



The Swedish Financial Market

2012

Errata 2 September 2012 to Tables X, Y and Z in Appendix 1

The historic data on the use of different payment instruments (Table X), card transactions in POS terminals and ATM withdrawals (Table Y), and average value of a card payment (Table Z) have been revised since last year, but were not included in this year's printed version of "The Swedish Financial market".

Updated tables are presented below.

Table X. Use of different payment instruments

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Number of transactions, millions										
Cards	621	759	845	970	1 114	1 293	1 527	1 653	1 800	1 956
Debit cards	541	670	674	777	873	1 017	1 226	1 337	1 448	1 606
Credit cards	80	89	172	193	240	276	301	316	352	350
Credit transfers	436	418	453	517	575	651	699	726	768	831
Electronic	304	335	365	430	484	555	605	638	686	756
Forms	132	83	88	87	91	96	94	88	82	75
Direct debit	119	130	143	160	197	208	229	241	272	289
Cheques, including money orders	2	1	1	1	1	1	1	1	0	0
Total	1 178	1 308	1 442	1 648	1 886	2 153	2 455	2 621	2 840	3 076
Transaction value, SEK billion										
Cards	365	408	479	537	562	634	719	732	758	779
Debit cards	297	331	369	413	432	477	538	550	563	575
Credit cards	68	77	110	124	130	157	181	182	195	204
Credit transfers	6 202	6 355	7 204	8 090	8 666	10 020	10 806	10 615	11 528	12 604
Electronic	5 348	5 803	6 732	7 635	8 269	9 674	10 499	10 358	11 315	12 430
Forms	854	552	472	456	397	346	307	257	213	174
Direct debit	250	268	302	344	384	424	452	469	507	543
Cheques, including money orders	21	46	59	55	54	60	69	42	27	30
Total	6 838	7 077	8 044	9 027	9 666	11 138	12 045	11 858	12 820	13 956

Source: The Riksbank

Table Y. Card transactions in POS-terminals and ATM withdrawals
Number of transactions (millions) and SEK billion

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
ATMs										
No. of ATMs	2 669	2 699	2 716	2 814	2 816	3 085	3 236	3 319	3 351	3 566
No. of transactions	341	328	324	321	313	320	295	267	243	226
Transaction value	284	276	293	289	270	240	239	229	220	206
Payment terminals										
No. of POS-terminals	142 021	153 055	161 098	176 637	184 590	187 330	194 776	217 760	203 117	209 631
No. of transactions	454	542	652	801	1 000	1 188	1 398	1 531	1 663	1 780
Transaction value	211	241	270	312	384	436	477	501	565	590

Source: The Riksbank

Table Z. Average value of a card payment
SEK

2002	587
2003	537
2004	567
2005	554
2006	505
2007	491
2008	471
2009	443
2010	421
2011	398

Source: The Riksbank



The Swedish Financial Market

2012

FOR INFORMATION about this publication, please contact
Jenny Mannent, phone +46 8 787 06 89 or
e-mail: jenny.mannent@riksbank.se

TO ORDER the publication, please contact
Sveriges Riksbank, Kontorsservicecenter@riksbank.se
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■ Foreword

The Swedish Financial Market is a description of the Swedish financial sector's functions and participants. The description is divided into three chapters: financial markets, financial intermediaries and the financial infrastructure. The publication is published once a year and the description is largely based on annual statistics.

In publishing *The Swedish Financial Market*, the Riksbank is endeavouring to contribute to increased knowledge of the financial system and its functions. The publication is designed both as a "reference book" for those needing statistical information and as a simple "textbook" for those who wish to learn more about Sweden's financial system. This means that the publication is directed at a broad readership, ranging from professionals to students and members of the general public with an interest in the subject.

The description of the financial markets, which is the first chapter of the publication, is divided into sections on the fixed-income market, the foreign exchange market and the stock market. This provides an account of how trading takes place. In addition, there is a presentation of various marketplaces and the different types of securities traded in these marketplaces, for example shares and bonds. The second chapter is devoted to important financial intermediaries. These include banks, insurance companies, fund management companies, securities companies and private equity and venture capital companies. The final chapter describes the financial infrastructure used for payments and securities transactions in Sweden.

As the title indicates, the descriptions are confined to the Swedish financial sector. This distinction is, at times, difficult to make, as the activities of the financial companies are largely international. However, the report is based on national statistics compiled annually for Swedish financial legal entities. This provides a natural set of Swedish parameters for the publication.

Stockholm, August 2012

Jenny Mannent
Editor

■ Introduction – The roles of the financial system

The financial system has three main roles: to convert savings into funding, to manage risks and to make it possible for payments to be made efficiently.

CONVERTING SAVINGS INTO FUNDING

Both private individuals and companies need to borrow money. For example, young people may need to borrow money for investments in housing and education. Companies may need to borrow to fund a project or to realise an invention. At the same time, there are people who want to save for pensions or consumption. There are also companies that want to save for investments.

It would be inefficient if every saver had to seek out and analyse suitable business projects to invest in. It would be equally inefficient if every single entrepreneur had to seek out a large number of potential investors for his or her projects. The financial sector thus plays a key role in this context by helping to channel savings into investments as efficiently as possible.

The capital market is the supply channel that makes it possible for companies, households, organisations and governments to access capital for investments and operations. Put another way, this market helps investors to find interesting investment opportunities. The capital market consists of the stock market and the credit market. Governments primarily fund their activities on the credit market, for example by issuing bonds, while companies can also find capital by turning to the stock market. In terms of value, the significance of the stock market in Sweden and many other countries is relatively limited in comparison to that of the credit market. The most usual way for companies and households to gain access to the capital market is to turn directly to a financial intermediary.

A financial intermediary is a specialised middleman, from which all parties can benefit. The clearest example of such a financial intermediary is a bank. Savers who, for example, want to smooth their consumption evenly over their lifetime can deposit money in a bank account and withdraw it (plus interest) at a later date. They can also invest their money in shares or debt securities, or in funds on both

Swedish and foreign markets. This in turn means that the banks must to a greater extent turn to the global interbank and securities markets to fund their operations. The money that comes into the banks in the form of deposits and other funding is mediated to companies and private individuals that need to borrow. Banks are specialists at valuing, monitoring and managing credit risks for the private individuals and companies to which they lend. In addition, banks can make use of *economies of scale* while, at the same time, solving the saver's problem of *asymmetrical information*¹, which means that the saver (the lender) and the borrower do not have the same access to information. With a bank as an intermediary, the borrower does not have to convince the lender of their own or their project's creditworthiness – it is sufficient to convince the bank alone. Similarly, the saver does not need to determine the creditworthiness of every borrower; it is enough to be convinced that the bank can meet its obligations. The financial sector – in this simplified case represented by a bank – thus contributes to a more efficient allocation of capital in the economy. Other examples of financial intermediaries are mortgage institutions and finance companies.

However, it is not always the financial intermediaries that are the most efficient means of distributing funding. Companies can also turn directly to the capital market. By issuing bonds and other money market instruments, companies can borrow money on the fixed-income market. For example, financing can be provided even more efficiently through these standardised financial contracts – securities – that can easily be bought and sold in a market.² Organised trading, with clearly defined rules and a high degree of standardisation contributes to an efficient market and effective pricing. When many participants monitor, analyse and trade in the instruments existing in the market, the overall level of information and transaction costs can be reduced. This in turn makes it easier to assess the value of a financial service, such as a loan, and thus set a price for it. At the same time, the risk borne by investors decreases because day-to-day trading makes it easier to sell securities.

Some common examples of standardised securities are shares, bonds and money market instruments. In simple terms, the *issuers* of bonds and other debt instruments correspond to the banks' borrowers.

1 For example, asymmetrical information arises when a lender does not have sufficient information to make a rationally-based decision on lending money to a borrower. The borrower knows more about his or her repayment prospects than the lender does.

2 Securities is an overall term for shares, bonds and other financial instruments that represent an economic value and that can be traded.

By issuing various securities they can obtain cheaper funding for their projects than would have been available by borrowing from a bank.

Unlike bonds and other fixed-income instruments, shares do not generate interest. Instead, they represent shares in a company and the return is determined by the future profits of the company. Given that these profits may vary considerably over time, those who invest in shares normally accept a higher risk than investors in, for example, government bonds. At the same time, the return can be substantially higher. Thus, unlike the fixed-income market, the stock market is therefore usually regarded as a market for venture capital. However, this relationship between risk and yield has changed slightly due to the sovereign debt crisis in certain euro area countries. An investment in government bonds in the most indebted countries is no longer considered to be linked with low risk and yields have thus been adjusted upwards considerably in these countries.

MANAGING RISKS

Financial intermediaries perform an important function in an economy's capital supply system, partly in their role as credit institutions and partly as investors where to a great extent they manage money on behalf of others. Unlike companies and households, credit institutions, such as banks, are specialists at assessing credit risks.

Both companies and private individuals need to protect themselves against different kinds of risk. Individuals, for example, may need to insure themselves against fire or theft. They can do this by using the products offered by property and liability insurance companies. They may also need to secure their livelihood after retirement or provide for their survivors in the event of premature death. They can do this by taking out life assurance and pension insurance policies with life assurance companies. Insurance companies are financial intermediaries specialising in the assessment and management of insurance risks.

Companies may also need to protect themselves against different types of financial risk. These may relate, for example, to undesirable changes in commodity prices or in exchange rates. Financial companies that fund their operations on global securities markets need to protect themselves against interest-rate or exchange-rate risks. On the financial markets it is therefore possible to trade in contracts that are specially designed to manage risks of this kind, so-called derivatives. These derivatives include options, forwards, and swaps.

A fund management company is an example of an intermediary that helps households to manage their savings efficiently. By capitalising

on economies of scale, fund management companies can construct portfolios of securities (mutual funds) where the risks of each individual security can be spread (diversified). The financial sector does not thus simply play a role in the mediation of capital, but also contributes to more effective risk management.

EFFICIENT AND SAFE PAYMENTS

In addition to mediating capital flows and managing risks, the financial companies create the conditions for the more efficient processing of payments in the economy. By using the existing financial infrastructure, the banks can support private individuals and businesses with different types of payment service. Such services include accounts and different routines for making payments between different financial institutions. Charge cards, credit cards and transfers between accounts are now common, enabling goods and services to be exchanged smoothly and economically. The smooth performance of financial transactions is important if the economy as a whole is to function efficiently.

THE INTERACTION OF INTERMEDIARIES, MARKETS AND AUTHORITIES

It is in the interest of society that the financial markets as a whole function safely and efficiently for private individuals, companies and other market participants. The interaction between intermediaries and markets is fundamental for this. The commercial banks, in their role as intermediaries, are central to the financial system. As banks in Sweden normally obtain funding on the securities market at shorter maturities than they lend, liquidity risks arise as a natural part of their operations. This means that their liabilities fall due more frequently, and must therefore be rolled over more frequently, than their assets. This makes the banks dependent on ongoing access to funding. As a large part of the funding is secured via the financial markets, the banks are also dependent on liquid markets.

Liquidity shortages arise on the securities market when the assets become illiquid, that is when the value of the assets traded on the market has become so uncertain that the market participants hesitate to quote prices, and in some cases refrain from doing so. In other words, it becomes problematic to convert securities into liquid funds. This in turn may lead to funding problems for companies and banks that are dependent on obtaining market funding. Market participants may have problems adjusting their financial positions and valuing their

holdings, which complicates their portfolio and risk management.

Banks also fund their operations by borrowing from each other. This means that problems at one bank can easily spread to other banks. Uncertainty about the creditworthiness of a bank's loan portfolio may therefore make it difficult for the bank to get funding. A bank can reduce its credit risk, and as far as possible ensure that it will get its money back, by choosing its borrowers carefully. However, the liquidity risk is more difficult to manage as it is dependent on the market at large and on the depositors' confidence in the bank. The banks' increased dependence on markets for their risk management and funding means that they are also more sensitive to liquidity problems in these markets.

Liquidity shortages have arisen on a number of occasions. This happened, for example, during the stock exchange crash of 1987, when the hedge fund LTCM failed in September 1998, and in conjunction with the terrorist attack on the World Trade Center on 11 September 2001. Liquidity shortages arose on several occasions in connection with the latest financial crisis, when trading on a number of markets temporarily ceased.

The stability of the financial system is based on the confidence of both companies and private individuals. Decreasing confidence can make it difficult for the banks to undertake their operations, in which case the system will be in danger. The basic requirements for confidence are sound institutions and efficient markets.

A serious crisis in the financial system is liable to entail extensive economic and social costs. The authorities have an important role to play in the financial system in avoiding or, when necessary, managing such situations. One of the primary functions of the Riksbank is to "promote a safe and efficient payment system". The Riksbank therefore continually analyses risks and threats to the stability of the financial system, both as a preventive measure and in crisis situations. The interaction between various authorities is critical both in this preventive work and in crisis management. The Riksbank therefore cooperates closely with Finansinspektionen (the Swedish Financial Supervisory Authority) the Ministry of Finance and the Swedish National Debt Office (see the box "Supervision and regulation of the financial sector in Sweden"). The same applies to international cooperation as financial companies increasingly operate across national borders.

Supervision and regulation of the financial sector in Sweden

Companies in the financial sector provide services that are important to the functioning and growth of the economy and thereby support the financial system's basic functions. If the financial companies encounter problems, such as during a financial crisis, this can impact the entire economy. For example, it can become more difficult to get credit, which can impact companies' propensity to invest and lead to increased unemployment. The stability of a country's financial system is thus important, which justifies the special regulation of the financial system. To prevent financial crises, special regulations have therefore been introduced for companies that conduct financial operations or provide financial infrastructure. The aim of these regulations is to ensure that the financial companies have sufficient resilience to avoid bankruptcy and that they can manage the risks that arise in their operations. Another justification for regulating financial companies is to protect the assets and interests of the consumers in relation to the financial companies.

In Sweden, it is the Riksdag (the parliament) and the government that decide on these regulations, laws and statutes and that thus have ultimate responsibility for the financial system. However, responsibility for promoting financial stability and maintaining an effective financial system has been shared out between three authorities: the Riksbank, the Swedish National Debt Office and Finansinspektionen (the Financial Supervisory Authority). The allocation of responsibility means that the Riksbank is responsible for providing liquidity in the system. Finansinspektionen is responsible for the supervision of the financial companies, while the Swedish National Debt Office, together with the Government Offices, bears responsibility for more long-term forms of support (read more about the Government Support to Credit Institutions Act in the box "Central regulations in the finance sector").

Even if the authorities have been allocated different areas of responsibility, they must cooperate with each other to be able to efficiently promote financial stability. Since 2012, the Riksbank

and Finansinspektionen have formalised this cooperation into a council for cooperation on macroprudential policy. At the council, authorities will continually consult and exchange information on the assessment of risks to the financial system as a whole, and will discuss appropriate measures for the prevention of risks.³

The Riksbank and Finansinspektionen, together with the Government Offices (mainly the Ministry of Finance) and the Swedish National Debt Office, also play an important role in managing financial crises. There is an agreement between these authorities governing their cooperation on stability and crisis-management issues and an arrangement for consultation in a so-called stability council. The cooperation between authorities in Sweden is described by a written agreement known as a Memorandum of Understanding.⁴

The increasing globalisation of the financial markets and of the players on these markets also creates the need for strong coordination with authorities in other countries with regard to

the oversight and supervision of financial operations. Among other organisations, Swedish authorities participate in the European Systemic Risk Board (ESRB) and the European Banking Authority (EBA). The ESRB's task is to identify risks to the stability of the EU's financial system and to issue warnings and/or recommendations on serious risks. Its General Board consists, among others, of the central bank governors and the heads of the supervisory authorities in the EU.⁵ At the EBA, representatives of the bank supervisory authorities and central banks of the EU countries meet 5–6 times per year. The Authority's task is to promote a uniform application of the regulations in the member states and coordination of the national financial supervisory authorities.⁶

The Riksbank

The Riksdag has delegated the responsibility for monetary policy to the Riksbank and stipulated in legislation that the objective of the Riksbank's activities is to maintain price stability. According to the Sveriges Riksbank Act,

³ More information on the work of the council can be found at www.riksbank.se.

⁴ This agreement is published on www.riksbank.se.

⁵ More information on the ESRB can be found at www.riksbank.se and www.esrb.europa.eu.

⁶ More information on the EBA can be found at www.eba.europa.eu.

the Riksbank shall also promote a safe and efficient payment system. The Sveriges Riksbank Act does not describe in detail what is meant by this. However, it is clear that the Riksbank has a responsibility for the supply of cash and for providing a central payment system.

Making the payment system safe and efficient requires the financial system to be stable so that payments and the supply of capital can work well. The Riksbank, like other central banks, must therefore be able to manage financial crises and other serious disruptions to the financial system so that the payment system can continue to function, even in such situations.⁷ In this respect, the Riksbank plays a special role as Sweden's central bank, because it can rapidly supply money to the financial system if the need arises.⁸

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 on 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 payment system” thus has a fairly broad meaning. In practice, it entails a responsibility to promote stability in the financial system. In addition to issuing banknotes and coins and providing a central payment system, the Riksbank supports the financial system in several other ways. Under normal conditions, the Riksbank works on the general prevention of financial crises. For example, the Riksbank draws the attention of banks and other participants on the financial markets to risks that the Riksbank has identified. However, in this work, the Riksbank has no binding tools to influence participants in the financial system. The Riksbank instead acts to exert influence by engaging in a public dialogue, for example by publishing its Financial Stability Report twice a year, in which the Riksbank recommends measures to the participants in the financial system. The

⁷ The Riksbank's role and tasks in the work of promoting financial stability are described in the document “The Riksbank and financial stability”, at www.riksbank.se.

⁸ This is what is meant by the term lender of last resort.

Riksbank also presents its views on proposed legislation and regulations from the EU, the Swedish Government and Finansinspektionen.

Finansinspektionen

Finansinspektionen is an authority that supervises financial companies and marketplaces. The overall tasks and objectives of Finansinspektionen are to promote stability and efficiency in the financial system and consumer protection in the financial area. Among other means, it does this by issuing licences or permits, conducting supervision and issuing regulations.

Finansinspektionen is responsible for issuing *licenses* to companies wishing to offer financial services to the public, but it also intervenes in mismanaged companies, ultimately by withdrawing their licenses.

Supervision means that Finansinspektionen exercises supervision to ensure that the companies that conduct financial operations or provide elements of the financial infrastructure comply with the special regulations that they are subject to. This task includes, for example, revealing any shortcomings in internal

governance or control. In the event of problems in a financial company, Finansinspektionen assesses the causes of the problems and can take measures against the company concerned.

In order to enable Finansinspektionen to achieve its overriding objectives, it has the authority to decide on new statutes and general guidelines, that is to *issue regulations*. The aim of the regulations encompassing financial companies is to ensure that they have sufficient resilience to financial risks. Finansinspektionen thus requires them to have sufficient capital, as well as the capacity to manage the risks in their own operations.

Finansinspektionen, like the Riksbank, also has the task of regularly monitoring and analysing developments in the financial sector in order to be able to identify risks at an early stage. Finansinspektionen's supervision provides the authority with information on the development of individual companies and thus on the financial sector as a whole.

The Ministry of Finance

The *Ministry of Finance* is responsible for legislation in the

financial sector. Its objectives are stability, efficiency and a high level of consumer protection. The Ministry of Finance monitors the development of the financial system at an overall level. In the event of a crisis, the Ministry of Finance can initiate measures if it turns out that the tools available to FI and the Riksbank are inadequate. However, some of the measures that the Ministry of Finance may need to implement require a decision by the Riksdag. In accordance with the Support to Credit Institutions Act, the government also makes decisions on support in certain cases.

*The Swedish National
Debt Office*

The Swedish National Debt Office is responsible for the government's payments and manages Sweden's national debt. The authority does this, for example, by issuing and selling government bonds and treasury bills. The National Debt Office can also issue government guarantees and loans. By being responsible for the deposit insurance and the bank support system, the Office also helps to safeguard the stability of the financial system. The deposit insurance, which is an important

element of consumer protection, means that the state or another agent reimburses deposits in accounts if a bank defaults. However, the deposit insurance 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. Without a deposit insurance, there is a risk that, in times of financial unease or when a certain bank is rumoured to have economic problems, bank customers will withdraw their savings to avoid losing these in the event that the bank should enter bankruptcy. If many bank customers simultaneously withdraw their savings, this can lead to the bank encountering a liquidity shortage, accelerating and exacerbating the crisis. Apart from being responsible for the deposit insurance, the Office is also a support authority under the Government Support to Credit Institutions Act. This entails responsibility for entering into support agreements and administrative duties relating to the support provided on the basis of this Act. This may include, for example, guaranteeing the banks' long-term borrowing or injecting risk capital.

■ The financial markets

The financial markets are categorised here as the fixed-income market, the foreign exchange market and the stock market. Nowadays, Swedish banks and companies operate to a great extent on global financial markets, but in this chapter the description is limited to the Swedish financial markets alone. The chapter describes how trading on the different markets works and the securities and instruments that are traded on the respective markets.

The fixed-income market

The fixed-income market is a market for trading what are known as debt instruments, which yield a specific predetermined return in the form of an *interest rate*. Considerably fewer transactions are conducted on the fixed-income market than on the stock market, but they usually involve substantially larger sums.

The fixed income market is often divided into a *bond market* and a *money market*. The bond market comprises trade in securities – bonds – generally with maturities of one year and longer. Trading on the money market comprises, for example, *treasury bills* and *certificates*, usually with maturities of up to one year.

The participants are largely the same on these two markets, primarily central governments, mortgage institutions, banks and large investors such as insurance companies and pension funds.

On the other hand, the purposes underlying trading in the various submarkets for bonds and money market instruments differ somewhat. In simple terms, the main purpose of the bond market is to channel long-term savings from certain participants to others in need of capital. The most important function of the money market is instead to facilitate the investment of surpluses and to mediate short-term funding. In the most short-term segment of the money market (maturities ranging from one day to one week), the instruments are used to carry out daily adjustments of deficits and surpluses in the transaction accounts of the market participants. As a large part of the turnover takes place in this segment, often with special contract arrangements, this area of the money market is also described in more detail.

Debt instruments are traded on the *spot market*, where payment and delivery take place immediately or within a few days of agreement on the transaction. As a complement to the instruments in the spot market, *derivative instruments*⁹ are also traded with debt securities as the underlying asset. These derivative instruments help the participants in the fixed-income markets, for example, to diversify and manage risks. They also enable the participants to change the maturities of their fixed-income portfolios. As a result, investors are, in practice, unconstrained by whether a security was originally issued with a short or long maturity. This publication, however, makes a simplification for illustrative purposes. The description of the bond and money markets is divided up on the basis of the original maturities that characterise these securities.

THE MONEY MARKET - FOR SHORT MATURITIES

The *money market* is a collective term for markets for interest-bearing assets that are usually issued with maturities of up to one year. One important task of the money market is to facilitate liquidity management for the participants in the economy. For example, banks need to maintain a state of preparedness for future deposits and payments. The banks therefore invest in various assets depending on their assessments of future payments. These investments can then easily be converted into liquid funds when the payments fall due.

