO has also produced a consultation report for the financial infrastructure, including an analysis of how the FSB's recommendations could be used for the systems in the financial infrastructure.<sup>15</sup>

### BOTH THE FINANCIAL INFRASTRUCTURE AND AUTHORITIES ARE AFFECTED

The framework is aimed partly at more clearly requiring financial participants to be able to emerge from financial problems, and partly at ensuring that a situation in which a participant defaults can be managed by the authorities in a way that allows socio-economically important functions to be maintained. The systems in the financial infrastructure are responsible for preparing recovery plans, while the authorities are responsible for, among other things, preparing resolution plans.

The Riksbank is positive to the work in this area as the financial infrastructure plays a very important role for financial stability. The Riksbank considers that Swedish systems should develop recovery plans right away. This is also in line with the requirements set by the international principles of CPSS and IOSCO.

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<sup>13</sup> Small incentives may be due to 'moral hazard', which means that the participants expect to be rescued from the consequences of their risk-taking. This can lead to excessive risk-taking in the financial system.

<sup>14</sup> See FSB (2011), "Key Attributes of Effective Resolution Regimes for Financial Institutions".

<sup>15</sup> See BIS and IOSCO (2012), "Recovery and resolution of financial market infrastructures".



## THE SYSTEMS IN THE FINANCIAL INFRASTRUCTURE MUST HAVE RECOVERY PLANS

The overall purpose of a recovery plan is to ensure that the infrastructure company can undertake measures, for example obtaining further capital and liquidity, so that the system can survive also in a crisis situation. A recovery plan should provide the system with a number of different measures to choose from, depending on the situation. The measures listed should be seen as possible measures, not as something that the system commits itself to doing.

To determine which measures should be included in a recovery plan, a system in the financial infrastructure must identify scenarios in which such a plan may be needed. If such a scenario then arises in practice, it may still deviate considerably from the scenarios conceived in advance. This means that it may be necessary to employ one or more of the measures listed in the plan, but it may also mean that none of them is appropriate and that another, completely different measure is needed instead.

Below are some examples of measures that could be included in a recovery plan:

- selling or liquidating business operations or companies
- acquiring further capital that is not included in the business plan
- eliminating planned dividends and compensation or parts of them
- selling entire operations to a third party
- utilising liquidity buffers and any collateral or using existing credit lines

## APPROPRIATE LEGISLATION IS REQUIRED FOR RECOVERY AND RESOLUTION

If a system in the financial infrastructure encounters financial problems it must first use its recovery plan to address the problems. Should this prove insufficient, it is important that it is possible to efficiently resolve the system with as little effect on the market and financial stability as possible. This requires appropriate legislation. The legislation must specify the authority that is to take over the operations in the system and then resolve the system's operations with as little effect as possible on the financial market and other financial participants. It has not yet been decided which authority will be given this role for the financial infrastructure in Sweden.

## The Settlement Finality Directive has only partially been incorporated into Swedish law

It is important for the financial system's functioning and stability that transfers and the netting of payments in settlement systems are permanent and cannot be disregarded by receivers if a participant in such a system enter bankruptcy. At the EU level, agreement has therefore been reached on rules collected in the 'Settlement Finality Directive'<sup>16</sup> and aimed at preventing or minimising the risks associated with the insolvency of a participant in a designated settlement system<sup>17</sup>. According to the Settlement Finality Directive, transfer orders entered into such a system and executed on the same banking day are binding towards third parties

<sup>16</sup> Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on settlement finality in payment and securities settlement systems.

<sup>17</sup> A designated settlement system is a settlement system that a state within the EEA has notified with the European Securities and Markets Authority (ESMA). Such systems must comply with certain criteria and are considered to be particularly worth protecting.

(such as receivers), even if insolvency proceedings are initiated against a participant *before* the transfer order has been entered into the system. This is on the condition that the operator of the settlement system was not aware that insolvency proceedings had been initiated.

The Settlement Finality Directive has partially been incorporated into Swedish law, through the Settlement Act<sup>18</sup> among other means, but no explicit rule corresponding to that mentioned above exists in Swedish law. In addition, the Bankruptcy Act includes a provision that could be used to overrule any such rule, even if one had existed in explicit form. According to the Bankruptcy Act, a receiver has the right, in certain circumstances, to demand that an act, such as a payment, be cancelled if the insolvent estate reimburses the counterparty with whatever has previously been supplied. However, for payments via settlement systems, there are seldom any considerations that can be returned, making the refund one-sided for the party that received the payment. This cancellation rule is problematic as it disregards the purpose of the Settlement Finality Directive, that transfers in designated settlement systems shall be permanent.<sup>19</sup> This problem has been noted by the Riksbank<sup>20</sup> and the International Monetary Fund (IMF)<sup>21</sup>. The Ministry of Finance has initiated an inquiry to ascertain how this problem could be addressed, but has not, as yet, produced any proposal for a legal amendment.

The Riksbank sees it as highly important that the legal uncertainty described here be cleared up as soon as possible. It is important for the functioning and stability of the financial system that systems in the financial infrastructure, market agents and participants can be certain that transfers in designated settlement systems will really be permanent and that the rules covering this are clear.

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<sup>18</sup> The Swedish Act on Systems for the Settlement of Obligations on the Financial Market (SFS 1999:1309)

<sup>19</sup> Similar problems exist regarding the introduction into Swedish law of the 'collateral directive', which regulates the pledging of collateral. See Directive 2002/47/EC of the European Parliament and of the Council of 6 June 2002 on financial collateral arrangements.

<sup>20</sup> See Sveriges Riksbank (2010), "Consultation response on Modernised regulations for settlement systems and financial collateral".

<sup>21</sup> See IMF (2011), "IMF Country Report No. 11/172".