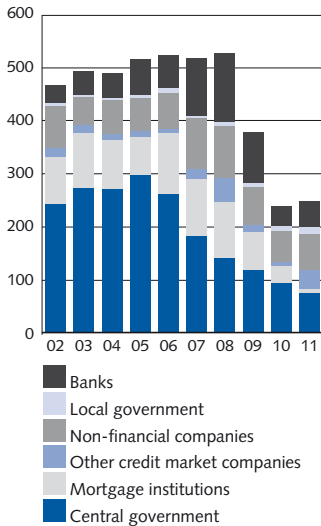
Issuers on the money market in Sweden

The central government, the mortgage institutions and the banks are the largest borrowers on the money market. Central government borrowing on the money market takes place through treasury bills. Other institutions borrow by issuing certificates such as bank certificates and mortgage certificates. The total stock of money market instruments issued has decreased significantly in recent years. Compared with 2009, the stock has decreased by almost SEK 290 billion. However, over the last year, the value of the total outstanding stock of securities in the money market increased slightly compared with the previous year, and amounted to SEK 246 billion at the end of 2011 (see Chart 1).

⁹ Derivative instruments are contracts that are linked to various securities as underlying assets, and that are entered into (and traded) by the participants in the secondary market. The most common derivative instruments traded on the fixed income market include interest forwards, interest options and interest swaps. *Termer i Nationalekonomi*, Dickson, Luukainen and Sandelin, 1992.

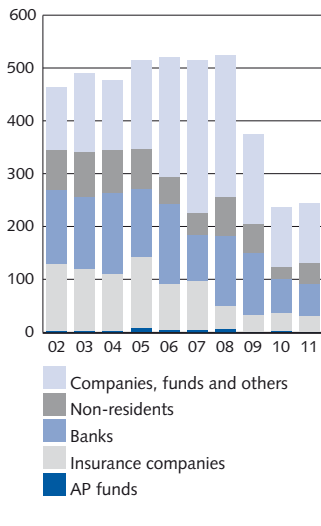
The substantial fall in the total stock in recent years is partly due to the increase in borrowing in money market instruments denominated in foreign currencies, which has replaced parts of borrowing in Swedish kronor. Just over two thirds of short-term borrowing was in foreign currencies at year-end 2011. The government's issue of treasury bills has also declined in pace with the fall in the government's borrowing requirement. Borrowing at longer maturities through bonds has been given priority ahead of the issue of treasury bills.¹⁰ Banks and mortgage institutions have also issued a greater proportion of long-term securities than previously, at the expense of borrowing over the shorter term. Several international and national regulations have started to demand funding at longer maturities, a situation for which these participants are preparing.¹¹ Moreover, the mortgage institutions are matching their long-term lending with long-term borrowing to a greater extent than previously. The financial risk is, of course, reduced when liabilities and assets have the same maturity. Another reason that mortgage certificate borrowing has decreased since 2009 is that the statistics previously made no distinction between issues on the Swedish and overseas markets. Issues on the Swedish market have historically been estimated as all issues

Chart 1. Outstanding volumes on the money market, per issuer
SEK billion



Sources: Statistics Sweden and the Riksbank

Chart 2. Investors on the money market
SEK billion



Sources: The AP funds, Statistics Sweden and the Riksbank

¹⁰ When the government's borrowing requirement declines, the Swedish National Debt Office gives priority to maintaining a high level of liquidity in bonds ahead of treasury bills.

¹¹ For example, the Basel III Accord includes requirements for a higher proportion of borrowing with long maturities.

in Swedish kronor, regardless of the market. It did not become possible to distinguish the markets in the statistics until September 2010. This means that borrowing on the Swedish market has been overestimated for periods before September 2010, as issues in Swedish kronor made on overseas markets have been included in the statistics¹².

A *treasury bill*¹³ is a debt instrument that represents a short-term claim on the state that can be bought and sold on the money market. Treasury bills are issued by the Swedish National Debt Office and are used, among other things, to manage fluctuations in the government's short-term borrowing requirement. Treasury bills' previous dominant position on the money market has successively declined, as the outstanding volume has decreased in recent years at the same time as borrowing in certificates has increased. At the end of 2011, treasury bills accounted for slightly less than 30 per cent of the outstanding stock of short-term securities. The outstanding volume decreased by SEK 20 billion in 2011, amounting to about SEK 72 billion at the end of the year.

A *certificate* is the same kind of debt instrument as a treasury bill but is issued by banks and companies, for example. The primary aim of the mortgage institutions' short-term borrowing is to match their lending to their customers and thus manage their interest rate risks.¹⁴ The short-term borrowing of the mortgage institutions via certificates issued in Swedish kronor amounted to SEK 9 billion at year-end 2011. The banks' short-term borrowing in certificates issued in Swedish kronor increased during 2011 to SEK 48 billion, after having decreased for two years in a row.

The borrowing of the non-financial companies amounted to SEK 68 billion at year-end 2011. The borrowing volume for "other credit market companies" increased in 2011. The outstanding volume amounted to SEK 34 billion at year-end 2011, compared with SEK 12 billion at the end of 2010. The municipalities also increased their borrowing by SEK 4 billion to SEK 14 billion at year-end 2011.

¹² See financial market statistics, www.scb.se.

¹³ The treasury bill is constructed as a zero-coupon bond, i.e. a security without interest payments during the term of the bill.

¹⁴ The mortgage institutions' borrowing via certificates is relatively small, however, in relation to their short-term fixed-rate lending. In order to match the fixed-rate periods of mortgage institutions' funding and their lending to households, the institutions issue bonds and subsequently enter into swap contracts to obtain short-term interest bonds. Mortgage institutions also borrow from their parent banks. For further information, see the description of swap contracts in the sections "Derivatives in the fixed income market" and "Frequently used instruments in the Swedish foreign exchange market".

Investors in the money market

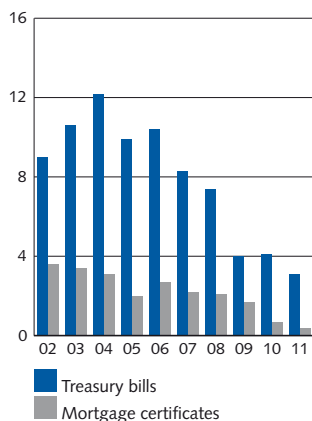
Swedish banks, insurance companies and funds form the largest categories of investors in the money market (see Chart 2). The category companies, funds and others¹⁵ together has the largest holdings on the money market and controlled almost half of the outstanding stock at year-end 2011. The banks' holdings of short-term fixed income securities constituted about one quarter of the total money market at year-end 2011, while the insurance companies' holdings corresponded to about 12 per cent of the market.

Foreign investors accounted for about 16 per cent of the market's total volume at year-end 2011. The AP funds, which did not make any investments on the money market during the year, have radically reduced their holdings of short-term fixed income securities since 2000.¹⁶

Low turnover on the money market

In a historical perspective, turnover on the money market was low in 2011. According to the statistics that the Riksbank compiles from its primary monetary policy counterparties,¹⁷ turnover in mortgage certificates issued in Swedish kronor decreased between 2010 and 2011, from an average of SEK 700 million to SEK 400 million per day

**Chart 3. Average daily turnover on the money market
SEK billion**



Source: The Riksbank

¹⁵ The category "Companies, funds and others" is a heading for residual items in the figures provided by Statistics Sweden and is derived from the difference between the outstanding stock of securities in the money market and the other sectors' holdings of these securities.

¹⁶ More information about the AP funds is available in the section on State-owned pension funds in the chapter *Financial intermediaries*.

¹⁷ More information about the Riksbank's counterparties is available at www.riksbank.com.

between year-end 2010 and year-end 2011. Turnover in treasury bills also decreased (see Chart 3). In addition, the turnover of treasury bills and mortgage certificates has decreased in relation to the total turnover of government and mortgage securities, and constituted an average of 10 per cent of turnover in 2011, compared with 20 per cent or more in the period 2000-2008.

CONTRACT TYPES FOR THE MONEY MARKET'S SHORTEST SEGMENT

Ordinary securities are less practical when maturities in the money market are reduced to a week or even less. Other contract solutions are used instead, such as *deposit contracts* and *repos* (see the relevant section below for the various contracts). These standardised contracts offer the participants greater flexibility in borrowing or investing at the shortest periods of maturity.

The Riksbank can also provide deposit and lending facilities for the shortest periods of maturity (although the conditions offered may be less favourable, as is explained below). Participants in the Riksbank's payment system RIX¹⁸ who have a monetary policy counterparty agreement with the Riksbank may take advantage of a number of separate facilities for depositing or borrowing money at short maturities. The Riksbank can meet the short-term borrowing or deposit requirements of the market participants by offering intraday facilities, fine-tuning operations, standing facilities, monetary policy repos or certificates.¹⁹

On the overnight market, the banks even out daily deficits and surpluses in their transaction accounts in the RIX payment system. Even though the banks make forecasts to assess how much liquidity they need for their payments, imbalances arise – for example, when the banks' deposits and payments do not match over time and when unforeseen payments must be made during the day. Customers' business transactions and transfers by portfolio managers and other financial participants in foreign exchange and securities portfolios may also create imbalances that may need to be adjusted during the day.

Because the Riksbank, along with the market participants, offers its counterparties facilities for borrowing or investing funds at predetermined interest rates, a potential alternative always exists to

18 See the section on RIX in the chapter *The financial infrastructure*.

19 See the box "Riksbank facilities for short-term borrowing and deposit requirements" in *The Swedish Financial Market 2011*, Sveriges Riksbank.

the market.²⁰ The market participants therefore have an incentive to determine a rate within the corridor formed by the deposit and lending rates offered by the Riksbank.²¹ In this way, the terms for the overnight market are decided in practice by the Riksbank.²² In turn, the policy rate influences the Stibor rate²³, which is a reference rate for trade in Swedish kronor. This interest rate is calculated as an average of the interest rates charged to each other by five banks for lending in Swedish kronor for maturities from tomorrow to the following day (Tomorrow/Next or T/N) up to one year.²⁴ Among other applications, the Stibor rate is used as a reference for pricing various derivative contracts, or, ultimately, for setting mortgage rates.

A reference rate for loans on the interbank market is published every day for each currency area for maturities of up to one year. For example, the reference rate for the British pound and the US dollar is the Libor (London Interbank Offered Rate), while the most common reference rate for the euro is the Euribor (Euro Interbank Offered Rate).

20 For example, the Riksbank always offers an overnight deposit or lending rate at 75 basis points *below* or *above* the Riksbank's repo rate respectively. These policy rates may be viewed at the Riksbank's website, www.riksbank.com.

21 See, for example, the brochure *The Riksbank's Management of Interest Rates – Monetary Policy in Practice*, Sveriges Riksbank 2005.

22 More information on the overnight market may be found in "The Swedish Market for Balancing Liquidity", article in Sveriges Riksbank Economic Review 2005:4.

23 Stibor stands for Stockholm Interbank Offered Rate. More information about the Stibor is available at www.nasdaqomx.com and in the box "Reference rates under the magnifying glass" in the *Financial Stability Report 2012:1*.

24 The Stibor is fixed at the maturities T/N, one week, one month, two months, three months, six months, nine months and 12 months.

Riksbank facilities for short-term borrowing and deposit requirements

The Riksbank offers facilities for depositing or borrowing money at short maturities with the aim of governing short-term interest rates. These facilities are available to participants in the Riksbank's central payment system RIX or those who have some form of monetary policy counterparty agreement with the Riksbank. The Riksbank's counterparties in the fixed-income market mainly comprise RIX participants, monetary policy counterparties and primary monetary policy counterparties.²⁵ At year-end 2011, the Riksbank had 25 RIX participants, of which 17 were also monetary policy counterparties. Of these RIX participants, five were also already primary monetary policy counterparties.²⁶

Depending on the level of the counterparty agreement signed with the Riksbank, short-term lending and deposit facilities may take the form of intraday facilities, fine-tuning operations, standing facilities, monetary policy repos or certificates. RIX

participants have access to the Riksbank's intraday facilities. A RIX participant that is also a monetary policy counterparty may purchase Riksbank certificates and participate in monetary policy operations such as the standing facilities and the fine-tuning operations that adjust liquidity in the banking system.

Intra-day facilities (intra-day credits) – for RIX participants

As a central bank, the Riksbank helps to ensure that payments between banks can be made efficiently and without delay. Banks participating in RIX are therefore able to borrow interest-free from the Riksbank during the day against collateral in securities. A loan of this type is called an intraday credit. The value of the collateral after any haircuts sets the ceiling for the loan, which is to say the maximum limit for the amount of credit the counterparty may be granted by the Riksbank during the day. The intraday facility is the fastest way of acquiring liquidity, as long as

²⁵ On 2 April 2009, the Riksbank also introduced "restricted monetary policy counterparties". Among other possibilities, these have been given the opportunity of taking Riksbank loans in Swedish kronor.

²⁶ More information about the Riksbank's counterparties is available at www.riksbank.com.

there is sufficient collateral. The credit is provided more or less instantaneously. The facility is needed mainly from when RIX opens until the early afternoon, which is when it becomes clear what surpluses and deficits the banks have in their transaction accounts.

From monetary policy repos to Riksbank certificates

The extraordinary measures introduced by the Riksbank to manage the financial crisis in 2008-2009 led to a large *structural liquidity surplus* in the banking system due to the large loans in Swedish kronor that the Riksbank offered the banks. In order to neutralise this surplus, the Riksbank began to issue certificates with a term of seven days and with a fixed interest rate equivalent to the repo rate. These certificates replaced the weekly repos that the Riksbank conducted until October 2008 with the aim of supplying the banking system with liquidity. Up until this point, the banking system had had a *structural deficit* of liquidity.

Irrespective of whether the Riksbank supplies liquidity to the banking system or withdraws it, it is the Riksbank's forecast for liquidity in the banking system that determines the extent of the weekly measures. Normally, the level of liquidity in the banking system depends primarily on changes in the stock of banknotes and coins in circulation. However, between October 2008 and January 2011, the size of the banks' loans with the Riksbank determined the level of liquidity in the banking system, and thus the amount that the Riksbank offered certificates for. Even after these loans have matured, the banking system has a surplus of liquidity, which is due to several factors.²⁷

In 2011, the Riksbank offered the banks the opportunity to buy certificates for just over SEK 15 billion on average per week. Since the Riksbank's last large fixed-rate loan matured on 6 October 2010, the banks have had no interest in investing in certificates. They have instead invested their entire surplus in the fine-tuning operations. Despite the Riksbank's attempts to make certificates more attractive,

²⁷ For example, the Riksbank's annual transfers to the Treasury increase liquidity in the banking system. Another factor that increases liquidity in the banking system is that the amount of banknotes and coins in circulation has decreased. More information about the surplus can be found in the article "The framework for the implementation of monetary policy, the Riksbank's balance sheet and the financial crisis" in *Economic Commentary 2011:1*.

interest has been low among the banks. In 2010, the Riksbank introduced the possibility of selling certificates back before they mature. In such cases, the Riksbank pays a lower price for the certificate than the price at which it was issued. The price is equivalent to an interest rate that is 0.02 percentage points lower than the repo rate. Certificates with a longer period of maturity were also temporarily introduced in 2010. The period of maturity of these longer-term certificates was, in principle, the period between the monetary policy meetings in July–October 2010, and it was also possible to sell the certificates back during this period. However, the possibility to sell certificates back has only been used on a single occasion.

Fine-tuning operations

Since October 2008 there has been too much liquidity in the banking system as a whole, which means that some of the commercial banks have a surplus of liquidity at the end of the day. The part of this surplus that is not invested in Riksbank certificates

is evened out in the Riksbank's fine-tuning operations.²⁸ These operations entail the banks depositing their surpluses with the Riksbank overnight. The counterparties that deposit their surpluses with the Riksbank receive the repo rate minus 10 basis points.

The sums deposited with the Riksbank at this rate have been substantial or very substantial since October 2008. In 2010, an average of SEK 15 billion was deposited in the fine-tuning operations, which corresponds to the entire liquidity surplus in the banking system (see Chart 4). It thus follows that if all or parts of the liquidity surplus had been invested in Riksbank certificates, the overnight deposits would have been smaller.

If, at the end of the day, the banking system was instead to have a deficit in relation to the Riksbank, the counterparty responsible for this deficit would be able to borrow from the Riksbank overnight. The counterparty would then pay the Riksbank's repo rate plus ten basis points.

28 Before the financial crisis in October 2008, the amounts involved in these operations were small in relation to the weekly repo. This is why they are called "fine-tuning" operations. In 2009 and 2010, however, the fine tuning operations were very substantial, both in relation to the weekly operations and in absolute amounts.

Nevertheless, before the Riksbank's extraordinary measures were introduced in connection with the financial crisis, the position of the banking system in relation to the Riksbank fluctuated between a deficit and a surplus from day to day. The counterparty or counterparties that held the final deficit or surplus, and therefore needed to perform a fine tuning operation overnight, also varied from day to day. Before the crisis broke out, the fine tuning operations averaged approximately SEK 200 million.

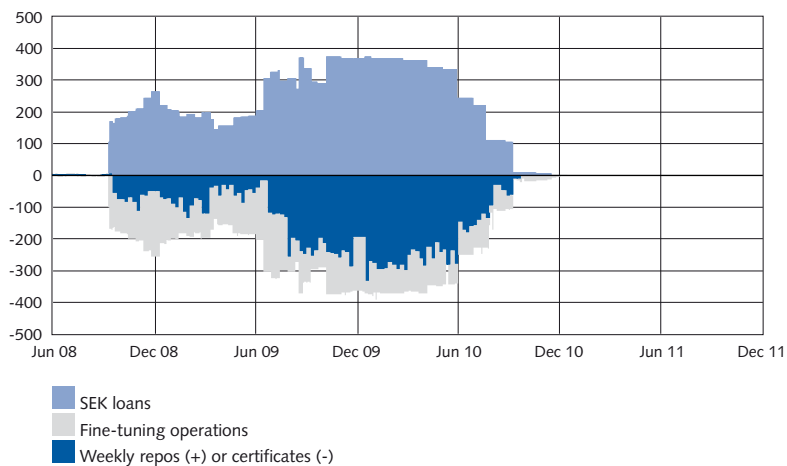
All of the monetary policy counterparties may participate in the fine-tuning operations. Other counterparties that are not participants in RIX and that wish to deposit deficits or surpluses have to turn to the Riksbank's monetary policy counterparties that, in turn, can participate in the fine-tuning operations.

*Standing facilities –
for monetary policy
counterparties*

Nevertheless, it may happen that the transaction accounts of individual banks at the Riksbank are not balanced when RIX closes. If so, any deficits or surpluses are placed in the Riksbank's standing facilities overnight. This involves much smaller amounts than in the fine-tuning operations. This is because, in the standing facilities, the counterparty is required to pay the Riksbank's repo rate plus 75 basis points for an overnight loan. Making deposits overnight provides a return equal to the Riksbank's repo rate minus 75 basis points.²⁹ During 2011, the average deposit in the Riksbank via the standing facilities to about SEK 45 million per day.

²⁹ Between 22 April 2009 and 6 July 2010, the deposit and lending rates in the standing facilities were equivalent to the repo rate +/- 50 basis points respectively. Both before and after these dates the width of this so-called corridor was/is +/- 75 basis points.

**Chart 4. The Riksbank's deposits and lending in Swedish kronor
SEK billion**



Source: The Riksbank

Deposits

Deposit contracts are standardised deposit and lending agreements without requirements for underlying collateral. Normally, market participants do not use deposit contracts for depositing and lending for longer than a week. This is because the counterparty limits³⁰ and capital adequacy requirements³¹ make this form of contract relatively more expensive than other financial contracts with longer maturities.³² Deposits are preferred to be used to even out the need for liquidity between the banks overnight. The banks have, quite simply, agreed to assist each other with liquidity and, under normal conditions, to pay the overnight rate for this, which is usually the same as the Riksbank's repo rate plus a supplement.³³ However, during the financial crisis of 2008–2009, the price of borrowing on the deposit market increased significantly. The banks were less willing to relinquish the liquidity they had.

Nearly all of the turnover in deposits thus relates to very short maturities.³⁴ In 2011, the institutions designated by Statistics Sweden as Monetary Financial Institutions³⁵ had average outstanding deposit volumes of SEK 148 billion at the end of each month. The major share of this amount, that is an average of SEK 134 billion, consisted of deposits from Swedish monetary financial institutions. Only a minor part of the deposits thus originated from foreign institutions.³⁶

Repos (“repurchase agreements”)

A *repo* is an agreement in which one party agrees to sell a security to another party in return for liquid funds.³⁷ At the same time, the parties also agree that the same security will be repurchased at a predetermined price at a given time in the future. A repo transaction

30 The amount a bank can lend to its counterparties is determined by the bank's own limits, 'counterparty limits'.

31 More information about capital adequacy requirements can be found in the box “Central regulations in the finance sector” in the chapter *Financial Intermediaries*.

32 See the article “*The Swedish Market for Balancing Liquidity*” in Sveriges Riksbank Economic Review 2005:4.

33 See the book *Penningmarknaden*, Nyberg, Viotti and Wissén, 2006.

34 Before the financial crisis of 2008–2009, the major banks estimated that around 90 per cent of the turnover on deposit contracts involved maturities of up to two days. See the article “*The Swedish Market for Balancing Liquidity*” in Sveriges Riksbank Economic Review 2005:4.

35 Monetary Financial Institutions (MFI) comprise banks, mortgage institutions, finance companies and other MFIs (for example, municipal and corporate-financed institutions, monetary securities companies and brokers).

36 Swedish Monetary Financial Institutions report their outstanding volumes in different currencies on a monthly basis to Statistics Sweden (SCB), which compiles financial market statistics. The definition of the Swedish banking day is not unambiguous: the definition usually refers to maturity overnight (O/N), but tomorrow next (T/N) may also appear (see appendix 2 on market conventions).

37 There are also reverse repos. For example, the Swedish National Debt Office conducted reverse repos during the financial crisis when the banks were given the opportunity to borrow liquid funds from the National Debt Office with mortgage bonds as collateral.

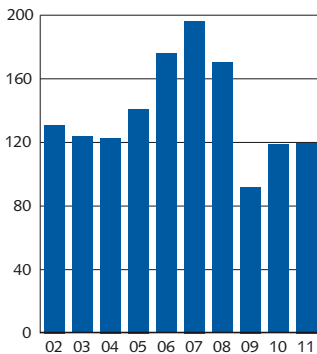
is therefore composed of two parts: a sale (spot), and an agreement to repurchase on a later date (forward). The repo thus functions essentially as a collateralised loan over the maturity of the repo.

The party that lends the security pays an interest rate equivalent to the difference between the sale and purchase prices. Conversely, repos may be viewed as security loans collateralised with cash. A company that wants to obtain liquidity via repos must have a portfolio of securities on which it can raise loans, which is not the case when deposits are used. If the borrower cannot honour his or her debts at the end of the period, ownership of the pledged securities is transferred to the lender. Repos thus entail minimal counterparty risk for the lender. In principle, all securities that can be traded on the fixed income market can be used as collateral for repos.

The turnover in repo transactions among the Riksbank's primary monetary policy counterparties and the Swedish National Debt office's dealers was almost unchanged between 2010 and 2011, following a fall during the financial crisis in 2008–2009 (see Chart 5). In 2011, turnover was about SEK 119 billion per day. Almost all the turnover in repos is in repos with maturities of up to one week. Turnover in repos is four times as high as the spot turnover in the underlying government and mortgage securities.³⁸ According to the statistics compiled by the Riksbank, spot turnover in these underlying securities amounted to SEK 30 billion in 2011 (see the section "Turnover on the bond market").

The main reason for the high turnover in repos is that they offer investors a quick and efficient way of getting access to capital. Bond

**Chart 5. Average daily turnover in repos
SEK billion**



Source: The Riksbank

³⁸ Includes treasury bills, nominal government bonds, mortgage certificates and mortgage bonds. Inflation-linked government bonds are not included in these figures.

dealers can fund their securities portfolios via the repo market. They can also acquire securities quickly in order to meet their obligations under their dealer agreements.