## ■ 2. The Swedish systems

*In this Chapter the Riksbank presents its views on the stability and efficiency of the Swedish systems RIX, Bankgirot, Euroclear Sweden and NASDAQ OMX Clearing. The requirements set out in the CPSS and IOSCO principles form the starting point for these views.*

*During the summer of 2012, the Riksbank and Finansinspektionen conducted surveys to establish what the participants in the Swedish systems Euroclear Sweden, Bankgirot and NASDAQ OMX Clearing think about the systems. A corresponding survey was conducted for RIX, but only the Riksbank was involved in this as RIX is not subject to supervision by Finansinspektionen. In this Chapter, the Riksbank also highlights the results of these surveys, which have been presented to the systems in more detail.*

### RIX – a payment system for large-value payments

*The Riksbank<sup>22</sup> considers that RIX has worked well on the whole in 2012. The system had a high degree of availability and the survey conducted by the Riksbank in 2012 showed that the participants are generally very satisfied with RIX.*

*However, according to the Riksbank, there are a number of areas that need to be managed. Considering that RIX is the hub of the financial infrastructure, the stability of RIX is of the utmost importance to financial stability. Over the last year, two major incidents have taken place, including one that forced RIX and its participants to transfer to manual routines. The Riksbank considers that RIX needs to work to avoid similar disruptions in the future. The Riksbank also considers that RIX should conclude its analysis of whether a third operating site is necessary. Furthermore, the upcoming outsourcing of the technical operation of RIX is placing requirements on the system's operation, function and development, which must continue to function well after outsourcing. The Riksbank therefore considers it important that RIX forms an effective client organisation.*

RIX is Sweden's payment system for large-value payments and an important hub in the financial infrastructure. Banks, the Swedish National Debt Office, clearing organisations and the Riksbank itself are participants in the system. The banks' RIX accounts are used to settle direct payments between the banks as well as payment orders from bank customers. This means that most of the payments involving a transfer from an account in one bank to an account in another bank are settled through the banks' accounts in RIX. In 2012, an average of approximately 14,500 payments per bank day were settled in RIX and the average turnover was approximately SEK 500 billion per bank day, which was an increase compared with the previous year. This means that a value corresponding to Sweden's GDP<sup>23</sup> passes through RIX in the course of roughly seven bank days.

<sup>22</sup> In the case of RIX the Riksbank has two different roles: it is both the operator and the supervisor of the system. However, these roles are organisationally separated from each other. RIX is dealt with and assessed on the same basis as other systems. References to the Riksbank in this report relate to the Riksbank's oversight function.

<sup>23</sup> In 2012, Sweden's GDP amounted to approximately SEK 3,555 billion.

## PARTICIPANTS SATISFIED AND AVAILABILITY TARGET ACHIEVED

In the survey conducted by the Riksbank<sup>24</sup> in 2012, RIX was awarded generally very high marks by the participants. The only area for which the result was not above an average of 4 (on a scale of 1 to 5) was pricing, in that participation in the RIX system was perceived as expensive. RIX applies full cost coverage, which means that the participants' fees should cover all of the Riksbank's costs for running the system.

As RIX is an important hub in the Swedish financial infrastructure it is vital to financial stability that the system works. It is therefore of the utmost importance that RIX is safe and has a high degree of availability. In 2012, technical availability for the payment flow in RIX was 99.87 per cent.<sup>25</sup> This means that RIX achieved the availability target, which is 99.85 per cent on an annual basis. However, there have been a number of serious disruptions over the last 12 months.

In 2012, there were three different types of incidents that caused stops in the flow of payments. The longest of these incidents occurred on 27 August and lasted for 130 minutes. It was caused by a fault in the communication with the SWIFT network. This fault has been corrected by updating the system, and the risk of this type of fault occurring again has been eliminated.

On 11 March 2013, a software fault caused a stop in the payment flow in RIX. The fault occurred at 11.00 am and an attempt to restart the system failed. During the afternoon, it was therefore decided to switch to manual contingency routines to settle the day's remaining payments. In order to settle all the payments manually it was necessary to extend the opening hours for RIX. The system finally closed at 9.30 pm when all the payments had been made. The fact that the fault occurred at 11.00 am after the peak period,<sup>26</sup> when approximately 60 per cent of the total payments during a day are made, facilitated the manual operation of the system as the volume of payments was much lower than it would have been if the incident had occurred before the peak period.

Together with the system supplier, RIX identified the fault during the day and was able to correct it. The system was therefore able to open as usual on the following day, 12 March. The Riksbank considers that the fault was dealt with effectively.

Given the central importance of RIX to financial stability, the Riksbank believes that it is of the utmost importance that RIX is stable and available and that the system continues its work to prevent that similar disruptions occur again.

## RIX HAS MADE IMPROVEMENTS TO REDUCE THE RISKS

In 2012, RIX acted to reduce the queues that arose in the flow of payments at different times during the settlement day. During the course of its ongoing oversight work, the Riksbank has discussed the queue problems with RIX and considers that it is positive that improvements have been made. This above all entails improved efficiency, but also a reduction of the risks that these queues give rise to.

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<sup>24</sup> In the case of RIX the Riksbank has two different roles: it is both the operator and the supervisor of the system. However, these roles are organisationally separated from each other. RIX is dealt with and assessed on the same basis as other systems. References to the Riksbank in this report relate to the Riksbank's oversight function.

<sup>25</sup> In 2011, availability was 100 per cent.

<sup>26</sup> The peak period starts at 09.30.

The queues have arisen both when the system has opened – when several payments need to be made at the same time, and during the peak period. When the system opens, several banks have already entered a large number of payment transactions and the system's previous method for managing these payments led to a shortage of liquidity when all of the payments had to be settled at the same time. A system upgrade was carried out in early 2012 and this improved the management of these payments and solved the problem of queues forming when the system opens. The system for SWIFT communication was also upgraded during the first half of 2012. This upgrade improved the processing of payment notifications, which also alleviated the problem of queued payments during the peak period.

A further improvement made by RIX during 2012 is that the internal requirement regarding recovery time in the event of a disruption has been changed from three hours to two hours. This new recovery-time requirement is also in line with the new CPSS-IOSCO principles.