Another reason for the high turnover in repos is that the repo market makes it possible for foreign participants to own Swedish securities without taking a currency risk. The use of repos allows the currency risk to be sold at the same time as the investor retains his or her interest investment via the underlying security that forms the collateral for the loan.

According to Statistics Sweden's financial market statistics, the outstanding volume of repo borrowing by the monetary financial institutions at the end of each month averaged around SEK 168 billion in 2011. Just over SEK 107 billion of this amount was attributable to the repo borrowings of *Swedish* monetary financial institutions.³⁹

THE BOND MARKET

The bond market brings together managers of long-term savings with those that need to borrow capital. The issuers are the same as on the money market, that is mainly the central government and the mortgage institutions. Companies and municipalities may also issue bonds. Bond issues often relate to a long-term funding requirement and trading takes place in debt securities – bonds – with maturities of one year and longer.

The bond market is much larger than the money market. In 2011, the outstanding volume of bonds issued in Swedish kronor was ten times greater than the volume on the money market and amounted to SEK 2 723 billion.

A bond is a debt instrument in the form of an agreement to lend money that is subsequently repaid with interest. It may be simply transferred between holders. A bond with several part payments⁴⁰ (coupons) over its term is known as a coupon bond. Bonds that do not have any coupon payments during their term are called discount bonds or, more commonly, zero coupon bonds. The central government also issues inflation-linked bonds, where interest payments and the final payment are linked to developments in the inflation rate.

The bond market can be divided into a *primary market* for new bond issues, and a second-hand or *secondary market* where investors can buy and sell bonds that have already been issued. A sale in the

³⁹ The special conventions used in trading in the money market's short-term contracts are presented in Appendix 2 on market conventions.

⁴⁰ The part payments are payments of interest.

primary market provides capital directly to the issuer of the bond. Thus, the issuer is a borrower in the market.

Investors who have bought bonds at issue can choose to resell them in the second-hand market. On an effective second-hand market, it is easy to buy and sell various securities. This leads to these bonds also becoming more attractive for investors on the primary market. A high demand for bonds on the primary market in turn reduces the borrowing costs of the issuers as it means that the interest rate will be lower.

Bonds are also used in so-called repo transactions, in which the holder can acquire liquidity by lending the bonds. The market for these repo transactions is larger than that for spot transactions in the same securities (see the section on repos).

Issuers on the bond market in Sweden

Volumes on the bond market in Sweden have successively increased over the years and amounted to SEK 2 723 billion at year-end 2011, which was SEK 156 billion more than 12 months previously (see Chart 6). The largest issuers on the Swedish bond market are the central government and the mortgage institutions. They represent 30 and 45 per cent respectively of the total issued volume of bonds in Swedish kronor. The term Swedish bond market refers to the market for bonds issued by Swedish issuers in Swedish kronor. Swedish participants can also turn to the international markets to gain access to capital. Issues are then conducted in other currencies.⁴¹

Central government borrowing is used to finance any central government deficit.⁴² At year-end 2011, the outstanding stock of government bonds was SEK 796 billion (see Chart 6). The government's borrowing on the bond market continues to be high, despite the fact that the borrowing requirement has decreased in recent years. This is explained by the Swedish National Debt Office's borrowing strategy. In order to offer investors good liquidity in Swedish government bonds, the stock of bonds has been increased at the expense of borrowing in treasury bills and loans in foreign currencies. The Swedish National Debt Office can use what are known as interest-rate swaps to ensure that it can still meet its target of a certain average maturity for the central government debt. The same

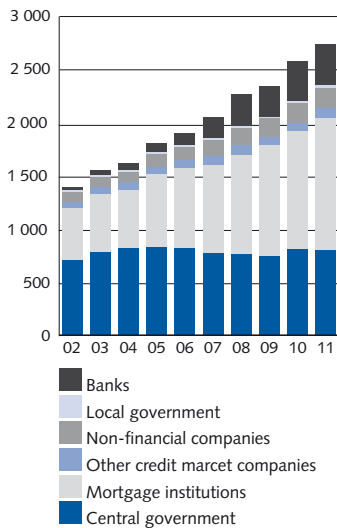
41 As a rule, issues conducted in other currencies are converted into SEK via derivatives, primarily currency swaps (see the box "Covered interest rate parity"). Balance of payment statistics from Statistics Sweden show that the volume issued in foreign currencies amounted to about half of the total lending volume at the end of 2011. It is primarily the banking sector that secures funding in foreign currencies.

42 The Swedish National Debt Office manages central government borrowing on the bond market.

principle applies to borrowing in foreign currencies. To achieve the target of a certain currency exposure, despite extensive borrowing in Swedish kronor, the Swedish National Debt Office can instead use currency swaps. However, central government borrowing is expected to increase slightly again in 2012 and 2013, as economic activity is expected to weaken.

The mortgage institutions primarily issue bonds to fund the loans (mortgages) provided to Swedish households in connection with the purchase of housing. Their total borrowing in 2011 increased by around SEK 128 billion, to SEK 1 233 billion by year-end. The increase in the mortgage institutions' borrowing in the form of bonds over the last ten years is a result of the increase in the households' borrowing for housing. Following the financial crisis, it has become increasingly important for the mortgage institutions not to fund their operations at too short maturities. Lending to households is a long-term commitment, which means that the financial risk is minimised if the maturity of the lending is also lengthened. The entire stock of mortgage bonds in Swedish kronor consists of so-called covered bonds. Covered bonds give the holder the right to a specific Cover Pool in the event of the issuer being declared bankrupt (for further information, see the box "Covered bonds in Sweden").

**Chart 6. Outstanding volumes on the bond market, per issuer
SEK billion**

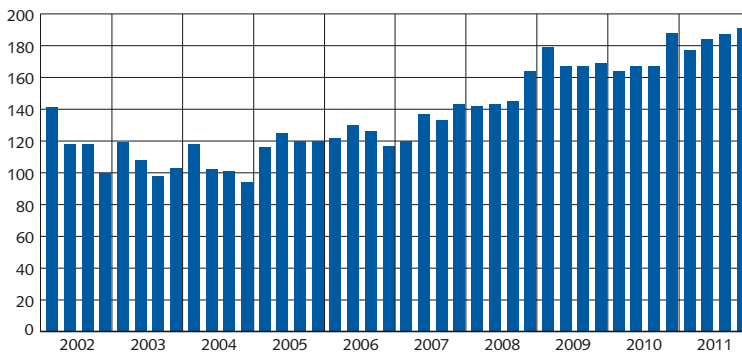


Sources: Statistics Sweden and the Riksbank

The banks' borrowing on the bond market increased slightly in 2011. The outstanding volume amounted to SEK 380 billion at year-end.⁴³

Non-financial companies, for example industrial enterprises, may also raise capital by issuing bonds. At year-end 2011, borrowing by non-financial companies in the Swedish bond market totalled just over SEK 191 billion (see Chart 7). This was a narrow increase of around SEK 3 billion compared with the previous year. There is reason to believe that the Swedish market for corporate bonds will continue to grow and to be an important funding alternative for the Swedish companies in the future. After the most recent financial crisis, companies started to look, to a greater extent, for other sources of funding than just straightforward bank loans. However, bank loans remain their primary loan-based source of funding. Among other reasons, this is because, to arouse interest among investors, larger amounts are often required to issue bonds on the market than small and medium-sized companies need. In addition, relatively few small and medium-sized Swedish companies have credit ratings, making it difficult for investors to assess the credit risks of these companies. The market is thus dominated by a few large, well-established companies, such as TeliaSonera, Volvo, Vattenfall, Vasakronan and Atlas Copco. However, several medium-sized companies have chosen to issue corporate bonds in recent years.

Chart 7. Outstanding volumes of corporate bonds in SEK issued by Swedish non-financial companies
SEK billion



Source: Statistics Sweden

⁴³ SBAB's parent company is now included in the category Banks, instead of in the category Mortgage Institutions. A similar re-classification took place in 2007 when SEB Bolån was merged with SEB. Since then all bonds, including mortgage bonds, belong to the sector banks.

Municipalities and county councils may also use bonds to fund their operations and investments. However, only a smaller number of municipalities and county councils had outstanding listed bond loans in their own name at year-end 2011.⁴⁴ At year-end, their total borrowing amounted to about SEK 14.2 billion.

The other municipalities and county councils, 267 municipalities and county councils in total, had outstanding bond loans in association with Kommuninvest, a credit market company.⁴⁵ Kommuninvest increased its lending to member municipalities from SEK 134 billion in 2010 to SEK 168 billion at year-end 2011. To fund this lending, Kommuninvest issues bonds in Swedish kronor and other securities. Kommuninvest is included in the category *Other credit market companies* in Chart 6. Together with the borrowing of other credit market companies, the outstanding value of issued bonds totalled SEK 94 billion at year-end 2011.

44 These municipalities and county councils are the City of Helsingborg, Lund Municipality, the City of Stockholm, Stockholm County Council, Sundsvall Municipality, Södertälje Municipality, Täby Municipality, Uppsala Municipality and the City of Västerås.

45 Credit market companies are finance companies that fund their activities with money from the public. These companies are under the supervision of Finansinspektionen and are covered by the deposit guarantee scheme. More information is available at www.fi.se.

Covered bonds in Sweden

Swedish banks' primary source of funding to meet the public's mortgage requirements at a competitive interest rate are so-called covered bonds. These have been issued by Swedish banks and credit market companies since 2006.⁴⁶ However, traditional mortgage bonds have been issued by the Swedish mortgage institutions for a considerably longer time. The difference between traditional and covered bonds is that the holder of a covered bond has a priority claim to specially-selected collateral, the so-called Cover Pool. This Cover Pool consists of various types of mortgages and of loans to central governments and municipalities.

Seven Swedish banks or their mortgage institutions have permits from Finansinspektionen to issue covered bonds.⁴⁷ The outstanding volume was just over SEK 1 800 billion at year-end 2011.⁴⁸ The issuing institution

continually issues bonds on the Swedish market for covered bonds under the terms and conditions that apply to the respective bond loans. This means that bonds with the same maturity and coupon rates are continually being issued. This issuing procedure is known as on-tap and also occurs in other countries, for example Denmark. The market for covered bonds is important to the Swedish banks' long-term wholesale funding. Half of their wholesale funding is primarily comprised of Swedish covered bonds.⁴⁹

Covered bonds differ from traditional bonds in several ways. *First*, they are governed by a well-defined regulatory framework that ensures that the Cover Pool is of high quality. This regulates, for instance, the maximum loan-to value ratios in the Cover Pool, what types of collateral can be included in the Cover Pool and how this may be composed (see Table 1). In

⁴⁶ It has, however, been possible to issue covered bonds since 2004. For more information see *The Swedish Financial Market*, 2009.

⁴⁷ The seven institutions are Swedbank, Stadshypotek, Nordea hypotek, SBAB, SEB, Landshypotek and Länsförsäkringar hypotek.

⁴⁸ According to statistics from ASCB, www.ascb.se.

⁴⁹ Approximately 76 per cent of the banks' borrowing via covered bonds is in kronor, while most of the remaining 24 per cent is in euro. In addition to the borrowing mentioned in this publication, Swedish banks borrow within the framework provided by similar regulations in other countries. Borrowing under the Swedish regulations for covered bonds can, however, take place in currencies other than kronor, for example euro.

addition, the issuer must keep a register of the covered bonds and the Cover Pool. This register must be updated daily. The regulations also require that an independent examiner, appointed by Finansinspektionen, oversees the operations and ensures that the collateral volume meets the requirements. It is essential that the Cover Pool is of high quality to meet the purpose of the covered bonds. At present, work is underway to increase transparency and comparability in the way the institutions calculate average leverage in the Cover Pool.⁵⁰

Secondly, the holder of a covered bond has a priority claim on a specific pool of assets (the Cover Pool) if the issuing institution should suspend payments. This means that covered bonds differ from traditional mortgage, bank and corporate bonds where the holder only has a claim on the issuer.

Thirdly, the Cover Pool linked to the covered bond is dynamic. This means that collateral that is

not up to standard is removed from the Cover Pool and can be replaced with new.⁵¹ *Fourthly*, covered bonds have the attractive characteristic that the credit risk remains on the balance sheet of the institution that issued the original loan, which naturally increases the incentive to carefully assess the credit risk in the Cover Pool.

There are thus good reasons to regard the creditworthiness of covered bonds as being higher than the creditworthiness of traditional bonds issued by banks and companies. As the holder of a covered bond has a priority claim on a specific Cover Pool, it is reasonable that the credit risk is primarily assessed on the basis of the credit quality of the Cover Pool and not on the basis of the issuing institution's credit rating. For the same reasons, the current price differences between covered bonds issued by different institutions can mainly be justified by differences in the liquidity risk relating to bonds from the different institutions.

50 This work is partly being conducted within The Association of Swedish Covered Bond Issuers, see www.ascb.se.

51 This is not the case with, for instance, Residential Mortgage-Backed Securities (RMBS), which are securities that also have mortgage loans as underlying collateral. Nor is an RMBS covered by the same standardised regulatory framework; it is regulated by specific agreements between the parties in the transaction. RMBSs exist in the USA, for example but not in Sweden.

To sum up, covered bonds thus entail a lower risk for the buyer than regular bonds, but also a lower interest rate for the borrower (the mortgage

institution). Ultimately this results in a lower interest rate for the end customer, for example a mortgage customer.

Table 1. Loans that can be included in the collateral volume for a covered bond

TYPE OF COLLATERAL	HIGHEST LOAN-TO-VALUE RATIOS, PER CENT	MAXIMUM SHARE OF THE COVER POOL, PER CENT
Mortgage loans for housing purposes	75	100
Mortgage loans in property for agricultural purposes	70	100
Mortgage loans in property for commercial purposes	60	10
Public loans to local or central government	100	100
Complementary collateral, such as liquid claims on central and local government	100	20

Source: Covered Bonds Issuance Act (2003:1223)

Investors on the bond market

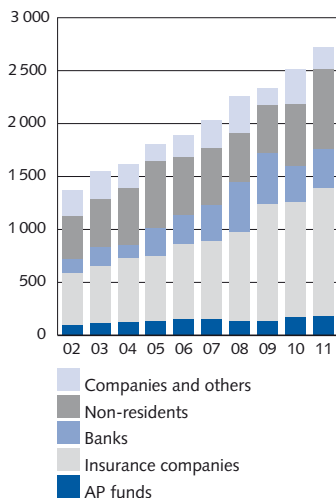
At year-end 2011, insurance companies were the category of investor with the largest holding in Swedish kronor in the bond market. They account for 44 per cent of the holdings, which corresponds to SEK 1 205 at year-end 2011 (see Chart 8). The banks' bond holdings amounted to SEK 364 billion at the same date.

However, foreign (non-residential) investors⁵² strongly increased their holdings on the bond market. At year-end 2011, their holdings amounted to almost SEK 762 billion, which was SEK 181 billion more than 12 months earlier. Given the uneasy international situation, the relatively strong macroeconomic development in Sweden and Sweden's stable public finances are probably helping to increase the interest of foreign investors in Swedish bonds.

Companies and others⁵³ decreased their bond holdings by almost SEK 108 billion in 2011, following a substantial increase in the previous year. This category had invested SEK 207 billion in bonds at year-end 2011.

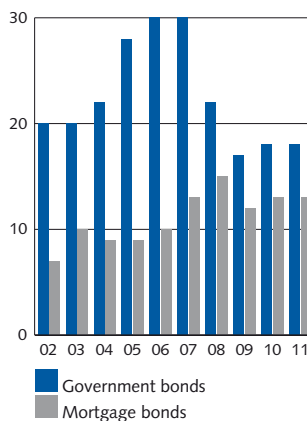
The Swedish bond holdings of the AP funds increased in 2011 to SEK 185 billion.

Chart 8. Investors on the bond market
SEK billion



Sources: The AP funds, Statistics Sweden and the Riksbank

Chart 9. Average turnover per day in the bond market
SEK billion



Source: The Riksbank

52 No detailed information exists as to which types of foreign investor make up the category "non-residential" in statistics for the balance of payments issued by Statistics Sweden (SCB). It is likely that major foreign pension funds represent a major share of this category.

53 The category "Companies and others" is a heading for residual items in the figures provided by Statistics Sweden on investors in the bond market and is derived from the difference between the outstanding stock of securities on the bond market and the holdings of major investors.

Turnover on the bond market

According to the statistics that the Riksbank compiles from its primary monetary policy counterparties, turnover on the bond market fell by just over 30 per cent during the financial crisis 2008–2009. The total daily turnover in government and mortgage bonds averaged SEK 30 billion at year-end 2011, which is a decrease of SEK 12 billion compared with just four years previously (see Chart 9).⁵⁴ It is primarily the turnover in government bonds that has declined during these years. From a level of around SEK 30 billion per day in 2005–2007, turnover has fallen over the last three years to SEK 18 billion per day in 2011. Turnover in mortgage bonds has been more stable and remains unchanged at SEK 13 billion per day in 2011.

The main explanation for the fall in the turnover in bonds is that many investors chose to retain primarily government bonds in their portfolios until they matured due to the financial crisis. When financial unease increases, investors tend to want to retain safe investments such as government securities.⁵⁵

Government bonds are primarily bought and sold on the secondary market. In 2011, over 90 per cent of all the transactions in government bonds were conducted on the secondary market, while less than one per cent took place on the primary market, that is in the form of issues.

Alongside the institutional trading in bonds, trading also takes place in private bonds. A private bond is a debt security primarily aimed at private individuals and other small investors. They are listed on NASDAQ OMX Stockholm or on NDX (Nordic Derivatives Exchange). Unlike institutional trading, this trading is conducted electronically. The most common private bonds are structured products such as index-linked bonds and subordinated debentures. Even though private bonds are a popular saving strategy among private investors in particular, both the total outstanding volume and turnover of these bonds are minor compared with those of other debt securities.

⁵⁴ The statistics compiled by the Riksbank cover approximately 60 per cent of the turnover in repos at monetary financial institutions.

⁵⁵ The phenomenon of increased investments in securities issued by central governments during periods of turmoil is also commonly known as 'flight to quality'.

ISSUES AND THE TRADING STRUCTURE ON THE FIXED-INCOME MARKET

The issuance and trading of securities functions in approximately the same manner in the bond and money markets. The description below therefore applies to securities on both of these markets. However, different trading regulations (market conventions) apply on the two sub-markets. These trading regulations are described in more detail in Appendix 2.

Issues

Government bonds and treasury bills are issued and sold via auctions, in which authorised dealers for the Swedish National Debt Office participate. These dealers comprise a number of banks and securities companies with which the Swedish National debt Office has signed contracts. At present, there are seven or eight such dealers, depending on the kind of security to be auctioned. In their contracts, the dealers undertake to act as *market makers*. Acting as a market maker on this market involves a commitment to submit bids for every issue and to set prices for the securities issued by the state.

The Debt Office also sells treasury bills in already existing loans on an ongoing basis, a process known as *on-tap* sales. On-tap sales are used for short-term liquidity management (up to six weeks). The Debt Office can then customise the maturity of a treasury bill according to its borrowing requirement by choosing both the date of issue and the date when it falls due.

Mortgage institutions also issue their bonds and certificates through authorised dealers, which consist of banks and securities companies. In this case, however, no auctions are held. The bonds and certificates are instead sold on an ongoing basis according to the borrowing needs of the mortgage institutions, i.e. on-tap sales.

Companies often have agreements with one or more banks on borrowing programmes, in which they issue bonds and certificates on specific predetermined terms. As previously mentioned, companies and banks also issue securities abroad and then convert these loans to SEK using derivatives (see the box "Covered interest rate parity").

Alongside the corporate issues aimed at large groups of investors, there is also a market for *private placements*. These often involve bond loans that are issued in their entirety to one or a small number of investors. The terms are subject to negotiation and the issues are largely designed to meet the wishes of the investors. It has become increasingly common for companies to opt for this form of bond borrowing.

Trading structure

The fixed-income market has an active second-hand market. Government bonds are the securities that have the highest turnover, although this turnover has fallen in recent years. Turnover is high because these bonds are issued in large volumes and are exposed to low credit risk.⁵⁶ Mortgage bonds also have a relatively good second-hand turnover. Corporate bonds, on the other hand, are usually retained by investors until maturity, resulting in a lower turnover on the second-hand market. Securities in the money market, treasury bills and other certificates are also retained in the portfolio for their entire terms.

Trading in government bonds takes place by telephone or electronically. At present, electronic trading covers three so-called benchmarks bonds.⁵⁷ The electronic trading system is called SAXESS.

The dealers function as intermediaries in bond trading. The dealers can be described as *interbank participants* and the trading that takes place between these dealers is normally referred to as *interbank trading*. Trade by the dealers with other counterparties, for example industrial enterprises or insurance companies, is referred to as *customer trade*.

Sometimes, there may be a need for trading to take place anonymously. For this purpose, there are special intermediaries known as brokers. Interbank participants may, for example, declare their interests through a broker to avoid having to reveal them to their competitors. Brokers are normally well-established international brokerage companies, whose only clients are institutional participants. Brokers do not trade on their own behalf. Trading via brokers has increased in recent years.

A majority of the dealers in government securities are also dealers in mortgage securities, which means that bid and ask prices are quoted daily. As trade in corporate securities is limited in Sweden, it is unusual for both bid and ask prices to be quoted regularly in the trading system for these securities. It is rather the case that prices for corporate bonds are quoted in response to a client's request.

THE MARKET FOR INTEREST DERIVATIVES

The fixed income market comprises various types of derivative instruments, including interest-rate forwards, interest-rate swaps and interest-rate options. Other variants of derivatives include credit derivatives and structured products.

⁵⁶ In this context, credit risk refers to the risk of failure by the issuers of bonds to fulfil their contractual obligations. When the Swedish state is the issuer of the bond, this risk may be considered to be very slight.

⁵⁷ Benchmark bonds consist of the most frequently traded government bonds, with maturities of two, five and ten years.

Interest-rate forwards

A forward is a contract whereby the parties have undertaken to buy or sell an asset at a predetermined price at a specified time in the future. There is a distinction between *futures* and *forwards*. In a forward, the contract remains unchanged up to the time when the underlying asset is delivered and the payment is made. In a future, on the other hand, the price is adjusted daily in a market valuation process, i.e. the contract is “marked to market”. A future is usually traded on an exchange while forward contracts are often standardised agreements between two parties.

The most common way to use forwards on the Swedish fixed income market is to trade in *IMM-FRA (International Money Market Forward Rate Agreements)*.⁵⁸ These are standardised interest-rate forwards that have deposit contracts as the underlying asset. They have specific maturity dates known as IMM days.⁵⁹ The turnover in IMM-FRAs among the Riksbank’s primary monetary counterparties averaged SEK 162 billion per day during 2011. The equivalent figure for the previous year was SEK 130 billion.

Contracts based on the outcome for the Riksbank’s policy rate, the repo rate, were also introduced a couple of years ago. These are called *RIBA futures* or Riksbank futures.⁶⁰ Like the FRA contracts, these are standardised contracts in which the parties have undertaken to buy or sell an asset at a predetermined price at a specified time in the future. A RIBA contract gives the buyer and seller the possibility to speculate in the level at which the Riksbank will set its policy rate (the repo rate). FRA contracts are primarily used to manage interest rate risks, as these are affected by the repo rate set by the Riksbank. Like the FRA contracts, the RIBA contracts are settled on the IMM days.⁶¹ Both of these types are also fictitious contracts, that is the underlying loan sums are not transferred. The turnover in RIBA is moderate compared to that for IMM-FRA. In 2011, the turnover in RIBA contracts averaged SEK 18.5 billion a day. The corresponding figure for 2010 was SEK 8.8 billion.

Other forwards in the Swedish fixed income market are *forward contracts on bonds* and *on treasury bills*. These contracts are binding

58 However, when a contract for an IMM-FRA matures, the underlying instrument (the 3-month deposit contract) is not exchanged. Instead, there is a cash settlement between the agreed interest rate at the time of entry into the contract and the market rate when the contract matures.

59 IMM (International Money Market) days always fall on the third non-holiday Wednesday in March, June, September and December.

60 See *The Swedish Financial Market 2009*.

61 An important difference between the RIBA and FRA contracts is that the RIBA designated the “March contract” is finally settled against the average repo rate during the three-month period December to March, while the FRA “March contract” is finally settled against the average Stibor during the period March to June.

agreements to buy or sell government bonds, mortgage bonds or treasury bills at a specified date in the future.

Relative to the turnover of IMM-FRAs, the market in bond and treasury-bill forwards is not especially large. The average turnover in bond forwards with government bonds as the underlying asset also fell from SEK 23 billion per day to SEK 20 billion per day between 2010 and 2011. The turnover in forwards with mortgage bonds as the underlying asset decreased from an average of SEK 8 billion per day in 2010 to SEK 6 billion per day in 2011.

The turnover in treasury-bill forwards decreased sharply from SEK 102 million per day to SEK 12 million per day between 2010 and 2011. The turnover in treasury-bill forwards has also decreased over a longer perspective. This decrease is most likely due to the greater usage of IMM-FRA. During the last two years, a lower turnover in the underlying treasury bills may also explain the lower turnover in forwards.

Interest-rate swaps

Swaps are another type of derivative on the fixed-income market. An interest-rate swap is an agreement between two parties to exchange interest payments over a specific period of time. For example, one party can choose to pay a fixed rate of interest and, in exchange, receive a variable rate from the other party.⁶² As swaps are closely related to forwards, investors may use combinations of them to obtain the return and risk desired.

Interest-rate swaps with long maturities are referred to by the abbreviation *IRS* and involve the exchange of interest-rate payments over several years. Another type of interest-rate swap - with shorter maturities - used in Sweden is known by the acronym *Stina* (Stockholm Tomorrow Next Interbank Average). A *Stina* contract is an agreement, lasting up to a maximum of one year, to pay or receive the difference between an agreed fixed rate of interest and a variable overnight rate.⁶³ This enables a participant to protect itself against changes in the variable rate, which, in this case, is the T/N rate. As credit risk is limited in these contracts, the market-listed interest rate reflects monetary policy expectations to a great degree.

The daily turnover in *Stina* swaps among the Riksbank's primary monetary policy counterparties fell from SEK 14 billion to SEK 11 billion between 2010 and 2011.

⁶² The convention is always to state the variable rate as the current Stibor rate, while the fixed rate is stated at the government bond yield (with the same maturity as the swap) plus an addition.

⁶³ Reconciliation takes place in relation to the tomorrow next (T/N) rate, which is the underlying interest rate in the contract.

The TED spread and the basis spread – different measures of risk

The TED spread and the basis spread are two different measures which are used to get an indication of the degree of uncertainty on the interbank market. An increase in these spreads means that the risk premiums that reflect liquidity and credit risks have increased. In other words, the level of these spreads can provide an indication of how well the interbank market is functioning.

The *TED spread* indicates the difference between the interbank rate and the interest rate on risk-free government securities, that is treasury bills. This difference thus expresses how much extra interest a bank requires to lend money to another bank compared with making the same loan to the state. The interbank rate refers to the interest rate for loans without collateral between the banks. In 2011, the three-month Swedish TED spread was lower than at the height of the financial crisis. However, the TED spread is still considerably higher than it was prior to the crisis (see Chart 10).

The *basis spread* is the difference between the interbank rate for a certain period of

maturity, usually three months, and the average expected policy rate during the same period.

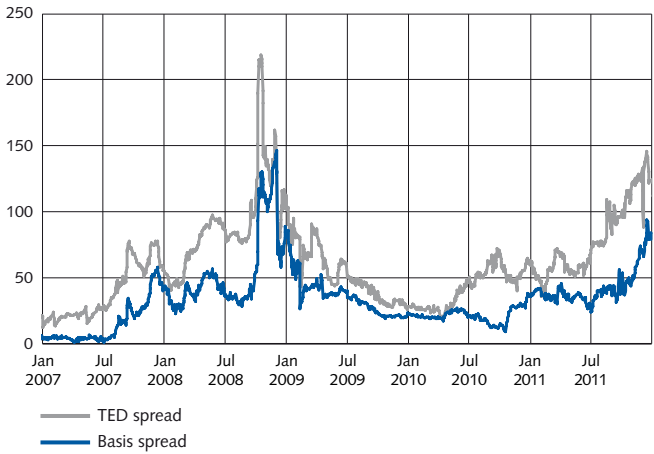
One could say that the basis spread measures the preference for keeping funds liquid rather than tying them up for a certain period. In times of financial turmoil, banks often want to invest less cash at longer maturities, thus widening the basis spread. The measure thus differs slightly from the TED spread, which widens when the banks demand higher costs for interbank loans from each other. Chart 10 illustrates how the basis spread moves approximately like the TED spread, but differences arise between the measures from time to time, meaning that they complement each other.

The expected policy rate is estimated with the aid of the market-listed interest rate of the Overnight Indexed Swap (OIS). The OIS is an interest-rate derivative contract in which two parties agree to pay or receive the difference between a fixed interest rate and a compound variable interest rate. The variable interest rate consists of the geometric mean value of the

overnight rate, measured as the T/N rate, over the term of the contract. The market-listed or fixed interest rate reflects the average expected overnight

rate during the term of the contract. These contracts are designated Stina in Sweden, while the equivalent of the variable overnight rate is Stibor T/N.

Chart 10. Measures of risk on the Swedish interbank market, 3-month maturity
Basis points



Source: The Riksbank

Interest-rate options

The Swedish market for interest-rate options is small. An *option* in the fixed-income market is a contract whereby the holder has the right, but not the obligation, to buy or sell a debt security at a specified price and on a specified date in the future. In turn, the writer of the option has only the obligation to exercise the contract.

In Sweden, trade is conducted in *government bond options*, where the underlying financial asset is a government bond. The turnover in government bond options has fallen sharply in recent years and trading in these instruments is small compared to the trade in other fixed-income derivatives. The estimated average turnover per day amounts to only approximately SEK 2 million.⁶⁴

One type of derivative instrument that has instead become more common in recent years is *structured products*. A structured product is a security that can consist of several different types of financial instrument, for example options, shares and forwards.

A *credit derivative* is a derivative instrument that is constructed to handle credit risks. A credit derivative can also be a structured product.⁶⁵ One example of credit derivatives are so-called *credit default swaps* (CDS). A CDS is a contract between two parties in which one of the parties buys protection against the credit risk in a bond by paying a premium. The seller receives the premium in return for accepting the credit risk. However, trading in credit derivatives and structured products has, up to now, been more highly developed internationally than it has been in Sweden. For example, no CDSs are issued in Sweden, although there are international CDS contracts that also cover credit risk for Swedish banks and companies.

The trading structure on the market for interest derivatives

Derivatives can either be traded directly, that is *over the counter* (OTC), between a buyer and seller or via marketplaces such as stock exchanges. On exchanges, trading in derivatives is standardised, with known maturity dates and contract sizes. Derivatives traded off organised exchanges may either be standardised or tailored to suit the buyer's or seller's requirements. Liquidity, that is the turnover in the derivatives, is generally higher in exchange-traded derivatives. In

64 Due to the low turnover in this instrument, the Riksbank ceased to collect statistics from its primary monetary policy counterparties as at 30 September 2007. During the years 2004–2006, the average turnover in interest-rate options was SEK 130 million per day, with the equivalent figure in 2007 being SEK 11 million.

65 More information about credit derivatives and structured products can be found in the book *Penningmarknaden*, Nyberg, Viotti and Wissén, 2006, and in the publication *Financial Stability 2006:2*, Sveriges Riksbank 2006.

Sweden, derivatives on the fixed-income market are mostly traded OTC and are usually of the standardised type. Some of these OTC derivatives are cleared by NASDAQ OMX Stockholm, which thus acts as a counterparty to the buyers and sellers.⁶⁶ The active trading in derivative instruments is conducted in a market where a number of dealers set prices by telephone or electronically.

The foreign exchange market

The foreign exchange market is an important financial market. What we normally call the foreign exchange market is a worldwide market. It is characterised by trading with large amounts, a large number of participants, low transaction costs and the rapid dissemination of price information. The global turnover in this market every day involves amounts corresponding to tens of thousands of billions of SEK.

This section primarily deals with the *Swedish* foreign exchange market, which is to say the foreign exchange transactions that take place in the international market, where one part of the transaction consists of Swedish kronor (SEK). The Swedish foreign exchange market may also be described as the trade in all currency pairs that is performed by institutions in Sweden, so an account of such trading is provided at the end of this section.

One reason why participants exchange SEK for foreign currency and vice versa is to match revenue and disbursements in foreign currency. These payments are traditionally generated by trade in goods and services or by investments in securities issued in foreign currency. Another common reason is to obtain protection against the foreign exchange risk that arises during trading in goods and services in foreign currency or via investments in foreign securities. Foreign exchange derivatives may be used to avoid risks of this kind. The close link between the fixed-income and foreign exchange markets is explained in the box *Covered interest parity* further on.

SEK may be exchanged either by *spot transactions*, where the deal is concluded directly and liquidity or money is normally received after two days, or via a derivative instrument, when liquidity is received at some other agreed time (see the section “Frequently used instruments in the Swedish foreign exchange market”, below).

In relation to the fixed-income market and the stock market, the largest turnover in terms of amounts is on the foreign exchange market. However, a large share of the number of foreign exchange transactions is not conducted there. This is because banks and

⁶⁶ See also the description in the chapter *The financial infrastructure*.

enterprises that operate internationally neutralise a large share of their income and expenditure in foreign currencies internally. For example, sales in EUR can be balanced against purchases of goods in EUR. In this way, a company can, for example, minimise the hedging it needs. This so-called *netting* does not therefore generate any flows in the foreign exchange market, but does offer a method for dealing with transactions in foreign currency without requiring the exchange of currency for each and every one of them. When a bank or a company needs to reduce or raise the amount of foreign exchange in its account with a foreign bank however, it normally turns to the institutionalised foreign exchange market.

Covered interest rate parity

There is a close connection between the fixed-income and foreign exchange markets through the foreign exchange derivative market. One effect of this connection is that it provides two options to major Swedish participants when borrowing money. They may, in theory, choose – at the same interest cost – either to issue securities in Sweden or to issue securities abroad.

Loans raised abroad can be converted to SEK through the use of currency derivatives. The reason for this is that exchange rates in the spot and forward markets are affected in this context by interest rates in the respective countries. In other words, the difference in current and expected interest rate levels between two countries is reflected in the price difference between the spot and the forward price for the currency pair of the two countries. The total cost will therefore be the same, irrespective of the currency

in which the loan is taken.⁶⁷ This link is usually referred to as *covered interest rate parity* (CIP).

If, for example, a Swedish company has to make a payment in USD in three months, the company can choose between two alternatives. It can either purchase USD for SEK today and invest these dollars at US interest rates for three months (for example, by buying US government securities) or it can invest SEK at Swedish interest rates for three months and, at the same time, purchase dollars forward, i.e. with delivery and payment in three months at a price in SEK that is known today.

Any difference in prices between these two options would provide opportunities for arbitrage⁶⁸, which would immediately be taken up by participants in the market. As a result, the prices on the fixed-income and foreign exchange markets will be adjusted in such a way that interest rate parity prevails, i.e. that the total cost

⁶⁷ In practice, a difference between these alternatives may still arise for an individual player. This may be because different players have access to different information or that the market is not effective for some reason.

⁶⁸ Arbitrage is a term that describes the use of imbalances, expressed as differences in market prices, between two or more markets.

is equally high regardless of where the loan was raised. This relationship also enables major Swedish participants to borrow abroad and then use foreign exchange derivatives (above all, foreign exchange swaps) to convert their foreign currency loan to SEK.

The interest rate parity relationship was clearly illustrated during the financial crisis. When, for various reasons, market rates did not reflect the market participants' 'true' expectations, the price of foreign exchange forwards was changed instead.

FREQUENTLY-USED INSTRUMENTS IN THE SWEDISH FOREIGN EXCHANGE MARKET

The following section presents the instruments most commonly used in trading where Swedish kronor constitute part of the transaction.

Spot

The definition of spot is “a system of trading in which commodities are delivered and paid for immediately after a sale”.⁶⁹ In the foreign exchange market, a spot transaction means that payment and delivery in a foreign exchange transaction will take place immediately, in practice two banking days after the completion of the trade.

Derivatives

Derivative instruments are used, for example, as a means of spreading and managing risks. The choice of derivative instrument is made according to the purposes of the participants. The derivative instruments used in the foreign exchange market are *foreign exchange forwards*, *interest rate* and *foreign exchange swaps* and *foreign exchange options*.

Foreign exchange forwards are used by companies to hedge currency risk when handling payments to and from abroad. A foreign exchange forward is an undertaking to purchase or sell the currency in the future on a set date at a set price.

One of the most common instruments in the foreign exchange market is *foreign exchange swaps* or FX swaps. A foreign exchange swap works as an agreement between two parties to simultaneously buy and sell one currency against another with two different value dates. The currency is usually bought on the spot date (with liquidity in two days' time) and sold as a forward sale (that is at some point in the future). These swaps could be regarded as the equivalent of the money market's repos. After all, a repo also consists of a spot and a forward transaction that are linked to each other. However, in the fixed-income market, it is a security and not a currency that is sold and repurchased at a later date (see the section on “The fixed-income market – the money market's shortest segment”). FX swaps can be classified according to maturity: short swaps with maturities of less than two days (spot) and longer swaps with maturities from spot up to (normally) one year, or longer. Short swaps are normally used to manage liquidity,

⁶⁹ Concise Oxford Dictionary, 11th edition.

while longer swaps are pivotal instruments for the banks in their pricing of interest rate spreads for different currency pairs.⁷⁰

A *cross currency basis swap* (or more simply a *currency swap*) is another type of instrument that is also a combination of transactions. This instrument is an agreement in which one party borrows a currency from another party at the same time as it pays the counterparty the same amount in another currency. During the contract time, interest payments are exchanged for each currency⁷¹, and, when the contract matures, the same spot rate that the parties paid when the contract was agreed is repaid. Cross currency basis swaps are commonly used to fund foreign currency investments, and are utilised by both financial institutions and their customers. Most contracts have long maturities, from one year to occasionally as long as 30 years.

Options are also traded on the foreign exchange market. These are known as *foreign exchange options*. Option transactions in the foreign exchange market are structured in the same way as in the fixed-income market, with the difference that the underlying asset is a currency.⁷² Foreign exchange options may be used, for example, to reduce the foreign exchange risk in future transactions. The buyer of a foreign exchange option has the opportunity, but not the obligation, to exercise the option on the date that the payment falls due. If the market price is more advantageous than the foreign exchange rate at which the option entitles the holder to buy, the buyer will probably decide not to exercise the option.

TRADING STRUCTURE AND TURNOVER

Trading in SEK does not differ significantly from trading in other currencies on the foreign exchange market. This account may therefore be considered to apply to the foreign exchange market in general. Transactions on the foreign exchange market are conducted through so-called *market makers* who, on request, quote bid and ask prices mainly using electronic trading systems. The more traditional telephone trading is still important, but has decreased considerably in recent years. A standard spot transaction by telephone involving the EUR/SEK currency pair is EUR 5 million. Trading in the electronic systems is more order-driven⁷³ and standard transactions do not exist to the same extent. Like fixed-income derivatives, Foreign exchange derivatives in SEK are only traded OTC (see the description in the

⁷⁰ Currency rates are stated in pairs, such as USD/SEK, EUR/USD, GBP/SEK, EUR/SEK.

⁷¹ For example, Stibor for SEK and Euribor for EUR.

⁷² See the description in the section "The fixed income market – Derivatives in the fixed income market".

⁷³ Orders submitted are automatically matched without the brokers having to contact one another.

section “The fixed income market – Trading structure in market for interest derivatives”). Turnover in the Swedish foreign exchange market is described from two separate perspectives at the end of the section.

Interbank trading and customer trading

Every third year, the Bank for International Settlements (BIS) publishes the study *Report on global foreign exchange market activity*, which is based on surveys from individual central banks.⁷⁴ According to the latest study, 39 per cent of turnover on the international foreign exchange market during April 2010 consisted of what is called *interbank trading*. This refers to trade between interbank participants. According to the results of the study carried out in 2007, interbank trading's share of the total turnover was approximately 42 per cent. The primary reason for the slight decline in the proportion of interbank trading is increased activity in other segments. Above all, trade between dealers and other financial institutions such as hedge funds, pension companies and insurance companies has increased heavily in recent years. In 2010, this trade accounted for approximately 48 per cent of the global turnover, according to the BIS survey. Three years previously, these participants accounted for 40 per cent of the turnover.

Interbank trading is often the result of *customer trading*, that is transactions between dealers and customers. Customers are, generally speaking, all participants other than dealers. If the customer, for example a Swedish company, needs EUR to execute a payment today, it will turn to its bank, which will quote a EUR rate. If the bank wants to restore its foreign exchange allocations to the position prevailing before the sale of EUR, it will buy EUR for SEK from another bank. This transaction between the two banks may give rise to further interbank trading. The pricing of currency is largely determined on the interbank market, where bid and ask prices are continuously listed for different currencies against SEK. The prices that are quoted to Swedish customers are therefore very often a result of pricing on this market.

Electronic trading

Foreign currency trading is increasingly shifting from telephone trading to order-driven trading using different electronic platforms and systems. Almost all of the spot trade in SEK between the Riksbank's counterparties is performed via electronic systems. For example, SEK

74 This survey is known as “The Triennial Central Bank Survey”. More information is available at www.bis.org.

trading is conducted via systems such as Reuter Dealing 3000. Most of the major currency pairs (such as EUR/USD, GBP/USD, USD/JPY, and EUR/JPY) are traded via the *Electronic Broking System (EBS)*.

In the trading conducted by the Riksbank's counterparties on behalf of their customers, including major companies, the major banks often use electronic platforms that they have developed in-house. These are called *single-bank platforms* and quote the customer rates only from the bank itself. However, there are also *multi-bank platforms*, in which several banks participate. These quote the customer rates from several banks, enabling the customer to compare. A majority of customer trading in SEK is computerised, but some trading still takes place over the telephone. This pattern also generally applies to interbank trading in foreign exchange derivatives.

In the case of electronic platforms, there are systems that are anonymous and have central clearing, for example FXMarketSpace. Increased risk awareness has also led to an increase in the demand for safe services for managing currency transactions after the transaction itself has taken place. CLS is one example of such a service that offers the settlement of currency transactions (see also the chapter "The financial infrastructure").

Some electronic trading takes place in the form of algorithmic trading. Algorithmic trading is securities trading in which an order is generated by a computer system on the basis of predetermined instructions and parameters. In algorithmic trading, computers are thus programmed so that they can execute an order according to certain predetermined codes. These codes are known as trading algorithms. In addition to trading in currency, algorithmic trading also takes place in trading in shares. This is discussed in more detail in the section on the Stock market under the heading Trading structure. This also describes the term high frequency trading, which is a form of algorithmic trading.

Cross trading

Trading in currency usually takes place via one of the largest currencies. This means, for example, that the price of SEK relative to NOK is set via the euro, which is what is known as a *hub currency*. By starting from the price for NOK against EUR and for SEK against EUR, a price for SEK against NOK is obtained. This is usually called "*cross trading*".

Cross trading is a practical arrangement, as the banks would otherwise need to price SEK against every imaginable currency. On efficient markets, the currency that is used for pricing is unimportant,

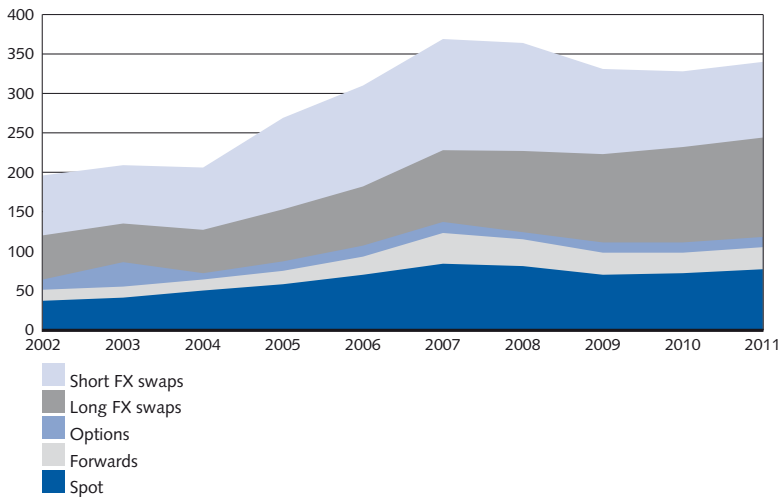
as long as the transaction costs are low. The reverse, that is inefficient markets, would create opportunities for risk-free profits, known as arbitrage. Then the participants would be able to sell SEK at a high price against a currency and buy SEK back at a low price against another currency.

Unlike in spot trading, derivative trading in SEK against other currencies does not take place using EUR as a hub currency, but USD. Until the end of the 1960s, the hub currency for derivatives trading was the pound sterling (GBP). A number of market conventions applying to foreign exchange trading in SEK are also described in Appendix 2.

Turnover in SEK

There are no comprehensive statistics on turnover in SEK on the foreign exchange market. However, the Riksbank collects turnover statistics from its counterparties in foreign exchange transactions where one side of the foreign exchange transaction is comprised of SEK. At year-end 2011, these counterparties consisted of the four major Swedish banks and five large international participants.⁷⁵ The Riksbank's counterparties account for around a half of the global

Chart 11. Average daily turnover in the Swedish foreign exchange market SEK billion



Note. The division into short swaps with a maturity of up to two days and long swaps with a maturity from two days up to 18 months reflects the definition used by the Riksbank when collecting turnover statistics. This definition of short and long swaps differs from the market's definition as described in the section on derivatives. Source: The Riksbank

⁷⁵ More information about the Riksbank's counterparties is available at www.riksbank.com.

turnover in SEK.⁷⁶

According to the statistics collected by the Riksbank, average turnover amounted to SEK 340 billion per day during 2011, which is marginally higher than in the previous year (see Chart 11).⁷⁷

Of this, the daily turnover in spot transactions averaged around SEK 77 billion per day in 2011, an increase of over SEK 5 billion per day compared to the previous year.

The turnover in foreign exchange swaps was approximately SEK 222 billion per day in 2011, which was marginally higher than in 2010. A possible explanation of the higher turnover in *longer* foreign exchange swaps is that Swedish participants are funding their operations to a greater extent by issuing certificates in foreign currencies. As these participants still need kronor, but wish to minimise the currency risk, they use foreign exchange swaps. The turnover in foreign exchange swaps with maturities from two days to 18 months increased by SEK 5 billion to SEK 126 billion between 2010 and 2011.⁷⁸ The turnover in foreign exchange swaps with maturities up to two days remained constant between 2010 and 2011 at SEK 96 billion.