In 2011, the IMF pointed out that RIX should consider having a third operating site for continuity reasons, which is also in line with the new principles.<sup>27</sup> RIX has therefore begun analysing whether a third operating site is necessary. The Riksbank considers that it is very important that this analysis will be completed.

## OUTSOURCING OF IT-OPERATIONS AND NEW SECURITY MANAGEMENT SYSTEM

The Riksbank has outsourced some parts of its IT-operations to an external supplier, which means that the operation and support of some IT-systems will be transferred to this supplier during 2013. This also covers the technical operation of RIX including the collateral management. However, the operation, function and development of the system must continue to work well after it is outsourced and the Riksbank considers it important that for RIX, an effective client organisation is developed.

## Bankgirot – clearing of retail payments

*The Riksbank considers that the Bankgirot's payment system has worked well on the whole in 2012. The system had a high degree of availability and the survey conducted by the Riksbank and Finansinspektionen in 2012 showed that the participants are generally satisfied with Bankgirot. In 2012, Bankgirot completed a new alternative operating site, which the Riksbank found positive.*

*However, there is room for further improvement, primarily in the work to reduce operational risks. The Riksbank sees that Bankgirot, together with the participants, should find alternative ways to manage payments based on Bankgiro numbers since the contingency routines are not sufficient. There is also a need for Bankgirot, together with the participants, to work to ensure that there are contingency routines for all payment products and that these contingency routines are tested continually.*

Bankgirocentralen BGC AB (Bankgirot) is the central player for the clearing<sup>28</sup> of retail payments in Sweden. Retail payments consisting of Bankgirot's own payment

<sup>27</sup> See IMF (2011), "IMF Country Report No. 11/172".

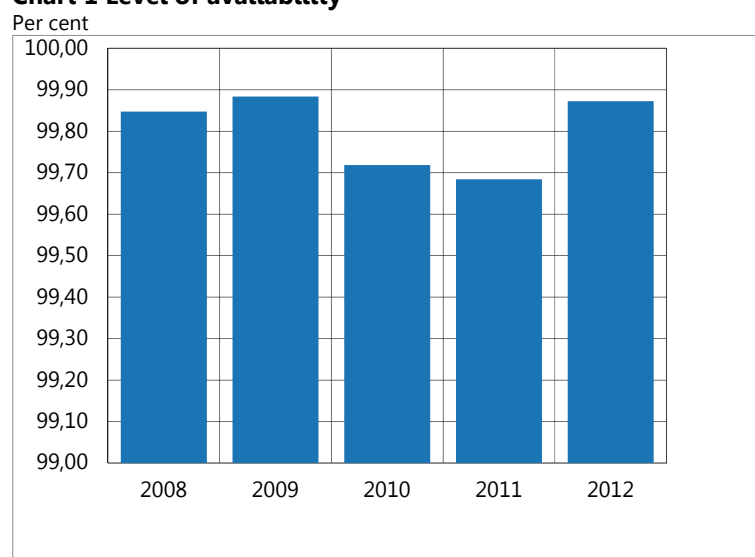
<sup>28</sup> Bankgirot clears credit transfers and account transfers.

products as well as payment products and payment systems with other owners are mediated through Bankgirot's payment system.<sup>29</sup> Bankgirot's payment system consists of a technical system platform on which the Bankgirot system and the Clearing and Settlement service are run. Bankgirot also provides other services, for example electronic identification and electronic invoicing. In 2012, the average number of cleared payments was 3.7 million per bank day, and the value of these payments was SEK 45.3 billion per bank day, which is a slight increase compared with the previous year.

#### IMPROVED AVAILABILITY IN 2012

The Riksbank takes a positive view of the improvement in the availability of Bankgirot's payment system in 2012, when availability reached 99.87 per cent. Following an analysis of Bankgirot's operational risks, the Riksbank and Finansinspektionen pointed out in 2012 that they were concerned that availability had declined in 2010 and 2011 (see Chart 1). This short-term downward trend was thus halted in 2012 with a level of availability in line with the levels in 2008 and 2009.

**Chart 1 Level of availability**



Note: In Bankgirot's availability level it is measured that clearing and settlement are made on time, that payments are made to the correct account via debit and credit files and payments are made on time as agreed with the respective bank.

Source: Bankgirot

Bankgirot suffered two major incidents in 2012, both of which were due to software errors. These were dealt with temporarily to ensure that processing could continue on the day concerned. Long-term solutions were implemented at a later date. The Riksbank considers that these incidents were handled correctly.

In both cases the incidents delayed files with information for the banks on which customer accounts should be credited and meant that the payments reached the banks' account holders after a certain delay later during the day.

<sup>29</sup> An example of a payment system with another owner is Dataclearing, which is owned by the Swedish Bankers' Association.

## OUTSOURCING TO VOCALINK COMPLETED

The Riksbank welcomes the fact that Bankgirot completed the planned outsourcing of parts of IT operations to VocaLink during the year. This outsourcing process began in 2008 and was originally intended to cover all the Bankgirot system's products and the Dataclearing, but was changed after delays to ultimately cover only two products.<sup>30</sup> The completion of the outsourcing process means that Bankgirot has been able to move on and phase out an older system platform.

## BANKGIROT'S PARTICIPANTS ARE SATISFIED

The Riksbank is satisfied that the participant survey carried out during the summer of 2012 together with Finansinspektionen generally resulted in high marks from Bankgirot's participants. However, there were indications in a few areas that small participants feel they are treated less well than large participants. Examples of such areas were the model for pricing and possibilities to influence and the Riksbank considers Bankgirot should take this into account in its ongoing work.

## BANKGIROT SHOULD ENSURE THAT CONTINGENCY ROUTINES ARE IN PLACE AND PRACTICE THEM TOGETHER WITH THE PARTICIPANTS

Following a number of disruptions in the autumn of 2011, the Riksbank decided, together with Finansinspektionen, to analyse Bankgirot's operational risks. This analysis showed that it was important for Bankgirot to complete its work on the new alternative operating site. The Riksbank takes a very positive view of the fact that this work was completed in late 2012. The analysis also showed that it is desirable to practice the contingency routines regularly together with all of Bankgirot's participants.