The turnover in foreign exchange options among the Riksbank's counterparties was also constant between 2010 and 2011, and amounted to SEK 13 billion. The turnover in foreign exchange forwards in SEK at the Riksbank's counterparties totalled approximately SEK 28 billion per day in 2011. This represented an increase of around SEK 2 billion, compared to the figure for 2010.

According to the BIS study, over three-quarters of the trade in SEK took place outside Sweden in April 2010. Banks based in the United Kingdom accounted for 31 per cent of the turnover. There may be several explanations for this major foreign participation in trade in SEK. To begin with, London is the dominant financial centre for the global foreign exchange market and many of the largest banks are based there. In addition, the Swedish krona and securities issued in SEK are important elements in well-diversified foreign portfolios focused on Europe.

Other countries where there is extensive trading in SEK are Denmark (18 per cent), the United States (9 per cent) and Finland (8 per cent).

Foreign exchange trading in Sweden

76 According to the BIS study "The Triennial Central Bank Survey" and the Riksbank's turnover statistics for the foreign exchange market (the SELMA database).

77 Only one leg of the swap transaction is included in these figures.

78 The division into short swaps with a maturity of up to two days and long swaps with a maturity from two days up to 18 months reflects the definition used by the Riksbank when collecting turnover statistics. This definition of short and long swaps differs from the market's definition as described in the section on derivatives and may thus refer to both currency swaps according to the market's definition and cross currency interest swaps.

Above, we have described the Swedish foreign exchange market, defined as all the foreign exchange trading where SEK forms one leg of the transaction, wherever in the world the transaction takes place. An alternative definition of the Swedish foreign exchange market is all the foreign exchange trading that takes place in Sweden, irrespective of the currency pairs involved.

One issue examined in the BIS study previously cited was the foreign exchange undertaken in April 2010 by the four major Swedish banks based in Stockholm. According to the survey, Sweden is the 15th largest trading venue in foreign exchange in global terms. Between 1998 and 2010, foreign exchange trading in Stockholm increased by around 9 per cent per year. The turnover increased from an average of USD 16 billion per day in 1998 to an average of USD 45 billion per day in 2010.

The currency pair with the highest turnover in Stockholm is USD/SEK. However, its share of the total turnover has fallen somewhat, from 39 per cent in 2007 to 27 per cent in 2010 (see Table 2). The next largest currency pair is EUR/USD. This represented 25 per cent of trading in Stockholm in 2010. The third largest currency pair was EUR/SEK. In 2010, this currency pair accounted for 18 per cent of the trade in Stockholm. Further down the line, the ranking of the most frequently traded currency pairs in Stockholm varies from year to year.

The largest single currency traded in Stockholm in April 2010 was not SEK but USD, which formed one part of approximately 69 per cent of all the currency pairs traded. This was followed by EUR (around 50 per cent) and SEK (around 50 per cent).

Table 2. The six currency pairs with the highest turnover in Stockholm
Per cent

	1995		1998		2001		2004		2007		2010	
1	USD/SEK	28	USD/SEK	28	USD/SEK	33	USD/SEK	31	USD/SEK	39	USD/SEK	27
2	DEM/USD	19	DEM/USD	16	EUR/USD	14	EUR/USD	16	EUR/USD	26	EUR/USD	25
3	DEM/SEK	18	DEM/SEK	7	EUR/SEK	12	EUR/SEK	11	EUR/SEK	23	EUR/SEK	18
4	USD/CHF	4	USD/JPY	4	GPB/USD	4	GPB/USD	5	GPB/USD	2	GPB/USD	3
5	DEM/FRF	2	GBP/USD	2	USD/JPY	3	USD/JPY	2	USD/JPY	4	USD/CHF	2
6	USD/JPY	2	GBP/SEK	2	GBP/SEK	1	USD/CHF	2	USD/CHF	2	USD/JPY	2
	Others	27	Others	40	Others	32	Others	33	Others	4	Others	23
	Total	100	Total	100	Total	100	Total	100	Total	100	Total	100

Note. The figures represent the month of April.
Source: BIS

The stock market

The stock market helps to perform two of the financial market's basic functions: to convert savings into funding and to manage risks. It enables investors to channel their savings to companies that need capital. This gives investors access to investments with relatively high, albeit fluctuating, yield. At the same time, the companies redistribute a proportion of their risks to investors who are willing to bear them.

Share (or equity) is the term for the owners' shares in a company (limited company). The capital contribution made by the owners in return for these shares comprises the company's *share capital*. A share is essentially a claim on the company's assets and profits after the company's creditors, for example the company's lenders, have received their portion. As the value of this claim is determined by the profitability of the company, share capital can be regarded as risk capital. However, the shareholders' risk is limited in the sense that they cannot lose more than the amount they have invested in the company. A part of the company's profits is distributed to the shareholders in the form of dividends. In Sweden, these dividends are usually paid out once a year. The remaining profits are added to the company's equity capital. A shareholding also entails co-determination rights in the company in that each share carries some form of voting right at the company's annual general meeting.⁷⁹

Companies that are expanding and need an injection of capital may issue new shares, issue bonds on the fixed-income market or borrow money, for example from a credit institution. Due to the risks associated with lending to expanding businesses, companies' funding needs can rarely be met fully on the fixed-income and credit markets, or at least not at a reasonable cost. Some of these companies therefore meet their funding needs by issuing new shares that are sold to investors who are willing to take on risk.

The mediation of risk capital takes place most easily and most efficiently on an organised marketplace for shares, for example a stock exchange. Companies use stock exchanges to issue shares and investors to buy and sell shares.

A description of the stock market in Sweden is presented below. We start by describing the issuers and investors on the market. After this, we present the role of the marketplaces in share trading, and then describe share trading at NASDAQ OMX Stockholm and other

⁷⁹ The normal principle is one share/one vote, although differentiated voting rights also exist. For example, there may be class A shares in a limited company, which confer ten votes per share, and class B shares, which only confer one vote per share.

marketplaces in Sweden. The section concludes with an account of the trade in share-related derivatives.

The growing integration of the European stock markets is making it increasingly difficult to determine what can be considered to be a Swedish share. Throughout this section, the term Swedish shares is used to designate the shares listed on Swedish marketplaces. Certain companies that should be defined as foreign companies, for example those with head offices located abroad, can still list their shares on Swedish marketplaces. These will thus still be designated "Swedish" shares. In the same way, Swedish shares that are only listed on a foreign marketplace can be traded overseas and are not discussed in this section.

ISSUERS

Far from all Swedish companies may obtain funding by issuing shares. To be a limited liability company, which just less than one-third of all Swedish companies are at present, a company must have capital in an amount of SEK 50 000. But only those limited liability companies with at least SEK 500 000 in capital may offer their shares for public trading.

Limited liability companies that do not sell their shares to the public are referred to as *private limited companies*, while companies whose shares are sold to the public are called *public limited companies*. Both established companies and companies that are not yet ready for stock exchange listing or other forms of public share trading can opt to be classified as private limited companies. In certain cases, they can receive funding in the form of private venture capital. Such funding is sometimes channelled via a special form of intermediary, a venture capital company. These are described in more detail in the chapter Financial intermediaries.

INVESTORS

Shareholding in Sweden is widespread and extensive. At year-end 2011, the total value of the shares listed on Swedish marketplaces amounted to approximately SEK 3 500 billion (see Table 5). This is a decrease of slightly more than 17 per cent since 2010, which is largely the result of a general downturn in share trading during the year. Table 3 shows that foreign investors owned about 38 per cent of this SEK 3 500 billion. Foreign investors thus answer for the largest portion of shareholdings, which they have done since 1996. Swedish households' direct shareholdings amounted to just over 11 per cent.

But the households also own shares indirectly through investment funds and savings in insurance and pension schemes. At the end of 2011, the proportion of shareholdings held by financial companies amounted to approximately 28 per cent, while non-financial companies held 12 per cent.

MARKETPLACES

Marketplaces have two main tasks: providing assistance to companies wishing to offer shares for sale and administering the technical systems and the regulatory framework that make share trading possible.

There are currently two categories of marketplace: regulated markets (including traditional stock exchanges) and trading platforms, which are usually called MTFs (Multilateral Trading Facilities).

There were 529 public limited companies in Sweden at the end of 2011 (see Table 4). Of these, 275 were listed on a regulated market and 254 were traded on an MTF. On a *regulated market*, companies must comply with the requirements of Swedish legislation and of the marketplace itself. These requirements apply to factors such as the company's size, provision of information and corporate governance. A regulated market is usually referred to as a stock exchange.

Table 3. Holdings of shares listed on Swedish marketplaces, per sector
Per cent

SECTOR	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Non-financial companies	8.5	9.2	8.7	8.4	9.0	9.4	9.5	9.1	9.2	12.0
Financial companies										
Banks, finance institutions, etc.	2.5	2.3	3.4	2.8	2.5	2.2	1.6	2.1	2.2	1.8
Investment companies ¹	5.6	5.6	5.3	5.3	5.2	5.6	5.4	5.3	5.4	5.3
Mutual funds	10.5	11.6	11.1	11.8	11.2	10.9	11.4	12.6	12.3	11.9
Insurance companies, pension institutions	10.4	9.2	8.7	8.7	8.1	8.3	9.0	9.1	8.9	8.7
Financial companies, total	29.0	28.7	28.5	28.6	27.0	27.0	27.4	29.1	28.8	27.7
Public sector										
Central government	5.7	5.5	5.2	4.4	4.5	4.5	4.6	4.7	3.8	3.1
Local government	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0
Social insurance funds	4.1	4.1	3.8	3.5	3.2	3.2	3.5	3.4	3.1	3.3
Public sector, total	10.0	9.8	9.2	8.0	7.8	7.8	8.2	8.1	6.9	6.4
Households	14.3	14.4	15.0	14.8	14.3	13.4	14.5	13.9	13.3	11.2
Non-profit organisations										
Companies	1.8	1.8	1.8	2.1	2.1	2.0	2.1	1.8	1.6	1.7
Households	2.9	2.9	2.8	2.7	2.7	2.4	2.5	2.5	2.4	2.2
Non-profit organisations, total	4.7	4.7	4.6	4.8	4.8	4.4	4.6	4.3	4.0	3.9
Outside Sweden	33.5	33.1	33.9	35.3	37.2	38.0	35.8	35.4	37.8	38.7
ALL SECTORS, TOTAL	100	100	100	100	100	100	100	100	100	100

1. Investment companies are defined as limited companies with ownership spread among a great number of natural persons, which primarily manage shares and other securities with a significant risk spread across industries and companies. This definition is derived from Statistics Sweden's Standard Classification by Institutional Sector 2000.

Source: Statistics Sweden

MTFs are marketplaces that can be run by a stock exchange or a securities institution and offer simpler opportunities for trading than a regulated market. Such trading can include both shares that are already being traded on a stock exchange and shares that are only traded on the MTF. Those companies whose shares are only traded on an MTF have a simpler and less detailed framework with which to comply. MTFs are thus appropriate for use by newer and smaller companies, as the lower requirements make trading less expensive for companies. On the other hand, trading via MTFs usually entails greater risks for investors. However, the MTF itself can choose to apply the stricter requirements of the regulated markets.

Some MTFs use the business concept of offering trading in shares that are already listed on a regulated market. These shares therefore come from companies that already fulfil the requirements for exchange-traded shares, and trading in these shares on an MTF thus does not entail any increased risk.

Regulated markets and MTFs must also adopt regulations that govern information related to trading. Companies intending to trade on these marketplaces must undertake to provide the market with information concerning decisions and events that may influence share prices. The reason for this is that all traders should have the possibility of having access to the same information at the same time. This is intended to create confidence in the market and protect investors.

At year-end 2011, there were two regulated marketplaces in Sweden: NASDAQ OMX Stockholm, which has the dominant position, and Nordic Growth Market (NGM). There were four MTFs in Sweden at the end of 2011: *First North*, *Nordic MTF*, *Burgundy* and *Aktietorget*⁸⁰. Swedish shares can also be traded on certain overseas MTFs that have specialised in providing a marketplace for shares that are already listed on a stock exchange and thereby fulfil the listing requirements.

Table 5 shows that the market value of NASDAQ OMX Stockholm was SEK 3 496 billion, or 99 per cent measured as the market value of the shares traded on Swedish marketplaces. This is despite the fact that only 49 per cent of the public limited companies are listed on NASDAQ OMX Stockholm. The market value of NASDAQ OMX Stockholm decreased by about 17 per cent compared to 2010 as a result of a general downturn in share trading during the year.

The overwhelming majority of share trading in Sweden is

⁸⁰ Since 1 January 2001, Burgundy has had a permit to run a regulated market for trading in warrants, certificates, structured products and fund units. Burgundy has also received a permit to run an MTF.

conducted in an electronic trading system belonging to a stock exchange or at an MTF. But it is also possible to trade shares outside these. A portion of the trading that takes place outside these systems is conducted in accordance with NASDAQ OMX Stockholm's regulations and is reported to NASDAQ OMX Stockholm as normal stock exchange transactions. Examples of such trading include that taking place via telephone or email, or via chats over the information system Bloomberg. The remainder of the trade conducted outside the system takes place directly between the buyer and the seller (a practice also known as OTC trading) and is not subject to the regulations of any marketplace.

TRADING IN SHARES ON NASDAQ OMX STOCKHOLM

NASDAQ OMX Stockholm is the predominant marketplace for Swedish shares. The following section describes the members of NASDAQ OMX Stockholm, its trading structure and turnover.

Members of NASDAQ OMX Stockholm

All trading on NASDAQ OMX Stockholm is conducted through its members. Both large and small investors have to go through one of these members in order to buy or sell shares. The members consist of Swedish securities institutions, i.e. securities companies and credit institutions which are licensed by Finansinspektionen (the Swedish Financial Supervisory Authority) to engage in securities trading. Members also include remote members, i.e. foreign companies that engage in securities trading in Sweden from abroad. NASDAQ OMX Stockholm has 84 share trading members, 42 of which are remote members.⁸¹ If members in derivative and bond trading are included, the total number of members of NASDAQ OMX Stockholm is 124. In principle, non-financial companies and branches of foreign companies

Table 4. Swedish marketplaces 2011 (2010 in brackets)

	NUMBER OF COMPANIES		SEK BILLION MARKET VALUE	
NASDAQ OMX Stockholm	259	(258)	3 496	(4 230)
NGM Equity	16	(22)	1,3	(2)
Aktietorget	125	(130)	5,5	(8)
First North	110	(99)		(26)
NGM Nordic MTF	19	(18)	1,1	(1)
Total	529	527	3 504	4 267

Sources: NASDAQ OMX Stockholm and the Riksbank's own calculations

⁸¹ NASDAQ OMX Stockholm membership statistics 2011.

can also be members of the stock exchange. At present, however, there are no members in this category in NASDAQ OMX Stockholm.

Trading structure

Share trading on NASDAQ OMX Stockholm takes place electronically through the matching of orders in the trading system INET Nordic.⁸² The trading day begins and ends with an auction, which is intended to find the prices that provide the largest number of finalised orders for each share. During the trading day, buyers and sellers place buy or sell orders with their securities institution. Every order is then forwarded to brokers for entry into an order book in the trading system.

Many exchange members provide Internet-based services for placing orders. This can often entail lower transaction costs (for example brokerage fees⁸³) than when trading via securities companies and banks.

When a deal is closed, information is sent to Euroclear Sweden, where the transaction is settled.⁸⁴ Settlement entails the shares being deregistered from the seller's account and registered on the purchaser's account (if the customer has a custody account at a broker, the transaction is instead registered in the custodian's management account at Euroclear Sweden). At the same time, payment for the transaction is made via the buyer's and seller's banks. Only when this is done is the transaction completed (usually three days after the deal is closed). More information about securities settlement is available in the chapter "The financial infrastructure".

The electronic trading facilities have provided the possibility of conducting what is known as *algorithmic trading* on the stock market. Algorithmic trading can be described as trading in which the execution of an order is delegated to a piece of software on the basis of predetermined instructions and parameters. In algorithmic trading, computers are thus programmed so that they can automatically carry out an order on the basis of set codes. These codes are known as trading algorithms.

The concept of algorithmic trading also covers *high frequency trading* (HTF). High frequency trading is electronic trading carried out by algorithms that take decisions on entering orders and carrying

82 INET Nordic was launched on the markets NASDAQ OMX Nordic and NASDAQ OMX Baltic in February 2010. This is the same system that NASDAQ OMX uses on its US exchange and on its European trading platform NASDAQ OMX Europe. The fixed-income market on NASDAQ OMX Nordic still uses the old system SAXESS.

83 Brokerage fees are charged by a broker to a client when trading shares, for example.

84 Shares traded on NASDAQ OMX Stockholm and belonging to the Large Cap list are cleared at the central counterparty European Multilateral Clearing Facility (EMCF). More information about central counterparties is available in the chapter *The financial infrastructure*.

out transactions at a very high frequency. In only microseconds, the computer searches a large number of marketplaces and then places its order where the market conditions for a transaction are considered to be best. This type of trading is most common on the stock market, but also occurs on other markets, such as the foreign exchange market. NASDAQ OMX Stockholm has estimated that algorithmic trading accounted for approximately 45 per cent of all trading on the exchange in 2011 and that high frequency trading amounted to about 13 per cent of all trading.⁸⁵

Listed companies

At the end of 2011, there were 259 companies listed on NASDAQ OMX Stockholm.⁸⁶ Public companies listed there are presented on the Nordic list, which also includes the public companies listed on the stock exchanges in Helsinki, Copenhagen and Reykjavik.

The Nordic list has entailed a harmonisation of the listing requirements. To be listed on NASDAQ OMX Nordic, the expected market value of the shares must be no less than EUR 1 million. Further requirements are that there should be a sufficient number of shareholders and that the company has complete accounting documentation going back at least three years. The company must also show stable profitability or have financial resources to cover operations for at least 12 months.

The Nordic list is divided into three segments according to the market value of the companies: Large Cap, Mid Cap and Small Cap. The Nordic Large Cap segment comprises companies with a market capitalisation of more than EUR 1 billion. Companies with a market value of between EUR 150 million and one billion are placed in the Nordic Mid Cap segment. The segment Nordic Small Cap includes companies with a market value of less than EUR 150 million.

On the stock exchange, new capital can be raised through new share issues, i.e. listed companies increase their equity capital by issuing new shares. New capital can also be raised through initial public offerings (IPOs), i.e. when new companies are listed on the stock exchange.

⁸⁵ For further reading on high-frequency and algorithmic trading on the Swedish stock market, see Finansinspektionen's investigation from 2011 *Investigation into high frequency and algorithmic trading*.

⁸⁶ Three companies are also listed on the Xterna list, which has been established by NASDAQ OMX Stockholm for trading in shares in foreign companies not listed on the stock exchange.

Turnover and market value

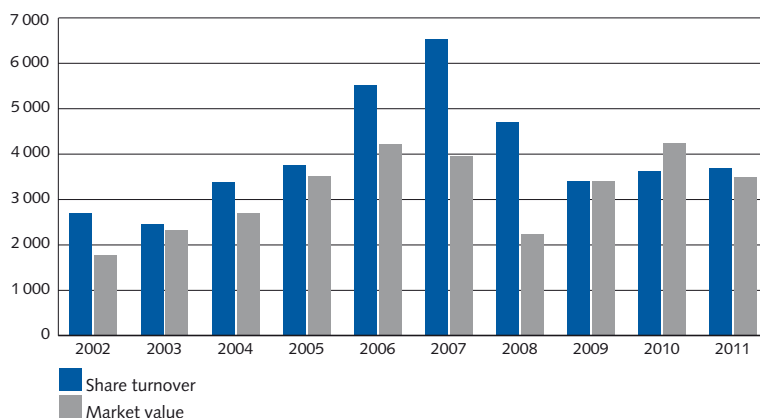
The turnover in share trading on NASDAQ OMX Stockholm was just over SEK 3 684 billion in 2011. This is slightly more than in 2010, but significantly less than in 2008, when turnover peaked (see Chart 12). Even if it has not reached the same level as prior to the financial crisis (2007-2008), activity on the stock market has increased during the year. The number of transactions increased by 30 per cent to slightly fewer than 57 million. The average turnover per trading day amounted to SEK 14.5 billion (see Table 5). However, the turnover on the stock market in terms of SEK is about half that on the fixed-income market. On the other hand, the number of transactions is considerably greater than on the fixed-income market (see the section on the fixed-income market). At year-end 2011, market value amounted to SEK 3 496 billion, a decrease of 17 per cent compared with the previous year.

SHARE TRADING ON OTHER SWEDISH MARKETPLACES

Regulated markets

At year-end 2010, there were two regulated marketplaces. In addition to NASDAQ OMX Stockholm, Nordic Growth Market (NGM) has also been licensed by Finansinspektionen to operate a stock exchange in Sweden. NGM has specialised in small and medium-sized growth companies and offers listing and share trading on the NGM Equity list. At year-end 2011, a total of 16 companies were listed on NGM Equity, a decrease of 6 companies compared with the previous year.

Chart 12. Share turnover and market value on NASDAQ OMX Stockholm
SEK billion



Source: NASDAQ OMX Stockholm

In addition, NGM offers derivatives trading on the Nordic Derivatives Exchange (NDX) list.

Trading facilities (MTFs)

At year-end 2011, there were four MTFs in Sweden: First North, Nordic MTF, Burgundy and Aktietorget.

First North is intended for small companies, new companies and growth companies and is operated by NASDAQ OMX Stockholm as an alternative marketplace. First North includes companies in Denmark, Finland, Iceland and Sweden. The companies that are traded on First North are not listed on NASDAQ OMX Stockholm. However, they use the same trading system, INET Nordic, as NASDAQ OMX Stockholm. Information about prices, volumes and order depth⁸⁷ is published in real time through the same channels as for the shares traded on NASDAQ OMX Stockholm.

However, NASDAQ OMX Stockholm does not take responsibility for monitoring the companies listed on First North. Instead, every company has a *Certified Adviser* who, by agreement with NASDAQ OMX Stockholm, is responsible for that company's compliance with the requirements for trading on First North and with the requirements for the continuous provision of information. The Certified Advisers are, in turn, required to enter into agreements with the companies for which they are responsible. These agreements specify the requirements for trading on First North, including those regarding share distribution, market value and information. At year-end 2011, a total of 110 companies were traded on First North.

In February 2009, a new segment, First North Premier, was introduced into First North. The companies trading on the First North

Table 5. Some key figures for share trading on NASDAQ OMX Stockholm

Market value 31/12 2009, SEK billion	3 496
Turnover 2009, SEK billion	3 684
Average daily turnover, SEK billion	14.5
Annual turnover, billion shares	46.2
Total number of deals closed during the year, million	56.6
Average amount per deal	65 079
Average number of deals per day	223 558
Rate of stock turnover, per cent	95.6

Source: NASDAQ OMX Stockholm

⁸⁷ The order depth shows how many shares the purchaser wishes to buy and the seller wishes to sell and at what price.

Premier segment must fulfil the same requirements for accounting and information as those companies trading on NASDAQ OMX Nordic.

NGM operates Nordic MTF, a trading facility for small to medium-sized growth companies. The electronic trading system provided by NGM for share trading is known as Elasticia and was introduced in November 2010. NGM is responsible for monitoring the listed companies and for the trade in the companies' shares. At year-end 2011, a total of 19 companies were listed on Nordic MTF.

Burgundy is an MTF operated by leading banks and investment companies in the Nordic region, which are also the participants allowed to trade on this facility. Institutional and individual investors may only trade through one of these participants. These, in turn, ensure that the transactions are carried out in accordance with the "best possible result" principle.⁸⁸ This means that an order is only executed on Burgundy if the price is better there than on other marketplaces that offer trading in the security concerned. Trading is offered in all the shares listed on NASDAQ OMX in Sweden, Denmark and Finland, on NGM, and on the Oslo Stock Exchange in Norway.⁸⁹

The fourth Swedish MTF is Aktietorget, which is intended for small and growing companies. Trading takes place through the INET Nordic trading system, exactly like the trading on NASDAQ OMX Stockholm. Aktietorget complies with the general regulations for an MTF, but has in addition its own regulatory framework to protect the investor. At year-end, 2011, a total of 125 companies were traded on Aktietorget, a slight decrease compared with the previous year.

EQUITY-RELATED DERIVATIVES

Derivative contracts with individual equities or share indices as underlying assets may be traded on marketplaces in Sweden. The vast majority of these derivatives are options or forwards. A *share option* is a contract whereby the holder has the right, but not the obligation, to buy or sell a share at a specified price on a specified date in the future. In turn, the issuer of the option has the obligation to exercise the option if the holder wishes. An *equity future* is a contract whereby the buyer and seller have undertaken to buy or sell a certain share on a specified future date at a predetermined price.

The vast majority of trading in share derivatives takes place under the auspices of NASDAQ OMX Derivatives Markets (NASDAQ OMX

⁸⁸ According to MiFID, banks and investment companies must adopt all reasonable measures to achieve the best possible result for their clients when they offer the execution or transfer of an order.

⁸⁹ Since 1 January 2001, Burgundy has had a permit to run a regulated market for trading in warrants, certificates, structured products and fund units. Burgundy has also received a permit to run an MTF.

DM), which is a secondary name of NASDAQ OMX Stockholm.⁹⁰ NGM also provides trading in derivatives on the list Nordic Derivatives Exchange (NDX). NASDAQ OMX DM offers trading in derivatives with Swedish, Danish, Norwegian, and Finnish shares as underlying assets.⁹¹ In addition to derivative contracts linked to individual shares, trading on NASDAQ OMX DM also includes options and forwards that are linked to NASDAQ OMX's own stock index. NASDAQ OMX DM also provides clearing for the derivatives traded on its exchange and for certain OTC derivatives that are not listed for trading (see the chapter "The financial infrastructure").

The number of standardised derivative contracts traded on NASDAQ OMX DM during 2011 amounted to just under 83 million. Equity options and index futures accounted for approximately three-quarters, while the remaining quarter was divided between equity futures and index options.

Other equity-related products

Other products tied to certain shares or to a basket of shares are also traded on the Swedish market. *Warrants* are one such product. In the Swedish financial market, the term warrant is currently used for many different types of security. In most cases, these are call options, i.e. they give the holder the right, but not the obligation, to purchase the underlying asset at a set price before or at a set time. Warrants are issued using various underlying assets. The most common type of underlying asset is shares, but warrants can also be linked to commodities, currencies, stock indices and equity baskets, to give a few examples. A characteristic of warrants is that they generally have a considerably longer time horizon than ordinary equity options, usually more than one year. They are also issued by a party – usually a bank or a securities company – other than the one issuing the underlying asset. The company that has issued the warrant then acts as market maker. Furthermore, warrants differ from standardised equity options in that it is possible to transfer them. This is not the case with all standardised equity options. In Sweden, warrants are traded on NASDAQ OMX Stockholm and also on the Nordic Derivatives Exchange (NDX). In 2011, the turnover in warrants on NASDAQ OMX Stockholm totalled SEK 22 million per day. Since 2008, both turnover and the number of transactions per day have almost halved.

⁹⁰ A secondary name is not a separate legal entity but relates to a particular part of a company's activity.

⁹¹ Certain Finnish derivatives, including Nokia derivatives, are traded on Eurex, in line with an agreement with NASDAQ OMX.

Exchange traded funds (ETFs) are also traded on NASDAQ OMX Stockholm. By investing in an exchange traded fund, the investor buys a basket of underlying securities. These funds are often index funds, which is to say funds structured to reflect a specific share index. The basket may also consist of commodities or fixed-income investments, for example. Exchange traded funds, like shares, are traded in real time and are offered via market makers who guarantee the liquidity in the instrument. It is the market price that governs the value of the investment, and this changes during the day as the index changes. Those who offer an exchange traded fund can increase the number of shares in the fund depending on the demand from investors. This form of investment has become more common in Sweden in recent years. In 2010, the daily turnover for exchange traded funds amounted to SEK 604 million.

Outside the established marketplaces, trading is conducted in CFD (Contract for Difference) contracts. These can be described as forward contracts without a set maturity date. A CDF contract reflects price changes in underlying assets, which usually consist of shares, share indices, commodities or currencies. CFD contracts are traded through a broker. The buyer of the contract provides collateral that only needs to represent a certain percentage of the value of the underlying asset. This collateral is continuously updated, in addition to which the buyer pays a daily interest charge as long as the contract runs. In certain cases, a brokerage fee is also paid. The decisive factor for profit or loss is the performance of the underlying instrument from the time of purchase or sale until the time the CFD contract is terminated.

■ Financial intermediaries

This chapter describes the different types of middlemen, or intermediaries, involved in the financial system. The intermediaries can be divided into various groups: credit institutions in the form of banks, mortgage institutions and other credit market companies, which are important for the supply of credit; investors in the form of insurance companies, fund management companies and pension funds, which take care of large portions of the general public's savings; securities companies, which act as brokers and market-makers in the financial markets; and private equity investment companies, which play an important role in the supply of venture capital.

In this chapter, the intermediaries have been classified by type of institution. The regulation of the financial intermediaries (see the box "Central regulations in the financial sector") is also based on type of institution. However, different types of intermediaries are often organised into one and the same group. Table 6 provides an overview of the way in which the business activities have been divided within the six largest financial groups in Sweden.

As the table shows, the groups often include several different types of intermediaries such as banking companies, mortgage institutions, insurance companies and fund management companies. The reason behind this kind of organisation is that several major Swedish banks have long sought to fulfil the role of universal banks; that is, to be able to provide products and services in the entire financial field. The groups organise their operations in different ways. For example, two of the six largest financial groups have their securities businesses in separate subsidiaries. The others have opted to offer these services through their banking arms. Neither do all financial groups have banking operations as their main operations. For example, there are financial groups that have insurance activities as their main operation, but which also conduct banking operations.

The financial groups also have significant operations outside Sweden. For example, half of the banks' lending takes place abroad. However, this publication is primarily intended to describe the

Swedish financial market. The statistics presented therefore contain neither the Swedish banks' overseas operations conducted through branches abroad, nor the operations conducted in the banks' foreign subsidiaries. As regards the foreign participants active on the Swedish financial market, branches in Sweden and Swedish subsidiaries are included in the statistics.⁹² To provide a complete picture of the four largest Swedish banking groups, a brief outline of these groups and, in particular, their operations abroad is presented in the box "Foreign operations – a part of the banking groups".⁹³

However, the banks, mortgage institutions, insurance companies, securities companies and so on will be dealt with separately in this chapter. Charts 13 and 14 provide an overview of the extent of the operations conducted in the most important categories of financial intermediaries.

Table 6. Operations of the major financial groups in Sweden

PARENT COMPANY	BANK	MORTGAGE INSTITUTION	FUND MANAGEMENT COMPANY	SECURITIES BUSINESS	LIFE INSURANCE	FINANCE COMPANY
Nordea AB	Nordea Bank AB	Nordea Hypotek AB	Nordea Fonder AB	Nordea Investment Management AB	Nordea Liv och Pension AB	Nordea Finans AB
Svenska Handelsbanken AB	Svenska Handelsbanken AB	Stads-hypotek AB	Handelsbanken Fonder AB	Provided by the bank	Handelsbanken Liv AB	Handelsbanken Finans AB
Skandinaviska Enskilda Banken AB	Skandinaviska Enskilda Banken AB	Provided by the bank	SEB Fonder AB	Enskilda Securities AB	SEB Trygg Liv AB	Provided by the bank
Swedbank AB	Swedbank AB	Swedbank Hypotek	Swedbank Robur Fonder AB/Swedbank Robur Kapitalförvaltning	Provided by the bank	Swedbank Försäkring AB	Swedbank Finans AB
Danske Bank A/S	Danske Bank Sverige ¹	Provided by the bank ²	Danske Capital ³	Provided by the bank	Danica Pension Försäkringsaktiebolag ³	Provided by the bank
Skandia AB	Skandia-banken AB	Provided by the bank	Skandia Fonder AB	Provided by the bank	Livförsäkringsaktiebolaget Skandia	–

Note. The corporate groups do not group their companies according to the table, which is why certain companies may be responsible for more than one line of business. The groups also have more companies than are shown here.

¹ Branch.

² Realkredit i Danmark is the Danske Bank group's mortgage institution.

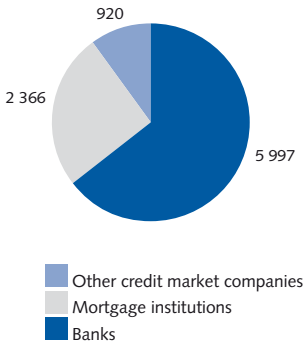
³ Common specialised entities.

Source: The banks' annual reports

⁹² The difference between a subsidiary and a branch is that a subsidiary, unlike a branch, is a distinct legal entity, separate from the parent company, while branches are included in the parent company or in a subsidiary. A branch has no equity, and its assets and liabilities are considered to be a part of the net wealth of the company to which the branch belongs. Accordingly, a branch is considered to be a unit with its own administration.

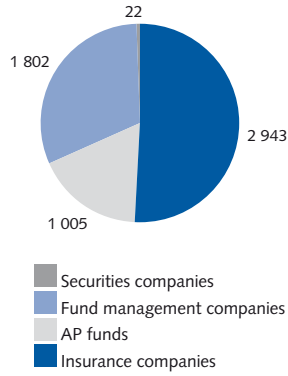
⁹³ See the Financial Stability Report, published by the Riksbank (www.riksbank.se) twice a year, for a more detailed review of the activities of the major banks.

**Chart 13. Total assets of Swedish banks at year-end 2011
SEK billion**



Source: The Riksbank

**Chart 14. Total assets and investment assets at year-end 2011
SEK billion**



Note. The chart shows total assets for securities companies, while for insurance companies and AP funds the diagram shows investment assets and for fund management companies it shows the funds managed.

Sources: Finansinspektionen, the AP funds' annual reports and the Riksbank

Foreign operations – a part of the banking groups

The four major Swedish banking groups (Handelsbanken, Nordea, SEB and Swedbank) conduct significant operations outside of Sweden. The operations of a group's various companies, both within Sweden and overseas, are all, to some extent, dependent upon one another and affect the development of the group as a whole. For example, companies within a group can share certain administrative functions or joint funding, which can provide them with advantages over companies that are not organised within a group. Similarly, the entire group can be negatively impacted if a part of the group, a unit or company, encounters problems. Consequently, to obtain an overall view of the four major banks, it is important to examine both the operations conducted in Sweden and the overseas operations. The purpose of this box is to present a view of the banks' operations abroad. Table 7 indicates the consolidated total assets of the four major

Swedish banks, as well as the groups' lending to the public, in Sweden and abroad. The table indicates that both Swedish and foreign operations are of major significance for the major banking groups as a whole.⁹⁴

Lending to the public in Sweden and abroad⁹⁵ accounts for around 55 per cent of the major banks' assets. Less than half of this is lending outside Sweden, which is a reduction of about 5 percentage points since the financial crisis broke out in 2008. Even so, this means that a large portion of the banks' risks is located abroad.

Nordea is the bank undertaking the largest proportion of lending to borrowers outside Sweden. About 75 per cent of Nordea's lending is outside Sweden; only a minor portion refers to the Swedish public. The other three major banking groups have their largest markets in Sweden and an average of one third of their operations abroad (see Table 7).

⁹⁴ Unlike the rest of the statistics in this publication, the statistics in the overview below refer to the entire operations of the groups, i.e. operations in all companies and countries.

⁹⁵ The term "lending to the public" is defined as all lending that is not lending to monetary financial institutions (MFIs). This also applies to the term "deposits from the public".

There are also differences between the major banks in terms of the geographical extent of foreign operations. Nordea's lending outside of Sweden is primarily to the other Nordic countries. Handelsbanken and SEB conduct approximately one fifth of their lending in the other Nordic countries, while Swedbank only conducts a small portion of its lending in these countries. Both SEB and Swedbank conduct a large portion of their lending in the Baltic countries. SEB also has a large part of its lending in Germany, and Handelsbanken has a part of its lending in the United Kingdom. Chart 15 shows the geographical distribution of lending in each major banking group at year-end 2011.

Almost 40 per cent of foreign lending is funded through deposits from the public, which is slightly less than in Sweden. Chart 16 shows the four major

banks' lending in foreign currencies, deposits in foreign currencies and the difference between lending and deposits, what is known as the deposit deficit.

The chart shows that the banks' lending in foreign currency increased until 2008, but that it then slowed down and stabilised in 2011. The deposit deficit shows the proportion of a bank's lending in foreign currency that is not funded by deposits in the same currency and accordingly has to be funded in some other way. In other words, the deposit deficit shows the banks' dependence on wholesale funding in foreign currencies. At the end of 2011, the deposit deficit in foreign currency amounted to around SEK 1 250 billion, which corresponds to 38 per cent of the lending in foreign currency. Wholesale funding on capital markets abroad is used not only

Table 7. Operations of the four dominant banking groups on the Swedish financial market at year-end 2011
SEK billion

	HANDELS- BANKEN	NORDEA	SEB	SWEDBANK	TOTAL FOUR MAJOR BANKS
Total assets	2 454	6 383	2 363	1 857	13 057
Loans to public, of which:	1 591	3 005	1 186	1 211	6 994
– loans to Swedish public	1 061	765	764	1 000	3 589
– loans to public abroad	530	2 241	423	211	3 405

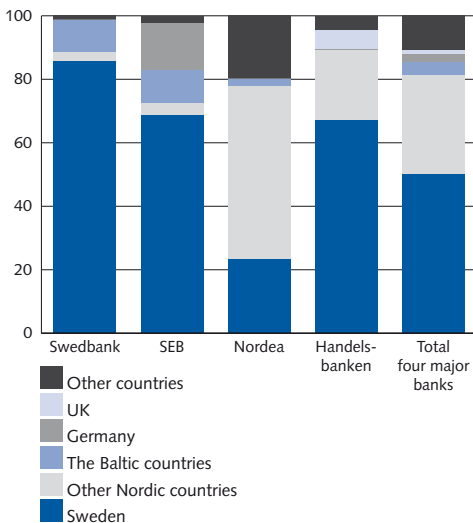
Note. To some extent, repos are excluded from the lending to the Swedish public and the public abroad respectively.
Sources: Bank reports and the Riksbank

to fund the deposit deficit in foreign currency, but also to fund parts of the lending in Sweden. The banks convert, or swap, this lending into Swedish kronor to protect themselves against foreign exchange risk.⁹⁶

The banks' funding may differ, depending on whether they have a centralised or decentralised funding strategy. To a large extent, Swedish banks have centralised funding, in which liquidity management is

carried out as a central function and the parent company holds a liquidity reserve.⁹⁷ Foreign subsidiaries which are dependent on wholesale funding obtain liquidity through the parent company, which, in turn, borrows on the global securities market. Centralised funding is cheaper, as the parent company often has a more well-known name and higher credit rating than the individual subsidiaries. As all of the funding is obtained in the

Chart 15. Geographical breakdown of the major banks' lending 2011
Per cent



Sources: Bank reports and the Riksbank

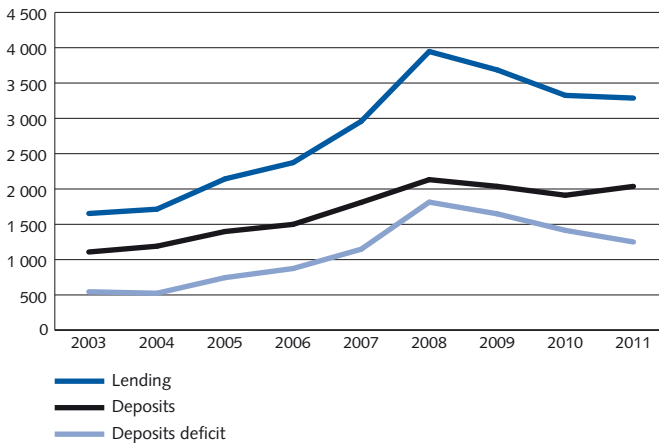
⁹⁶ See the article "Swedish banks' use of the currency swap market to convert funding in foreign currencies to Swedish kronor" in *Economic Review* 2012:2.

⁹⁷ One exception is Nordea, which has significant operations in Denmark, and largely obtains funding on the Danish securities market.

same place, the bank can also benefit from economies of scale and reduce total fixed costs. One disadvantage may be, however, that potential financial problems on the foreign market could spread to operations in other markets. With a decentralised strategy, the banks allow foreign subsidiaries and branches to manage their own funding

and liquidity. This leads to a developed local market that is less dependent on the parent bank's home market. The strategy also leads to diversified funding and reduces the group's dependence on a small number of participants. However, decentralised funding also leads to higher costs because of the lack of economies of scale.

Chart 16. The four major banks' deposits and lending in foreign currency SEK billion



Note 1. Deposit deficit = Lending – Deposits

Note 2. As the focus is on the overseas operations here, we only show the deposit deficit in foreign currency. The total deposit deficit amounted to around SEK 3,200 billion at the end of 2011.

Sources: Bank reports and the Riksbank

Credit institutions

Credit institutions include banks and non-bank credit institutions, which is to say companies offering loans with a particular focus, such as mortgage institutions (see Table 8). The credit institutions are specialists in assessing and monitoring credit risk thanks to the often long-term relationships they have with their customers. Consequently, they play an important part in ensuring the supply of capital in the economy.

The banks have long played a key role among credit institutions. For example, the banks have traditionally had a monopoly on accepting deposits. These deposits, which can very quickly be converted into cash or used for payments, mean that the banks contribute to the supply of liquidity in the economy. However, the banks' monopoly on accepting deposits was abolished on 1 July 2004. Since then credit market companies are allowed to accept deposits from the public. These deposits are covered by the Swedish deposit guarantee scheme, just like deposits with banks.⁹⁸

One of the banks' most important functions in society is their role in the payment system (see the chapter The financial infrastructure). Among other services, the banks provide the accounts through which many payment transactions are made plus a number of payment services associated with the transactions.

In general, credit market companies are specialist lenders within a particular area. Among credit market companies, *mortgage institutions* and *finance companies* have the largest market share. Chart 17 shows a breakdown of lending to the public, between banks, mortgage institutions and other credit market companies.

BANKS

The *banks* are the largest group of lenders among all credit institutions. They account for almost half of the credit institutions' total lending

Table 8. Different types of credit institutions

Credit institutions	
Banks Limited liability companies Savings banks Co-operative banks	Credit market companies Mortgage institutions Other credit market companies (including finance companies)

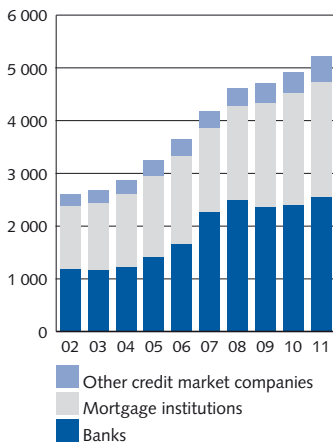
⁹⁸ According to the Act that came into force on 1 July 2004, other undertakings besides banks and credit market companies may, subject to certain conditions, also accept deposits from the public. However, these deposits are not covered by the deposit guarantee scheme. The deposit guarantee scheme aims to protect customers' deposits in accounts up to the amount in Swedish kronor that corresponds to EUR 100,000 per customer and institution.

to the public, which corresponds to more than SEK 2 500 billion (see Chart 17). In the Swedish market, the four largest banks together account for 75 per cent of the banks' total assets (see Table 9).

In addition to the *limited liability banks*, the Swedish market also includes *savings banks* and *co-operative banks*. There are a large number of independent savings banks in Sweden. However, these are usually small, operating solely in regional or local markets. Unlike limited liability banks, savings banks lack equity capital and therefore have no shareholders. The profits of the business are therefore not distributed. Instead, any surpluses are retained in the bank as reserves. The number of savings banks has declined in recent years, frequently through mergers of small savings banks.

A *co-operative bank* is an economic association established to offer banking services on behalf of its members. The members of the

Chart 17. Lending by credit institutions to the public
SEK billion



Note 1. The chart shows lending by type of institution. As the mortgage activities of certain banks are conducted within the bank, the banks' credit granting statistics include a certain portion of loans traditionally regarded as mortgages, i.e. loans to households provided against liens on real property. This means that the mortgage institution lending statistics do not include all the mortgages taken in Sweden. However, total lending from credit institutions is not affected by this.

Note 2. Since 2007, SEB has conducted its mortgage operations within the banking company, rather than within a separate company. This means that the banks' credit granting statistics, as of 2007, also include lending previously carried out within SEB Bolån at that point included in the category lending from mortgage institutions. The relative change in lending from banks and lending from mortgage institutions between 2006 and 2007 can be partly attributed to this.

Source: The Riksbank

Table 9. The ten largest banks' balance sheet totals at year-end 2011
SEK billion

SEB	1 399
Nordea Bank	1 285
Swedbank	968
Handelsbanken	832
Danske Bank ¹	688
SBAB Bank	162
DnB Bank ¹	109
Länsförsäkringar Bank	77
SkandiaBanken	36
Volvofinans Bank	30
Total 10 largest	5 586
Total all	5 996

Note 1. The figures in the table refer to operations conducted in Sweden. Foreign operations conducted by branches or subsidiaries are not included. The figures for foreign banks' branches and subsidiaries therefore refer only to operations in Sweden.

Note 2. All of the Swedish banks' balance sheet totals as a percentage of GDP amounted at the year-end 2011 to 174 per cent. Overseas operations not included.

1. Foreign branch.

Source: The Riksbank

bank are involved in the decisions that affect the bank's activities. Co-operative banks do not have shareholders either; the profits are re-invested in the business and can, to a certain extent, be distributed to the bank's members in the form of a bonus dividend.

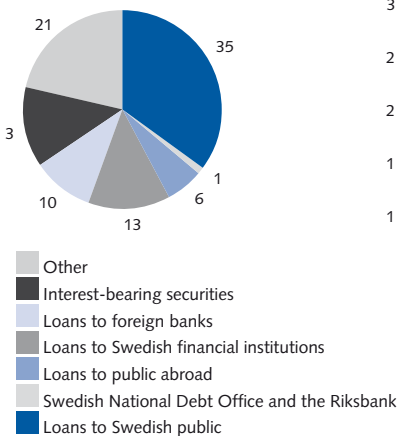
At the end of 2011, there were a total of 115 banks established in Sweden. These comprised 37 limited liability banks, of which one was the subsidiary of a foreign bank, 27 foreign-owned branches, 49 savings banks and two co-operative banks. Compared with 2010, three limited liability banks and two foreign-owned branches have been added to the Swedish banking market, at the same time as one savings bank has closed down.

The banks' assets and liabilities

The banks' assets consist for the most part of loans to the public in Sweden and abroad. At the end of 2011, lending to the public in Sweden and abroad totalled SEK 2 501 billion, corresponding to around 41 per cent of the banks' total assets (see Chart 18).