The Riksbank has also analysed what the consequences for the financial system would be if Bankgirot were to be unavailable and not able to handle any payments for a period of three weeks. This analysis showed that the situation would become serious if a disruption lasted so long, as there are no obvious alternative payment routines for many payment flows in the short term. This is most clearly the case for payments based on Bankgirot numbers. However, the consequences are dependent on several factors, such as the effectiveness of crisis management, at what point in the month the incident occurs, how the media handle the situation and the capacity of the large non-financial companies<sup>31</sup>, that are customers of Bankgirot, handle such a situation.

In view of the analysis the Riksbank sees, among other things, that there is a reason for Bankgirot, together with the participants, to review possible solutions for handling the payments for which there are no alternative payment routines today, particularly payments based on Bankgirot numbers. From the analysis, the Riksbank also sees the need for Bankgirot, together with the participants, to ensure that contingency routines for all of the payment products in the Clearing and Settlement service work well in such a situation and, as in the analysis of Bankgirot's operational risks, practice these routines regularly.

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<sup>30</sup> The issuer payments product was migrated in 2010 and direct debit payments were migrated in 2012.

<sup>31</sup> For example electricity and telephone companies.

## BANKGIROT HAS DEVELOPED A NEW PAYMENT SYSTEM - BIR

Bankgirot launched a new payment system in 2012 called "Betalingar i realtid" (BiR) (Payments in Real Time). As an integrated component of BiR, Bankgirot has developed a settlement system<sup>32</sup> that has been approved by Finansinspektionen following consultation with the Riksbank. BiR provides the settlement of payments in real time 24 hours a day, 7 days a week (see the box "Payments in real time make it possible to use the mobile payment service Swish").

The Riksbank wishes to promote the efficiency of the Swedish payment system and considers that BiR is a positive development on the retail payments' market in this respect. The Riksbank's view is that this improvement in efficiency has not taken place at the expense of the safety of the financial infrastructure.

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<sup>32</sup> The settlement system is called BiR Avvecklingsstjänst and has been approved in accordance with Section 3 of the Act (1999:1309) on systems for settlement of obligations on the financial market.



## Payments in real time make it possible to use the mobile payment service Swish

Bankgirot has developed *Betalningar i realtid* (BiR) (Payments in Real Time), a payment system that enables settlement 24 hours a day, 7 days a week between the system participants. Settlement is carried out using accounts administered by Bankgirot where the balance in these accounts is guaranteed by the corresponding sum in RIX. Transfers in BiR are executed immediately, even if the payer and the payee have accounts in different banks. As BiR is open around the clock on every day of the week, it enables settlement even when RIX is closed.

There are similar systems abroad in which the customers get immediate access to the money in their accounts. What distinguishes BiR from many other systems is that settlement also takes place in real time, which removes the counterparty credit risk.

The first service to use BiR is the mobile payment service Swish, which is owned by six Swedish banks.<sup>33</sup> This system enables bank customers to use mobile phones to make payments to other users in real time 24 hours a day, 7 days a week.

Swish is an innovation that can help to reduce the use of cash in the economy as a whole. The Riksbank takes a positive view of Swish as it provides a safe and efficient alternative to using cash.<sup>34</sup>

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<sup>33</sup> The banks are Danske Bank, Handelsbanken, Länsförsäkringar Bank, Nordea, SEB and Swedbank.

<sup>34</sup> Research conducted by the Riksbank shows that the use of cash entails high costs to society. See Jansson T. and Segendorf B., (2012), "Cards or cash. How should we pay?".

## Euroclear Sweden – a central securities depository and a securities settlement system

*The Riksbank considers that Euroclear Sweden has worked well on the whole in 2012. The system had a very high degree of availability and the survey conducted by the Riksbank and Finansinspektionen in 2012 showed that the participants are generally satisfied with Euroclear Sweden and that the dialogue with the participants has changed for the better.*

*However, the Riksbank notes that the Euroclear Sweden's system (VPC-systemet) is comparatively old, which means that it may be difficult to adjust to the requirements that the market may have in the future. The Riksbank therefore considers that there is a need both to analyse how long it will be possible to conduct and develop securities settlement with the current system and to work out a clear strategic plan for how a modern and flexible system can be developed. The Riksbank also considers that Euroclear Sweden should perform regular continuity exercises with all participants. In addition, the possibility of introducing an automatic function for securities lending should be examined together with participants on the Swedish securities market.*

Euroclear Sweden AB (Euroclear Sweden)<sup>35</sup> is Sweden's central securities depository (CSD) and the country's only domestic securities settlement system. This means that Euroclear Sweden clears and settles transactions in Swedish equities and fixed income securities. In its role as a CSD, Euroclear Sweden keeps a register of securities and their owners, provides securities accounts and administers corporate actions. In 2012, an average of approximately 42,000 transactions valuing approximately SEK 32 billion were settled per bank day on the equity market, and approximately 1,400 transactions valuing approximately SEK 370 billion on the fixed income market.

### EUROCLEAR SWEDEN'S SYSTEM (THE VPC-SYSTEM) NEEDS TO BE REVISED

Euroclear Sweden's system (the VPC-system) is old and it may be difficult to develop and adapt it to future market demands. The Riksbank therefore thinks that Euroclear Sweden needs to analyse how long it will be possible to run and develop securities settlement in the present system. The Riksbank also considers that Euroclear Sweden needs to draw up a clear strategic plan for how to provide a modern and flexible settlement system and to analyse what services should be offered to the Swedish securities market. This work should be carried out in consultation with the system's participants.

Euroclear Sweden also needs to take into account the changes that are taking place internationally in the course of this work. It is important that cross-border transactions work simply and smoothly, that the Swedish market is easily accessible to foreign investors and that a potential future connection to the Eurosystem's system for securities settlement, Target\_2\_Securities (T2S), is facilitated.