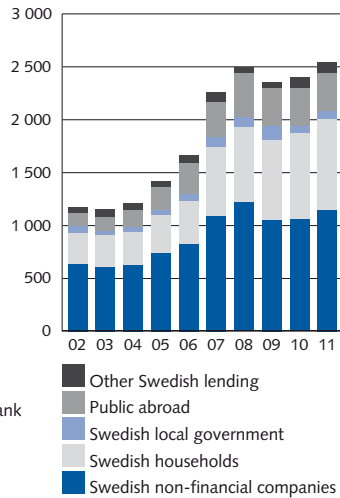
Of this lending, 45 per cent went to Swedish non-financial companies and 34 per cent to Swedish households (see Chart 19).

Chart 18. The banks' assets at year-end 2011
Per cent



Note. Claims on the Riksbank amount to 0.3 per cent of total assets. The equivalent figure for the Swedish National Debt Office is 0.8 per cent.
Source: The Riksbank

Chart 19. The banks' lending to the public by borrower category
SEK billion



Note. The figures for Swedish banks include lending by the entities conducting their operations in Sweden. Swedish banks' operations conducted by branches or subsidiaries abroad are not included. For foreign-owned banks, only branch operations in Sweden are included.
Source: The Riksbank

About 14 per cent of the lending went to the public abroad.⁹⁹ The remaining 7 per cent consisted of lending to the Swedish public sector and other Swedish lending.

In addition to lending to the public, the banks also have large claims on Swedish and foreign monetary financial institutions¹⁰⁰. Together, these claims comprised around 23 per cent of the banks' assets. In addition, around 13 per cent of the assets consisted of debt securities.

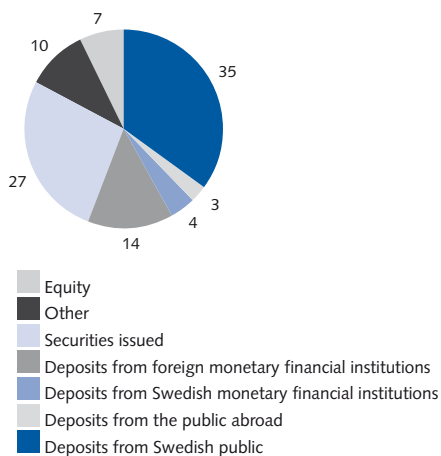
The largest item on the liabilities side of the banks' balance sheets is deposits from the public in Sweden and abroad. In 2011, these deposits constituted about 38 per cent of the banks' total liabilities (see Chart 20). Swedish households accounted for just over 50 per cent of this and Swedish non-financial companies for just over 30 per cent (see Chart 21). Around 14 per cent of the deposits came from the public abroad. The banks' liabilities otherwise consist of their wholesale funding requirements. These liabilities include both deposits from Swedish and foreign monetary financial institutions and liabilities in the form of securities issued. The banks' equity only constitutes a minor part of total assets.

In addition to the liabilities in the balance sheet, banks may also have off-balance sheet commitments. Typical off-balance sheet items are certain derivatives, guarantees and commitments. The common factor for these items is that the bank, as yet, does not have a real and quantifiable liability. That is, there is uncertainty regarding whether the bank's commitments will actually result in a liability, when any such liability will occur, and the total amount involved.

99 This represents only a small part of the Swedish banking groups' lending to the public abroad. The remainder of the banks' lending to the public abroad was thus comprised of the banks' foreign subsidiaries. For a brief outline of the total lending abroad, see the box "*Foreign operations – a part of the banking groups*".

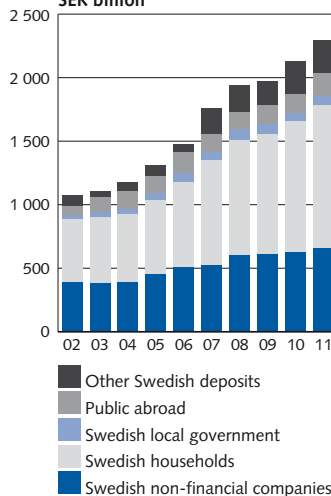
100 The monetary financial institutions include other banks, finance companies and securities companies.

Chart 20. The banks' liabilities and equity at year-end 2011
Per cent



Note. For Swedish banks the figures refer to liabilities and equity for operations conducted in Sweden. Swedish banks' overseas operations conducted by branches or subsidiaries are not included. For foreign-owned banks, branch operations in Sweden and Swedish subsidiaries are included.
Source: The Riksbank

Chart 21. The banks' deposits from the public in Sweden and abroad by lender category
SEK billion



Note. The figures for Swedish banks include deposits from the entities conducting their operations in Sweden. Swedish banks' overseas operations conducted by branches or subsidiaries are not included. For foreign-owned banks, branch operations in Sweden and Swedish subsidiaries are included.
Source: The Riksbank

The banks' wholesale funding

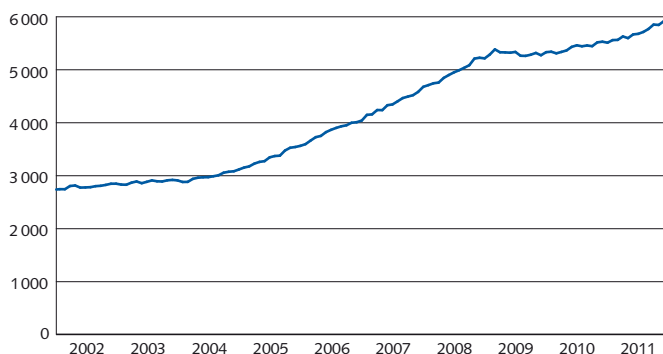
During the 2000s, the Swedish banks' lending to the general public increased substantially. The banks have partly funded the increased lending by issuing larger volumes of securities on the financial markets. Chart 22 shows Swedish monetary financial institutions'¹⁰¹ lending to the public, and Chart 23 shows their liabilities.

As the Swedish banks have moved away from more traditional funding in the form of deposits to fund themselves via the financial markets, increasingly long conversion chains are

required to finance lending. Traditionally, households have chosen to deposit their savings in an account at the bank. The bank has used these deposits for lending, for example in the form of mortgages to households. In this type of system, all bank liabilities thus consist of deposits.

However, today households invest part of their savings in funds, for example, instead of only as deposits in bank accounts. The savings still fund mortgages, but it now requires several intermediaries and complex interconnections between

Chart 22. Swedish monetary financial institutions' lending to the public SEK billion



Note. In addition to banks, monetary financial institutions (MFIs) also include mortgage institutions, other credit market companies and monetary securities companies. Swedish branches of foreign banks are also included.

Source: The Riksbank

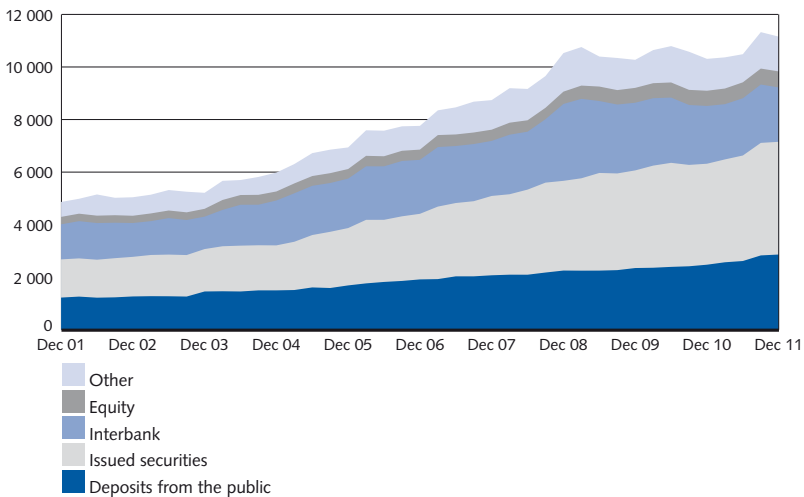
¹⁰¹ In addition to banks, monetary financial institutions (MFIs) also include mortgage institutions, other credit market companies and monetary securities companies. Swedish branches of foreign banks are also included.

several different financial agents. Somewhat simplified, the process can be described as follows. The funds that manage households' savings invest this to obtain the best possible yield. A large portion ends up with financial agents overseas. These agents, in turn, invest the savings in various types of securities, such as covered bonds issued by Swedish banks. In this way, the banks obtain funding which can be used to offer households mortgages. So the overall result is that households' savings are converted into mortgages, albeit through a longer and more complex chain of

intermediaries.

As the Swedish banks have increased their wholesale funding, they have also issued greater volumes of securities in foreign currency (see Chart 24). The banks issue in foreign currency for several reasons: partly because they are funding foreign subsidiaries' lending in foreign currency, partly because they wish to diversify with regard to countries and markets. In addition, it can also give the banks lower funding costs. If the banks instead were to fund all of their assets in kronor on the kronor market they would

Chart 23. Swedish monetary financial institutions' liabilities
SEK billion



Note. Monetary financial institutions' liabilities also include centralised funding that is subsequently forwarded to subsidiaries abroad. Lending from these subsidiaries to the public is not included in Chart 23.
Source: The Riksbank

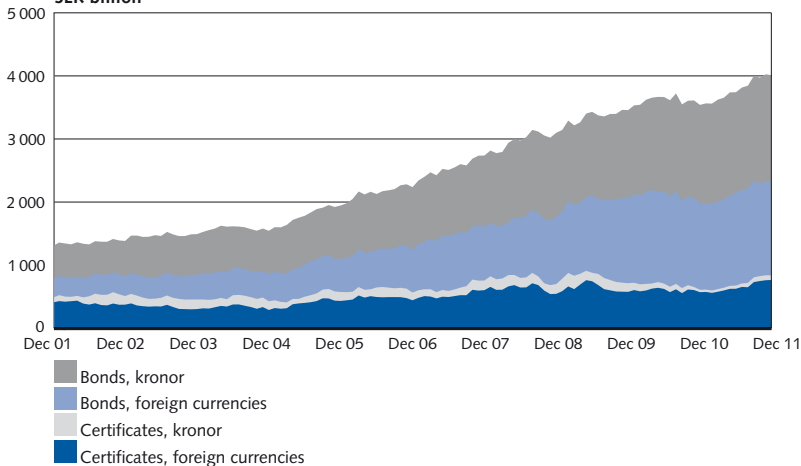
probably have to pay a higher interest rate to investors, which would increase their funding costs and ultimately lead to higher interest rates for bank customers.

The banks' wholesale funding consists of both short-term and long-term funding. The short-term funding is used to some extent to fund long-term lending. The banks thus expose themselves to a liquidity risk, which became evident during the financial crisis when the banks experienced difficulty in refunding their short-term liabilities. Unlike short-term wholesale funding, deposits


were not significantly affected during the financial crisis; that is, customers retained their savings in their bank accounts. One possible explanation is that many customers were protected by the deposit guarantee. The crisis thus showed that short-term wholesale funding can be a more volatile funding form than deposits in times of turmoil and when problems arise in the financial markets.

In addition, the banks' borrowing in foreign currency can entail special liquidity risks. During the financial crisis, access to wholesale funding in foreign

Chart 24. Swedish monetary financial institutions' long-term and short-term wholesale funding
SEK billion



Note. Certificates are regarded as short-term funding when they have a maturity of less than one year. Bonds have original maturities of more than one year and are therefore regarded as long-term funding. Source: The Riksbank



currency turned out to be more volatile than access to wholesale funding in Swedish kronor.¹⁰²

To summarise, one can thus say that the Swedish banks' funding methods have changed. Throughout the 2000s, deposits from the public have not increased at the same rate as lending to the public. The banks are thus obtaining funding through the financial markets to

a greater extent today. This has meant that parts of the stable funding and the short chains of intermediaries have given way to more volatile funding and longer chains of intermediaries. This sort of system usually works well, but makes considerable demands on all links in the chain functioning to allow the funding of long-term assets to take place.

¹⁰² See the box on “*The major banks' liquidity risk in US dollars*” in the *Financial Stability Report 2011:1* and the box on “*The banks' liquidity risk in foreign currencies*” in the *Financial Stability Report 2011:2*.

MORTGAGE INSTITUTIONS

The *mortgage institutions* belong to the credit market companies category and their main task is to fund the purchase of property, primarily homes. Loans are secured mainly by legal charge on real property or municipal sureties. State credit guarantees are also used. Lending by mortgage institutions constitutes around 45 per cent of the total lending of credit institutions.

There are, in all, six mortgage institutions in the Swedish market. The three largest institutions are part of banking groups and together account for 85 per cent of the mortgage institutions' total assets (see Table 10). Frispar Bolån is partly owned by SBAB, Sparbanken Finn and Sparbanken Gripen. AB Sveriges säkerställda obligationer is a fully-owned subsidiary of SBAB.

At year-end 2011, lending by the mortgage institutions to the public amounted to SEK 2 191 billion. Lending with single-family dwellings and multi-family dwellings as collateral comprised the largest part – just over 70 per cent (see Chart 25). The rest consists of lending with owner-occupied apartments and commercial and office buildings as collateral. Lending with tenant-owner apartments as collateral has increased very sharply and is now five times as large as at year-end 2001. Contributory factors here include both higher market prices and the conversions of rental properties to tenant-owned properties that have taken place during the period. In Chart 25, the mortgage institutions' lending to the public appears to decline between 2006 and 2007. This change is of a technical character alone and is due to the merger of SEB Bolån into SEB's banking arm in 2007, following which SEB Bolån is no longer included in the statistics for mortgage institutions.

The interest rates on loans from mortgage institutes can be fixed, for different terms, or variable.¹⁰³ The choice of fixed-interest period

Table 10. Mortgage institutions in Sweden, balance sheet totals and lending at year-end 2011 SEK billion

	TOTAL ASSETS	LENDING
Stadshypotek AB	787	751
Swedbank Hypotek	776	711
Nordea Hypotek	442	420
AB Sveriges säkerställda obligationer ¹	233	211
Länsförsäkringar Hypotek	117	89
Frispar Bolån	11	9
Total	2 366	2 191

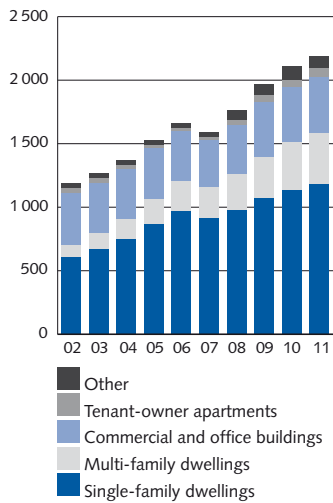
1. Fully-owned subsidiary of SBAB.
Source: The Riksbank

¹⁰³ In this report, variable rate refers to an interest rate fixed for three months.

is affected, for instance, by customers' expectations regarding the development of short-term and long-term interest rates. In 2011, the percentage of new loans granted at variable rates was 52 per cent. Fixed-rate loans with terms of more than five years and fixed-rate loans with terms up to and including five years accounted for 5 per cent and 43 per cent respectively of total new loans (see Chart 26).

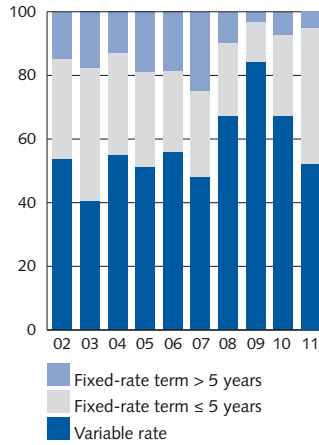
The distribution of the various fixed-interest periods in the mortgage institutions' total loan stock has varied over the most recent ten-year period. Over this entire period, and particularly during 2008 and 2009, the percentage of fixed-rate loans for five years or more has declined, while loans at fixed rates for terms of up to five years and variable-rate loans have increased. However, in 2010, there was a break in the trend as loans with longer fixed-rate terms increased again. This trend continued in 2011 and, at the end of the year, 48 per cent of the total consisted of variable-rate loans, while 46 per cent of the total consisted of loans at fixed rates for terms of up to five years and 6 per cent of the total consisted of loans at fixed rates for terms exceeding five years (see Chart 27).

Chart 25. Lending by mortgage institutions to the public SEK billion



Note. The decrease in the mortgage institutions' lending to the public from 2006 to 2007 results from the merger of SEB Bolån into SEB's banking arm at that point in time. Consequently, this is not a real reduction but only a consequence of the organisational change in SEB.
Source: The Riksbank

Chart 26. New lending per year by mortgage institutions per the original fixed-rate term Per cent



Source: The Riksbank

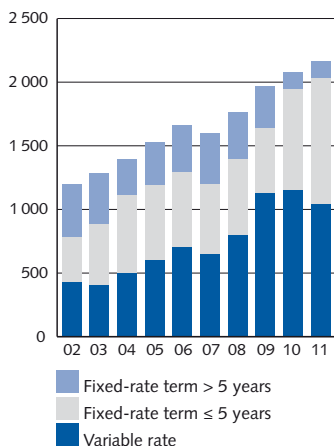
The mortgage institutions mainly obtain funding for credit granting by issuing bonds, so-called covered bonds, corresponding to about 75 per cent of funding (see Chart 28).¹⁰⁴ These are purchased primarily by large asset managers, such as the insurance companies, the banks and the AP funds. Out of this funding 25 per cent is in foreign currencies. Apart from covered bonds, funding by the bank-owned mortgage institutions primarily consists of loans from their parent bank.

The mortgage institutions strive to extend the maturities for their borrowing to better match the maturities for assets and liabilities. This has contributed to increased funding costs for the banks and thus increased differentials between the Riksbank's repo rate and the lending rates faced by households.¹⁰⁵

The mortgage institutions fund themselves largely at a fixed interest rate, but lend money at a variable rate, which leads to interest rate risks. To reduce these interest rate risks, the mortgage institutions use derivatives (see the description of interest-rate swaps in the section the Fixed-income market).

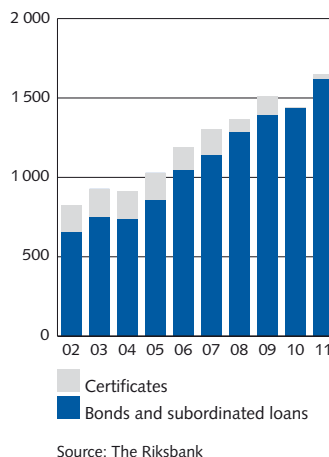
At year-end 2011, long-term borrowing through bonds amounted to SEK 1 619 billion, of which the most part was covered bonds, accounting for SEK 1 618 billion. Short-term borrowing through certificates amounted to only SEK 27 billion (see Chart 28).

Chart 27. Loan stock of mortgage institutions per the original fixed-rate term SEK billion



Source: The Riksbank

Chart 28. Securities issued by mortgage institutions SEK billion



Source: The Riksbank

¹⁰⁴ See the box on "Covered bonds" in the chapter The financial markets.

¹⁰⁵ See the box on "The relationship between the repo rate and interest rates for households and companies" in the *Monetary Policy Report*, February 2012, and the box "Effects of liquidity requirements for banks on Swedish mortgage rates" in the *Financial Stability Report 2010:1*.

OTHER CREDIT MARKET COMPANIES

Credit market companies also include *finance companies* other than mortgage institutions. At year-end 2011, lending by these institutions comprised ten per cent of total lending by credit institutions. Just over 15 per cent of the total assets of SEK 920 billion is attributable to the finance companies linked to the four major banking groups (see Table 10).

Prior to 1985, restrictions limited the scope of banks to lend money. By setting up finance companies, which were not subject to these restrictions, the banks were able to increase lending. Today, finance companies have typically specialised in one specific form of financing. They offer, for example, leasing¹⁰⁶ and factoring¹⁰⁷ services to corporate customers and promissory note loans and credit card accounts to households. For administrative reasons, they still operate as independent companies within the banking groups.

Finance companies are also owned by non-financial companies. In such cases, they provide complementary services to normal operations through the financing facilities they offer to the company's customers. For example, large car manufacturers often provide financing opportunities to purchasers.

Table 11. The ten largest institutions in the category other credit market companies, balance sheet totals at year-end 2011
SEK billion

Svensk Exportkredit AB	325
Kommuninvest i Sverige	245
Landshypotek AB	71
Handelsbanken Finans	49
Nordea Finans Sverige AB	51
Swedbank Finans AB ¹	37
Volkswagen Finans Sverige AB	19
Wasa Kredit AB	12
Entercard Sverige AB	9
SEB Kort AB	8
Total 10 largest	826
Total all	920

1. Swedbank Finans includes the subsidiary ML Rental.

Note. Excluding the Swedish institutions' overseas operations conducted through branches abroad, and their foreign subsidiaries.

Source: The Riksbank

¹⁰⁶ Leasing is a way for companies or private individuals to obtain funding for, for instance, a vehicle by hiring it over the longer term from a leasing company. In this way, it is not necessary to pay the entire purchase price in one go, but the vehicle can still be fully used.

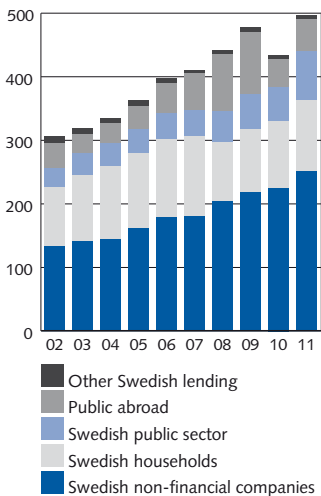
¹⁰⁷ Factoring can either refer to borrowing against an invoice or the sale of accounts receivable. An invoice borrowing agreement with a factoring company implies that a company receives credit against collateral consisting of its invoiced accounts receivable. A promissory note is the same as a debt instrument, i.e. a written promise to repay a debt. Loans against a promissory note are a common type of bank loan.

Other finance companies have focused on granting loans to a particular sector. The largest of these institutions is Svensk Exportkredit (SEK), a mainly state-owned company. SEK is charged with the task of fostering growth in the Swedish export industry.

In addition, Kommuninvest i Sverige AB was established by a number of municipalities and county councils. Its purpose is to arrange financing for its members that is as cost-efficient as possible. Similarly, Landshypotek AB aims to provide its members (agricultural and forestry companies in Sweden) with funding on favourable terms.

The finance companies fund their operations mainly through loans from other financial institutions, in particular the banks. Some finance companies also obtain funding by issuing certificates, bonds and promissory notes in the securities market. Outstanding loans to the public by other credit market companies amounted, at the end of 2011, to SEK 496 billion (see Chart 29). Of these loans, 50 per cent were made to Swedish companies, while 23 per cent went to Swedish households and 10 per cent went to public borrowers abroad. There are 50 companies categorised as other credit market companies on the Swedish market, of which 44 are finance companies.

Chart 29. Lending by other credit market companies to the public
SEK billion



Source: The Riksbank

Private equity investment companies

The term private equity is often used to describe investments in unlisted companies with an active owner role. Such companies often entail higher risk, which means that banks do not normally offer funding. Instead, established companies that are not yet ready for listing on the stock exchange or other forms of public trading in their shares can acquire funding in the form of private equity. Smaller entrepreneurs wishing to develop their operations and avoid pledging private assets, such as their home, can also obtain private equity. This kind of funding has increasingly been channelled through a special type of intermediary, the private equity investment company. Private equity investments made in unlisted companies are referred to as private equity.¹⁰⁸

Private equity investment companies thus invest in unlisted companies in the form of equity. These investments are funded through risk capital funds owned by the private equity investment companies. The development of the companies in which the private equity investment company has invested, the 'portfolio companies', determines the amount of yield received by the private equity investment company. These investments may basically be categorised as investments in early phases of a company's life cycle, known as venture capital investments, and investments in later phases of the company's life cycle, known as buy-out investments. Early phase investments usually entail high risk. This is because the investment is often made in newly-started companies with weak cash flows and few tangible assets. Private equity investment companies also differ from other financiers in that they frequently play an active owner role in the companies in which they invest.