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<sup>35</sup> Euroclear Sweden is owned by the Belgian group Euroclear SA. As Euroclear Sweden is part of a Belgian group, some of the Riksbank's oversight of the system takes place in the form of international oversight work that is led by the Belgian central bank.

## THE OUTSOURCING OF IT-DEVELOPMENT AND OPERATIONS PLACES HIGH DEMANDS ON EUROCLEAR SWEDEN'S CLIENT ORGANISATION

Euroclear Sweden's IT-development has been outsourced to an external service partner. Euroclear Sweden is still responsible for the operation of the system, but the work is carried out by staff from the same external service partner. The ongoing efficient operation, function and development of the system should be ensured. The Riksbank believes that, all in all, this requires that there is a client organisation that stipulates requirements and monitors compliance with the agreements entered into.

Finansinspektionen and the Riksbank have carried out a joint IT-audit focusing on the company's management of IT-operations and IT-development. The purpose of this IT-audit, which was conducted in the fourth quarter of 2012, was to investigate whether the management of these functions complied with the requirements set out in valid legislation, regulations and international standards. The results of the audit were generally positive. The Riksbank and Finansinspektionen were able to note that Euroclear Sweden's processes and procedures and the documentation of these functions complied with the requirements set to a high degree. In connection with the audit it became clear that Euroclear Sweden does not have an updated strategy for IT-development or IT-outsourcing. The authorities will therefore follow up on Euroclear Sweden's work in these areas. Finansinspektionen and the Riksbank intend to conduct a further IT-audit in the year ahead in order to assess Euroclear Sweden's IT-platform.

## EUROCLEAR SWEDEN HAS IMPROVED THE DIALOGUE WITH ITS PARTICIPANTS

In 2010, the Riksbank and Finansinspektionen carried out an assessment of Euroclear Sweden in its role as the operator of the Swedish securities settlement system.<sup>36</sup> Among other things, the assessment revealed shortcomings in Euroclear Sweden's communication with the participants. Since then, Euroclear Sweden has made a number of improvements to address these shortcomings. One example is improvements in the Market Advisory Committee<sup>37</sup> with regard to its function, the issues it discusses and the composition of its members. This has yielded positive results and in the participant survey conducted in the summer of 2012, Euroclear Sweden received high marks for its provision of information, its receptiveness to the views of the participants and its communication with them.

## EUROCLEAR SWEDEN SHOULD PERFORM REGULAR CONTINUITY EXERCISES WITH ALL PARTICIPANTS

Euroclear Sweden's system for securities settlement had a level of availability of 100 per cent in 2012, which is higher than the stipulated availability target of 99.9 per cent.<sup>38</sup> However, in the participant survey conducted by the Riksbank and Finansinspektionen, 62 per cent of the respondents said that they are not involved in the continuity exercises that are carried out.

The Riksbank takes a very positive view of the high level of availability in the system but also considers it important that Euroclear Sweden regularly carries out continuity exercises with all of the system's participants. An important aim of this is

<sup>36</sup> See Sveriges Riksbank (2011), "Assessment of securities settlement in Sweden 2010".

<sup>37</sup> An advisory committee intended to act as the primary body for consultation between Euroclear Sweden and its users on important issues on the Swedish securities market.

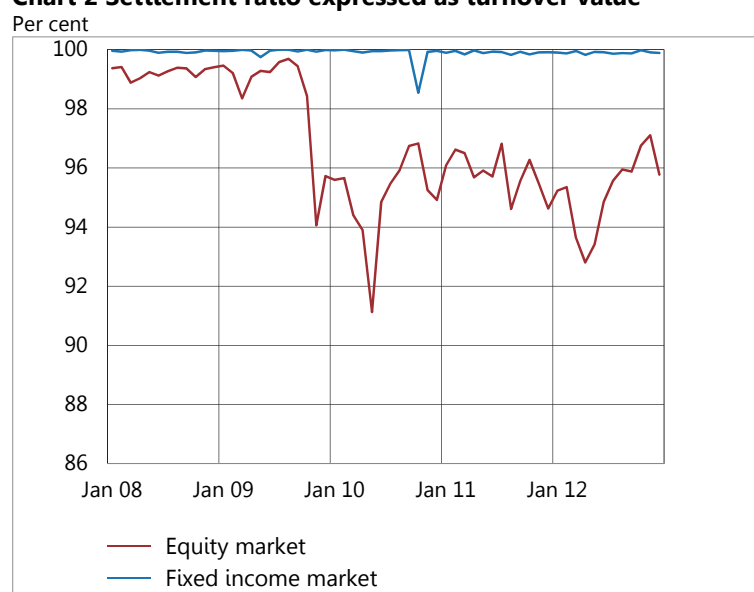
<sup>38</sup> Availability was 100 per cent in 2011.

to increase their knowledge of the contingency routines that are in place in case the system fails to function normally.

#### AN AUTOMATED SYSTEM FOR SECURITIES LENDING WOULD IMPROVE THE SETTLEMENT RATIO ON THE STOCK MARKET

The participant survey conducted by the Riksbank and Finansinspektionen also showed that as many as 87 per cent of the respondents believed that an automated function for securities lending would increase the settlement ratio on the stock market. A fall in the settlement ratio was noted in the autumn of 2011 and the first half of 2012, from approximately 96 per cent in October 2011 to approximately 93 per cent in May 2012, measured in terms of turnover value (See Chart 2).<sup>39</sup> The settlement ratio subsequently returned to approximately 96 per cent during the autumn of 2012, and the average for the year was approximately 95 per cent. Despite the recovery, this indicates that the efficiency of equity settlement needs to be improved. The Riksbank therefore considers that Euroclear Sweden should examine the possibility of introducing an automated function for securities lending together with the participants on the Swedish securities market. This is also in line with the CPSS and IOSCO principles.

**Chart 2 Settlement ratio expressed as turnover value**



Source: Euroclear Sweden

#### NASDAQ OMX Clearing – a central counterparty for derivatives

*The Riksbank considers that NASDAQ OMX Clearing has worked well on the whole in 2012 and welcomes the improvement work that is currently underway in several areas. This work is leading to improved risk management, among other areas for financial risks, which are of the utmost importance to a central counterparty.*

<sup>39</sup> The substantial fall in the settlement ratio at the end of 2009 occurred following the introduction of a central counterparty for equity transactions (EMCF). A central counterparty nets transactions, which means that in total there will be fewer transactions to settle and that each central counterparty transaction will generally have a very high value. This also means that any delay in the delivery of a security (or of liquidity) will delay the entire netted position, which will have a significant negative impact on the settlement ratio expressed as turnover value.

*One example of an area in which deficiencies exist and where improvement work is currently underway is the default fund, the financial buffer that exists to cover any losses that may arise if a participant should default. The Riksbank considers that all counterparties giving rise to exposure should contribute to the fund, regardless of the type of membership. At present, NASDAQ OMX Clearing contributes for certain counterparties, but a more even allocation of potential losses is now being attempted. Another example is the separation of clearing operations from stock exchange operations into a distinct legal entity, which is welcomed by the Riksbank. This will eliminate the risk of losses in stock exchange operations spilling over on clearing operations. A further example is that NASDAQ OMX Clearing in the future will manage posted collateral on their own, which the Riksbank considers will bring about better conditions for solid risk management and improved efficiency.*

NASDAQ OMX Stockholm AB comprises both a market place for exchange trading in equities and a central counterparty (CCP). The central counterparty within NASDAQ OMX Stockholm AB, hereafter referred to as NASDAQ OMX Clearing, clears derivatives contracts with equities, interest rates, indices or commodities as underlying assets, as well as repos.<sup>40</sup> In 2012, NASDAQ OMX Clearing cleared an average of 453,672 derivatives and repos per bank day<sup>41</sup>, which is a somewhat lower figure than in 2011.

NASDAQ OMX Clearing's system availability decreased marginally in 2012 compared to the level in 2011, which according to NASDAQ OMX Clearing was due to several system developments taking place during the year, which increased the complexity.<sup>42</sup> NASDAQ OMX Clearing is working to reduce the number of incidents and has set up a working group for this purpose.

NASDAQ OMX Clearing faces several challenges in the period ahead as a result of the new European Market Infrastructure Regulation (EMIR)<sup>43</sup>. It must comply with the new requirements itself in its role as a central counterparty, and also adapt to the changes on the derivatives market that these new requirements will give rise to.

In recent years, the Riksbank has commented on several areas, in particular the funding of the part of the financial buffer referred to as the default fund and the handling of collateral where NASDAQ OMX Clearing has not had full insight into the composition of the collateral stock. Other areas in which NASDAQ OMX has begun implementing changes are the introduction of CCP clearing for interest-rate swaps, the increased diversification of credit lines, a review of the governance of the company, and the transfer of NASDAQ OMX Stockholm AB's clearing operations to a separate legal entity. Generally, the Riksbank considers that NASDAQ OMX's changes in these areas will lead to improved risk management, for example with regard to liquidity and credit risks, which is of vital importance to a central counterparty. The changes are also in line with the EMIR requirements and the new principles from CPSS and IOSCO.

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<sup>40</sup> NASDAQ OMX Clearing also offers the clearing of emission rights, but the volumes concerned are very small compared with those of other products.

<sup>41</sup> 202 of these were emission rights, 3,318 were electricity derivatives, 303,238 were equity derivatives, 132,506 were interest-rate derivatives and 14,408 were repos.

<sup>42</sup> NASDAQ OMX Clearing has an availability target of 99.9% which is measured per month. The availability target was not met in October and November 2012 when availability was 99.3% and 98.8% respectively. Availability was 100% during the other months of 2011 and 2012.

<sup>43</sup> The European Market Infrastructure Regulation is an EU regulation that regulates the OTC derivatives market, central counterparties and transaction registers.

## THE DEFAULT FUND SHOULD BE FUNDED BY THE COUNTERPARTIES IN THE DERIVATIVES CLEARING

A central counterparty should have a financial buffer to protect itself against losses. EMIR stipulates that part of this buffer should consist of a default fund that is funded by the central counterparty's participants in relation to the exposure they give rise to for the central counterparty. The Riksbank considers that all of the counterparties in the derivatives clearing that directly give rise to exposures, and thereby risks, for NASDAQ OMX Clearing should contribute to the default fund. The purpose of the default fund is to provide an incentive for improved risk management among all of the counterparties and to achieve a more even loss distribution. When NASDAQ OMX Clearing introduced its default fund in January 2012, a certain type of counterparty<sup>44</sup> was exempted from the requirement to contribute to the fund.<sup>45</sup> Instead of these counterparties contributing to the fund, NASDAQ OMX Clearing funds their contributions. NASDAQ OMX Clearing plans to abolish this exemption in 2013, which the Riksbank welcomes.

## NEW COLLATERAL MANAGEMENT REDUCES RISKS AND IMPROVES EFFICIENCY

In recent years, the Riksbank has commented on NASDAQ OMX Clearing's collateral management as the company has used custodian banks to manage the collateral pledged by the participants.<sup>46</sup> This has meant that NASDAQ OMX Clearing has not had sufficient insight into the composition of the collateral stock and has thus not been able to analyse concentration risks<sup>47</sup>, for example. This in turn has resulted in NASDAQ OMX Clearing being forced to use relatively conservative haircuts to balance the uncertainty that the lack of insight and analysis has entailed.

A new system for collateral management that will enable NASDAQ OMX Clearing to manage the collateral itself will be phased in during 2013. The new system will provide improved risk management, reduce dependence on custodian banks and improve efficiency. The Riksbank therefore welcomes this development and intends to monitor the implementation of the new system.

## SWAP CLEARING REQUIRES ROBUST RISK MANAGEMENT

In 2012, NASDAQ OMX Clearing introduced a service for the clearing of interest-rate swaps, swap clearing. There is new regulations that require financial institution that enter into OTC derivative contracts to clear these contracts through a central counterparty, and interest-rate swaps make up a large part of these contracts.

OTC derivatives, such as interest-rate swaps, often have long maturities and large nominal amounts, which means that the value in absolute terms can change substantially even when market movements are small. Swap clearing is a relatively small service at present, but it may entail large volumes in the future, as well as significant risks that must be managed.

Risk management and the process and regulatory framework for default management are highly important components of swap clearing, which the

<sup>44</sup> Counterparties in end-customer clearing were exempted.

<sup>45</sup> NASDAQ OMX Clearing's default fund is divided into two parts, one for commodity derivatives and for share and interest-rate derivatives.

<sup>46</sup> See Sveriges Riksbank (2011), "Assessment of NASDAQ OMX Derivatives Markets as a central counterparty 2010".

<sup>47</sup> The risk that a large part of the collateral is concentrated to certain assets and is thus sensitive to movements in the prices of these assets.

Riksbank considers NASDAQ OMX Clearing has taken into account in the development of the service.

#### NASDAQ OMX AS A CENTRAL COUNTERPARTY WILL BE SEPARATED FROM THE STOCK EXCHANGE

As a result of new regulations, NASDAQ OMX Stockholm AB will separate all other operations from clearing operations during the course of 2013. This means that the stock exchange operations thereafter will be run under a separate legal entity. This will eliminate the risk of losses in stock exchange operations having an economic effect on clearing operations. It will also make it easier for the authorities in the event of NASDAQ OMX Clearing experiencing such serious financial problems that the new international framework for recovery and resolution would need to be used.<sup>48</sup> It is expected that the separation process will be completed during the autumn of 2013, and the Riksbank welcomes this process.

#### INCREASED DIVERSIFICATION OF CREDIT LINES AND A REVIEW OF CORPORATE GOVERNANCE

It is important that NASDAQ OMX Clearing has good access to liquidity so that it can avoid being hit by liquidity shortages. The number of credit lines increased from two to three in 2012, and further diversification is to be expected. This development is mainly being driven by the EMIR requirements, but is also in line with the IMF's recommendation.<sup>49</sup> The Riksbank supports the recommendation and takes a positive view of this development.

NASDAQ OMX Clearing is also currently reviewing the governance of the company. This entails, among other things, that there will be independent members not only on the board of the parent company but on the board of NASDAQ OMX Clearing itself. Independent board members and clearing members will also be represented on an advisory risk committee, which should ultimately lead to natural influence and greater commitment on the part of the members with regard to the central counterparty's risk management.

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<sup>48</sup> See the section "Recovery and resolution" in Chapter 1.

<sup>49</sup> See IMF (2011), "IMF Country Report No 11/172".





## ■ 3. The foreign systems

*There are international systems that are central to financial stability in Sweden. CLS, which is a settlement system for foreign exchange transactions, and SWIFT, which is a network for financial messages, both have considerable significance for the global financial system. In addition, there is EMCF, which is a central counterparty for equity transactions, and SwapClear, which is a central counterparty for interest rate swaps. They both play a central role in the clearing of financial instruments.*

*The Riksbank takes part in the cooperation on oversight of these foreign systems, as they are of central importance to the Swedish financial system and thereby to financial stability in Sweden. It is the international foreign systems' home authorities that are ultimately responsible for their oversight and supervision and that lead the oversight cooperation. The Riksbank does not make any own assessments of these systems.*

### CLS – a settlement system for foreign exchange transactions

CLS<sup>50</sup> was launched in 2002 to reduce the settlement risk for foreign exchange transactions. Settlement risk is minimised by CLS by ensuring that both currencies in a foreign exchange transaction change owners simultaneously, regardless of time zones. This is called payment versus payment, "PvP". CLS is based in New York, which means that the Federal Reserve oversees and supervises it. There is also an international cooperative oversight arrangement, in which the central banks responsible for all 17 currencies<sup>51</sup> settled in CLS participate.

During 2012 CLS settled foreign exchange transactions equal to an average of SEK 32 trillion a bank day.<sup>52</sup> The corresponding figure for transactions settled in Swedish krona was SEK 452 billion, which means that Swedish krona account for 1.4 per cent of the total turnover in CLS. CLS also improves the settlement efficiency of foreign exchange transactions by netting the funding obligation, which meant that the final actual payments in Swedish krona were on average SEK 9.6 billion a bank day during 2012.

The most recent self-assessment was published by CLS in 2011, and showed some improvement opportunities in its governance. Since then CLS has carried out extensive work on remedying the problems.

CLS constantly develops its technical systems. In 2013 there are plans to launch a same-day settlement session. This will enable a participant to enter into a foreign exchange transaction and settle it through CLS on the same day.<sup>53</sup> These transactions are currently settled outside of CLS, which entails increased risk for the counterparties. The first currency pair for which same-day-settlement will be introduced is USD/CAD. In addition, CLS is considering expanding same day

<sup>50</sup> CLS is an abbreviation of Continuous Linked Settlement.

<sup>51</sup> USD, AUD, GBP, DKK, EUR, HKD, ILS, JPY, CAD, KRW, MXN, NOK, NZD, CHF, SGD, SEK and ZAR.

<sup>52</sup> When translated into Swedish krona.

<sup>53</sup> Today settlement via CLS is usually t+2, which means that a transaction is settled two banking days after the order is sent to CLS.

settlement to other currencies, and CLS continues to work on including more currencies in its ordinary settlement service.

As of the end of 2012, all of the four major Swedish banks are direct participants in CLS, and 91 per cent of the major Swedish banks' volumes of foreign exchange transactions are settled directly via CLS. The Riksbank wants CLS to be used as much as possible, as this means that the largest risk linked to foreign exchange transactions is eliminated and the payment flows become more efficient.

## SWIFT – a global network for financial messages

SWIFT's<sup>54</sup> services are used in more than 200 countries and their users sent around 4.5 billion financial messages in 2012. Around 122 million of these messages were sent and received by Swedish users.<sup>55</sup> It is very important to the global financial system that SWIFT can maintain its operations.

SWIFT is a member-owned company with its registered office in Belgium and the Riksbank participates in the joint oversight headed by the National Bank of Belgium.<sup>56</sup> As SWIFT's global significance is increasing, a new forum for oversight was established in 2012. It consists of an extended group of selected central banks, who will be able to exchange information and discuss the oversight of SWIFT. The oversight is based on the framework "High Level Expectations for the oversight of SWIFT".<sup>57</sup>

Over the past year, the oversight work has largely been aimed at two major projects. One of them is the construction of a new operational computer centre of its own to replace the current leased computer center within the "Distributed Architecture" project. The construction work was completed at the end of 2012 and the plan is for the transfer of operations to be complete in spring 2014. The second project is "FIN renewal", which entails a changeover to a new technical platform and reprogramming all software in the FIN message service. This is to reduce operational costs and future risks of using an older platform solution. The project will not affect users of the FIN service, but the oversight group has expressed to SWIFT that it is important that the users are involved and ensure that the functioning of their own systems remains unaffected.

## EMCF – a central counterparty for equities

The European Multilateral Clearing Facility N.V. (EMCF) is currently the central counterparty that clears the majority of the Swedish equities cleared by a central counterparty. EMCF cleared Swedish equities to a total value of more than SEK 29 billion a bank day on average in 2012.<sup>58</sup> As EMCF makes clearing and settlement more efficient by netting transactions, the value settled was only around SEK 9 billion.

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<sup>54</sup> SWIFT is an abbreviation for the Society for Worldwide Interbank Financial Telecommunication. The Riksbank is both an owner of SWIFT and user of its services. The Riksbank's oversight of SWIFT is separated in organisational terms from its ownership and use of SWIFT.

<sup>55</sup> The figure refers to FIN messages and consist mainly of payment and securities messages. Source: SWIFT.

<sup>56</sup> The oversight is conducted through the SWIFT Co-operative Oversight Group (SWIFT OG), which consists of the central banks in the G10.

<sup>57</sup> See the National Bank of Belgium (2007), "Financial Stability Review 2007".

<sup>58</sup> The value presented here should not be confused with the value of total Swedish equities traded in 2012. This is because central counterparty clearing gives rise to more transactions in that the central counterparty novates all transactions and thus one transaction always becomes two transactions.

EMCF is a Dutch company and the Riksbank takes part in the oversight cooperation, which is led up by the Dutch authorities.

During 2012 EMCF has reduced its dependence on the ABN AMRO Clearing Bank, which is the majority owner and to which EMCF has been strongly tied. EMCF now has access to intraday credit in the Dutch central bank. EMCF does not fully observe the international standards by which central counterparties are assessed, which is partly due to its dependence on the ABN AMRO Clearing Bank.<sup>59</sup> EMCF therefore needs to further reduce its dependence on both ABN AMRO Clearing Bank and other commercial banks.

Interoperability, that is to say that more than one central counterparty can clear equities on the same marketplace, is one area that EMCF has focused on over the past year. It enables increased competition at the same time as it means greater risks for the individual central counterparties. These risks must therefore be managed so that problems in one central counterparty do not spread to other central counterparties. At the beginning of 2012, the domestic supervisory authorities of four central counterparties - British EuroCCP and LCH.Clearnet Ltd., Swiss SIX x-clear and EMCF - approved interoperability between them. Since then there has been a possibility to choose central counterparty on several marketplaces where Swedish equities are traded (but not on NASDAQ OMX Stockholm).

In mid-March 2013, EMCF and the British EuroCCP announced that they are planning a merger. According to the plans, the new central counterparty will be called EuroCCP and will have its head office in Amsterdam. The Dutch and British authorities have not yet approved the merger, which is a necessary condition for its implementation. The timetable for the merger has not yet been decided.

## SwapClear – a central counterparty for interest rate swaps

SwapClear is the part of the British central counterparty LCH.Clearnet Ltd that clears interest rate swaps in several different currencies, for instance in the Swedish krona. As SwapClear is part of a British company, the British authorities have the primary responsibility for its oversight and supervision.

The Riksbank is interested in following SwapClear because several Swedish banks use it and the Swedish krona is one of the eight largest currencies in its clearing. The Riksbank is therefore taking part in an international cooperation on the oversight and supervision of SwapClear, which began in 2012.

SwapClear clears large volumes of interest rate swaps and in recent years the volumes have steadily increased.<sup>60</sup> The reason for the increase in volumes is that financial agents have become more interested in managing counterparty risk through central counterparty clearing. During 2012 the volumes have continued to increase. Banks and other agents dealing in interest rate swaps and other standardised OTC derivative contracts must thus join central counterparties to meet the requirements of the new regulations<sup>61</sup> for central counterparty clearing. At present, it is only the central counterparties SwapClear and NASDAQ OMX Clearing that offer clearing of Swedish interest rate swaps. Nordea is the only Swedish bank

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<sup>59</sup> See the Dutch Central Bank (2013), "Oversight of payment and settlement systems 2012".

<sup>60</sup> The total number of outstanding contracts in SwapClear amounted to almost 2.5 million in February 2013.

<sup>61</sup> New regulations, such as EMIR in Europe, require central counterparty clearing of standardised OTC derivative contracts. Interest rate swaps are a standardised OTC derivative contract.

that is currently a member of SwapClear. Other Swedish banks also clear contracts via SwapClear, but through an agent.

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Sveriges riksbank  
103 37 Stockholm

Tel 08-787 00 00  
Fax 08-21 05 31  
[registratorn@riksbank.se](mailto:registratorn@riksbank.se)  
[www.riksbank.se](http://www.riksbank.se)