In Sweden, the first private equity investment companies were established at the end of the 1980s. However, the sector has grown rapidly, especially in recent years. According to the Swedish Private Equity and Venture Capital Association (SVCA), 143 private equity investment companies were operating in Sweden in December 2011. The majority of these focus on the buy-out segment. Together, Swedish private equity investment companies managed total assets in an amount of approximately SEK 500 billion at year-end 2011.¹⁰⁹

108 For a description of private equity investment companies in Sweden, refer, for example, to the article "Private equity investment companies in Sweden" in the Riksbank's *Financial Stability Report*. 2005:1.

109 Swedish Private Equity and Venture Capital Association: www.svca.se.

In Sweden, an amount equivalent to a half per cent of GDP is invested in private equity through private equity investment companies. A large part of the capital in Swedish equity funds is from foreign investors. Institutional investors, such as fund-in-fund managers and pension funds, are among the categories of investors.¹¹⁰

Insurance companies, fund management companies and pension funds

Financial intermediaries also include a number of middlemen whose activities are not primarily focused on the supply of capital. Examples of these are insurance companies, pension funds and fund management companies. While these serve different purposes in the financial system and the economy, they all have in common that they are important investors in the financial markets. As investors, they concentrate more on managing others' assets than their own.

INSURANCE COMPANIES

At year-end 2011, there were 351 Swedish *insurance companies* active in the domestic market. In addition, 35 foreign companies were operating through branches in Sweden. Most of the Swedish insurance companies are small, local companies, but the largest part of the market is concentrated to a few major companies. Taken together, the insurance companies had investment assets, that is to say assets invested to generate earnings, amounting to approximately SEK 2 950 billion at year-end 2011. Approximately 85 per cent of this amount was held by the ten largest insurance companies (see Table 12).¹¹¹

Insurance companies are divided into life assurance and non-life assurance companies. Life assurance and non-life assurance companies both offer insurance against risk, albeit totally different types of risk. These businesses may not be carried out in the same company, although it is common to have both types of business in the same corporate group.

Life assurance companies can pay out compensation when an insured person is unable to work, dies or reaches retirement age. The type of compensation provided by the insurance cover depends on how the policies are formulated. The products need not be seen only as insurance, but can also be seen as a form of long-term saving in

¹¹⁰ Ibid.

¹¹¹ The total investment assets indicated in Table 12 and in Chart 14 at the start of the chapter differ. This is because the figures in Table 12 do not include the AFA group, unlike the figures in Chart 14. The investment assets of the AFA group amounted to approximately SEK 217 billion at the end of 2010 (source: the Swedish Insurance Federation).

which the policyholder has a claim on the capital managed by the insurance company.

Life assurance can be divided up into traditional life assurance and unit-linked insurance. *Traditional life insurance* pays a guaranteed minimum return, while the yield from a unit-linked policy is determined by the performance of the individual funds. Saving in *unit-linked insurance* works essentially in the same way as saving in mutual funds (see the section on Fund management companies).

Non-life insurance companies compensate damage to property and pay third-party damages. Policyholders pay a premium to the companies in order to receive compensation for property damaged in an insurance event. Unlike life assurance, non-life assurance policies are not a form of saving. The activities of these companies in the securities market only take place in order to manage the companies' own funds.

Wage earners can also take out group insurance policies, which are based on labour market agreements. These provide additional cover in the event of sickness, occupational injury or retirement.

Insurance companies in Sweden can take three corporate forms: dividend-paying limited liability companies, limited liability companies operated on mutual principles and entirely mutual companies. Limited liability companies run on mutual principles and entirely mutual companies are known as non-dividend-paying companies. This mutuality means that the policyholders bear the risk of deficits in the operations. On the other hand, any surplus in the operations will also accrue to the policyholders. Accordingly, the corporate form in which an insurance company conducts its business operations is of significance, for instance, for the allocation of yield.

Table 12. The ten largest insurance companies' investment assets at year-end 2011, groups SEK billion

INSURANCE COMPANIES	INVESTMENT ASSETS
Alecta	495
Skandia group	435
AMF Pension	346
SEB Trygg Liv	298
Folksam	287
Länsförsäkring group	245
SPP	107
Swedbank Försäkring	96
If Skadeförsäkring	73
Handelsbanken Liv	57
Total 10 largest	2 440
Total all	2 943

Note. Excluding the AFA group.

Sources: Statistics Sweden and company reports

The assets of a dividend-paying limited liability assurance company consist of 'investment assets', i.e. premiums invested in various securities. The liabilities consist primarily of what are known as technical provisions. The technical provisions must correspond to the amount needed by the company to meet all the commitments arising from the insurance contracts into which it has entered.¹¹² Equity consists of bonus funds, which are the insurance company's accumulated profits. In a dividend-paying limited liability insurance company, equity is owned by the shareholders and it is the shareholders who must contribute capital if the company does not fulfil its undertakings. Policyholders in these companies do not take on any financial risk. On the contrary, policyholders in a limited liability company operated on mutual principles and in entirely mutual companies do take on financial risk, where the policyholders themselves own the equity. All surpluses arising in mutual companies accrue to the policyholders. However, this also implies that the policyholders accept the risk that a deficit may arise, which can entail such results as the lowering of pension payments. The insurance companies' total investment assets amounted to slightly less than SEK 2 950 billion at year-end 2011. Of these assets, the life assurance companies accounted for roughly 80 per cent (see Chart 30).

The investment assets of insurance companies comprise mainly equities and bonds. This means that the breakdown into equity and other assets varies depending on developments on the stock exchange. At year-end 2011, equities accounted for slightly less than 50 per cent of investment assets. Holdings of bonds and short-term investments made up 41 per cent and 4 per cent respectively of the investment assets. Investments in properties only accounted for a minor part (see Chart 31). Investment assets accounted for 30 per cent of investments abroad.

Insurance associations and pension foundations

In addition to insurance companies, *insurance associations* and *pension foundations* also provide insurance services. Compared to the insurance companies, these institutions represent only a small portion of the pension insurance market.

Insurance associations are associations that conduct insurance business on behalf of employees at one or more companies. Their

¹¹² The amount of these technical provisions is calculated using a number of variables, including expected return, life expectancy, estimates of future operating costs and premium income of contracts entered into, as well as the discount rate used to calculate the present value of the company's future commitments.

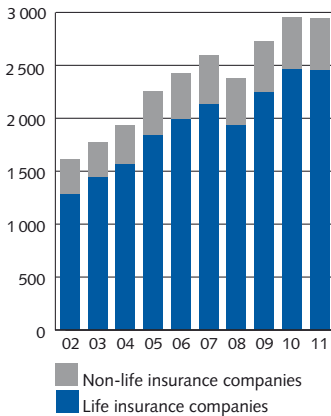
activities are aimed at individuals in the same professional group or members of certain communities of interest. Most insurance associations only offer pension insurance, but a few also offer health insurance. At year-end 2011, a total of 82 insurance associations were operating, with total assets amounting to approximately SEK 125 billion.¹¹³

Pension saving can also be conducted through *pension foundations*. An employer can choose to set up a pension foundation and transfer an amount to it each year, which is then paid out to the employees later on in the form of a pension. A pension foundation is a legal entity in itself. At year-end 2011, there were around 2 100 active pension foundations in Sweden, which, together, had about SEK 190 billion in assets.¹¹⁴

FUND MANAGEMENT COMPANIES

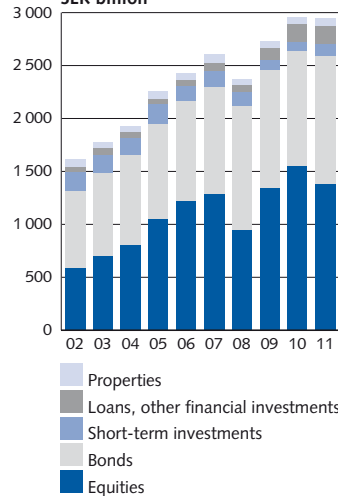
Fund management companies administer and manage capital in mutual funds. Generally, each fund management company can offer a large number of funds with a different investment focus. The Swedish fund management market is dominated by the bank-owned fund management companies. The four biggest fund management

**Chart 30. Investment assets of the insurance companies
SEK billion**



Source: Statistics Sweden

**Chart 31. Insurance companies' investment assets, by type of financial asset
SEK billion**



1. Changed definition from the first quarter 2009. The current definition includes lending, derivatives and repos.
Source: Statistics Sweden

113 The majority of insurance associations conduct their own asset management, while some outsource asset management. This means that some overlapping exists in the reporting of data, as these associations' assets are also included in investment assets of fund management companies.

114 Information on the assets held by pension foundations is based on data reported at year-end 2010.

companies, owned by the largest banking groups, together account for 60 per cent of the fund market (see Table 13). In the case of these fund management companies, the banks' branches or Internet services act as distribution points. Fund investment in Sweden totalled SEK 1 802 billion in managed capital at year-end 2011. This can be compared with Swedish households' total deposits with the banks, which amounted to SEK 1 123 billion.

The assets managed in equity funds amounted to SEK 933 billion at year-end 2011. Besides equity funds, other kinds of fund include fixed income funds, which invest in interest-bearing securities, and 'mixed funds', which invest in both equities and interest-bearing securities. The assets managed in fixed income funds and mixed funds amounted to SEK 466 billion and SEK 308 billion respectively for the same period. In addition to these types of funds, there are also hedge funds, which differ from other funds in that their management is relatively unrestricted regarding both investment strategies and the financial instruments that may be used, such as derivatives. The assets managed in hedge funds totalled SEK 95 billion at year-end 2011 (see Table 14).

Fund management companies affiliated to insurance companies have markedly increased their share of the fund market in recent years, due to the growing interest in choosing funds for pension saving. This, in turn, is partly a result of Sweden's pension reform in 2000, which saw the introduction of a premium pension system (PPM). In the premium pension system, the amounts set aside for premium pensions are invested in mutual funds. For private forms of pension savings, there are also a number of fund-based options (see the section on

**Table 13. The ten largest fund managers, assets managed, December 2011
SEK billion**

Robur	429
SEB	281
Nordea	208
Handelsbanken	164
Seventh AP Fund	106
Länsförsäkringar	67
AMF Pension	60
Skandia Fonder	57
SPP Fonder	55
Brummer & Partners	51
Folksam LO	32
Total 10 largest	1 510
Total all	1 802

Source: MoneyMate

Insurance companies). These forms of savings are basically the same product, the differences being the forms of ownership and taxation. Consequently, mutual funds today compete to some extent with the life assurance companies.

Just as in 2001 and 2002, during 2008 the total assets of equity funds decreased in comparison with the previous year, both in terms of SEK and as a proportion of the total investment fund assets. This was largely due to the negative developments in the stock markets.

Following this, mutual fund wealth increased substantially until 2010. Mutual fund wealth subsequently fell back slightly, but, at year-end 2011, was still above the levels prevailing prior to the financial crisis. Of total mutual fund wealth at the end of 2011, equity funds accounted for about 50 per cent, fixed income funds 25 per cent and other funds 25 per cent (see Table 14).

STATE-OWNED PENSION FUNDS

The Swedish public pension system is made up of two components: one collective and one individual. The collective element is often referred to as an income pension, and is a "pay-as-you-go" system whereby pensions are financed by current charges. The individual element consists of a *premium reserve system* in which pension disbursements are financed by money paid into funds during individuals' working lives and where individuals themselves choose their fund management company. Of the guaranteed pension, equivalent to 18.5 per cent of the individual's income, 16 per cent is managed under the pay-as-you-go system and 2.5 per cent under the premium reserve system.

The task of the national pension funds is primarily to manage the pension capital within the framework of the pay-as-you-go system. This task is carried out in the first place by the First, Second, Third, Fourth and Sixth AP funds. The Seventh AP fund manages the capital in a premium reserve system, in competition with private

Table 14. Mutual fund wealth, per type of fund
SEK billion

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Equity funds	344	445	514	733	868	895	543	863	1 160	933
Fixed income funds	205	244	275	310	340	354	373	378	403	466
Mixed funds	119	141	158	202	238	247	204	254	297	308
Hedge funds	36	43	50	71	82	76	66	88	84	95
Total	703	873	997	1 316	1 528	1 572	1 185	1 583	1 944	1 802

Sources: Svensk Fondstatistik (part of MoneyMate) and the Swedish Investment Fund Association

fund management companies. The Seventh AP Fund includes the pension capital of those people who did not choose a particular fund management company for their premium reserve pension.

The First, Second, Third and Fourth AP Funds are bound by identical investment regulations, which state inter alia that pension capital may be invested in all capital market instruments that are listed and tradable.¹¹⁵ One restriction is that at least 30 per cent of the funds' assets must be invested in low-risk debt securities. A limited portion of the assets may be exposed to foreign exchange risk. The Sixth AP Fund has the most flexible investment rules with regard to choice of instrument, but it may not invest abroad. The Seventh AP Fund may also invest in instruments other than shares and debt securities and, like the first four AP funds, is also allowed to invest abroad.

At year-end 2011, the investment assets of the AP funds totalled SEK 1 005 billion. This can be compared with life assurance companies and the fund management companies, whose investment assets amounted to SEK 2 447 billion and SEK 1 802 billion respectively in December 2011.

Securities institutions

Securities institutions is the term used to refer collectively to the securities companies and Swedish credit institutions that are licensed by Finansinspektionen, the Swedish Financial Supervisory Authority, to engage in securities trading. The term also covers foreign companies that engage in securities trading through a branch in Sweden. The Authority can license eight different kinds of investment activities (see the box "Central regulations in the finance sector").

Securities institutions have two primary functions. These are to trade with securities in their own name on behalf of customers, i.e. commission trading, and to buy and sell securities on their own behalf in their capacity of market maker.¹¹⁶ Being a market maker involves quoting two-way prices (i.e. bid and ask prices). All market makers must therefore be prepared at all times to buy and sell securities. To do this, the institutions need to hold a stock of securities, and thereby take on some of the market risk. By bringing together purchasers and sellers of securities and acting as market makers, they help create the conditions for a liquid and efficient market in securities.

¹¹⁵ Up to five per cent of the assets may be invested in unlisted securities. However, these investments must take place indirectly through mutual funds or private equity investment companies.

¹¹⁶ The role of market-makers is described in more detail in the chapter The financial markets.

Another important role played by the securities companies is in underwriting and assisting in other ways in connection with the issue of securities. By doing so, they make an important contribution in reducing the information gap between issuers and investors. Securities companies are also able to provide credit to customers purchasing securities and administrative services. They also accept deposits, to a limited extent.

At year-end 2011, just over 200 Swedish companies had one or more of the above-mentioned licences to engage in securities trading. Just over 60 per cent of these companies were securities companies, while the others were mainly credit institutions such as banking companies and savings banks.

SECURITIES COMPANIES

One type of securities institution is a securities company. Of the securities companies registered at year-end 2011, three companies held seven of the eight different licenses for securities trading activities. At year-end 2011, one company held the eighth license for "operation of a trading facility".¹¹⁷

Frequently, many securities companies are specialised in one or a small number of activities and therefore only need licenses for those. This group includes, for example, a large number of smaller asset management companies, as well as companies with other specialisations. Among the securities companies, there are also a number of power and commodity dealers.

As many securities companies concentrate on arranging contracts between potential buyers and sellers, their balance sheets are often relatively modest. At year-end 2011, the total assets of the securities companies amounted to about SEK 23 billion.

SWEDISH CREDIT INSTITUTIONS THAT ENGAGE IN SECURITIES TRADING

In addition to investment companies, many banks engage in securities trading on a major scale. Of the total of 37 banking companies registered in Sweden at year-end 2011, 24 were licensed for securities trading. Nine of these banking companies held seven of the eight licenses for securities trading.¹¹⁸ The four major banks are represented among the companies holding the most licenses.

¹¹⁷ See the review of trading facilities in the chapter The financial markets.

¹¹⁸ See review of investment business licenses in the box "Central regulations in the financial sector".

Among the banking companies conducting securities trading, there also exists a group of companies operating basically only in securities trading, but which have, for various reasons, applied for and been granted banking licences, mainly to avoid restrictions and competitive disadvantages vis-à-vis the banks. Furthermore, the Swedish securities companies may, subject to certain restrictions, accept deposits in order to facilitate their securities trading business.

Besides the securities companies and banking companies referred to above, 47 savings banks had one or more securities trading licences at year-end 2011. Usually, these involved a licence to act as an agent in securities transactions, i.e. to accept the customer's order locally and submit it to an affiliated bank holding more licenses.

Central regulations in the financial sector

As the financial companies provide services that are of great importance to society and the companies' customers, there are many rules they must follow. These rules may exist in laws passed by the Riksdag, ordinances decided by the government or statutes issued by Finansinspektionen. However, the content of these regulations is largely determined by decisions taken at EU level. This is because Sweden is obliged to convert EU Directives to Swedish regulations, for example laws. In addition, the EU can decide on so-called EU Regulations. An EU Regulation is binding and directly applicable in Sweden, and thus applies without being converted to a Swedish regulation. In addition, the European supervisory authorities have comprehensive regulatory powers.

Banks and credit market companies

Banks that conduct banking operations and *credit market companies* that conduct financing operations are subject to the regulations in the **Banking and Financing Business Act**.

This act states, for instance, what banking and financing business entails, and that banks and credit market companies need a licence from Finansinspektionen, the Swedish Financial Supervisory Authority, before they can begin conducting such operations. A banking business is an operation that combines the mediation of payments through general payment systems with receiving money (for instance, deposits in accounts) to be repaid within a maximum of 30 days of the customer's request. A financing business also combines two operations: first, receiving funds from the general public and, second, offering credit, guaranteeing credit, buying claims (for instance, invoices) or the financial leasing of personal property (such as cars). In addition to conducting banking or financing business, a bank or a credit market company may conduct other financial activities.

A bank can be a limited liability bank, a savings bank or a co-operative bank. A credit market company can be a limited liability company or an

economic association. Banks and credit market companies (credit institutions) come under the supervision of Finansinspektionen.

The Banking and Financing Business Act describes the requirements that banks and credit market companies must meet. This includes provisions regarding how banks and credit market companies should be organised, how they should conduct their operations and what demands are made of their owners and management.

One of the most important acts governing the activities of banks and credit market companies is the **Capital Adequacy and Large Exposures Act**. This act states how much buffer capital a bank or credit market company should hold in relation to the risks it takes, and how this capital should be calculated. Another important act is the **Money Laundering and Terrorist Financing (Prevention) Act**. This act aims to prevent financial operations from being used to conceal the connection of property with criminal activities or the financing of terrorism.

Examples of other laws that have a bearing on banks and credit market companies are

the **Consumer Credit Act** and the **Deposit Insurance Act**. The first of these includes provisions on cancellation rights for credit agreements, good lending practices, credit assessment, information to consumers and repayment of debts in advance, among others. The Deposit Insurance Act aims to guarantee funds in accounts of up to EUR 100 000 per customer and institution. However, any such amounts are paid in Swedish kronor. All types of accounts with banks and credit market companies (and securities institutions that are licensed to receive customers' funds in accounts, see below) are covered by the guarantee.

The **Payment Services Act** and the **Act on Unauthorised Transactions with Payment Instruments** cover accounts, services and products dealing with payments. Among its other purposes, the Payment Services Act aims to ensure that there are clear and consumer-friendly rules for payments. Among other provisions, the law forbids traders from charging fees for card payments. In addition, the length of time it takes to execute a payment has been regulated,

normally to one to two banking days, depending on the type of transaction in question. The law also regulates the information that the banks and other payment service providers are to provide to their customers.

The Act on Unauthorised Transactions with Payment Instruments clarifies account holders' responsibilities in the use of payment instruments by unauthorised parties. In this case, a payment instrument could be a debit card, a PIN code or a security authenticator for online banking. Among other areas, the law regulates how losses are to be allocated in the event that a card falls into the wrong hands.

The **Government Support to Credit Institutions Act**, also known as the Support Act, was passed to manage the financial crisis that culminated in 2008. The Support Act gives the Swedish state the possibility to offer support to banks and credit market companies to prevent them suffering financial problems that might pose a threat to the stability of the financial system. For example, in such a situation, the state can provide guarantees or capital injections or, as a last resort, take over ownership of

a credit institution through the compulsory redemption of the companies' shares. On the basis of the Support Act, a programme for borrowing with a government guarantee has been introduced, as has a capital injection programme.

Deposit companies

Under the **Deposits Business Act**, other limited companies and economic associations besides the credit institutions and securities companies can accept money (for example, deposits) from the public that is to be repaid within one year after a request from the customer. They must first register with Finansinspektionen. These companies, known as *deposit companies*, may accept at most SEK 50 000 per consumer, but there is no corresponding limit to the amount of money that may be received from a company. Deposit companies are not subject to supervision but are to be inspected by Finansinspektionen once a year. These companies are also covered by the Money Laundering and Terrorist Financing (Prevention) Act. The money received by deposit companies is not covered

by the deposit insurance or investment protection.

Insurance businesses

Private **insurance operations** are regulated in two fundamental legislative blocks: the **Insurance Business Act** and the **Insurance Contracts Act**.

The Insurance Business Act contains rules on the establishment of insurance companies in Sweden, their operations and supervision. The rules distinguish between life assurance and non-life assurance operations, activities that, in principle, must be conducted in separate companies. In addition, a distinction is made between insurance companies providing direct insurance and reinsurance companies. Reinsurance companies may not conduct any other business activities than reinsurance operations. However, there is nothing to prevent life assurance and non-life assurance companies from conducting reinsurance operations. Among other measures, policyholders are protected by the requirement that companies have a certain capital buffer beyond the commitments held by that company.

The Insurance Contracts Act regulates the legal relationship between the insurer and the policyholder – as well as other beneficiaries. The Act applies to non-life assurance, life assurance, accident insurance, health insurance and consumer insurance. The **Insurance Mediation Act** applies to the actual distribution of insurance products. It regulates how these operations are licensed, stipulates a central register of brokers and lays down certain requirements with which the brokers must comply.

Financial markets

The **Securities Market Act** covers several businesses that are important to a well-functioning securities market, namely securities business, stock market operations and similar, as well as clearing and settlement. The principal rule is that a licence is required for companies wishing to conduct any of these operations, and once a licence has been granted, these companies will come under the supervision of Finansinspektionen.

Securities business involves, for instance, the purchase or sale of financial instruments (such as

shares) on behalf of customers, financial advice, discretionary portfolio management and investment advice regarding financial instruments. The companies that are allowed to conduct securities business are called securities institutions (or securities companies). The Securities Market Act contains regulations on how the securities institutions should organise and conduct their operations and what demands are made of their owners and management. The act also includes rules of conduct that are aimed at protecting consumers. Like the credit institutions, the Swedish securities institutions are governed by the Capital Adequacy and Large Exposures Act and by the Money Laundering and Terrorist Financing (Prevention) Act.

For *stock markets* and similar regulated markets, the Securities Market Act includes, among its provisions, the demands made of the stock market's operations. It also describes which requirements must be met before a financial instrument can be traded on a regulated market, as well as the rules regarding access to regulated markets. Moreover, there are provisions regarding

the demands made on the stock market owners and management.

According to the Act, clearing organisation that engages in clearing activities (that is, clearing or settlement) must comply with certain operational requirements. Requirements are placed both on the party providing the clearing and on any party participating in the clearing. In addition, there are provisions regarding the demands made on a clearing organisation's owners and management.

Another act that has particular importance for securities trading is the **Financial Instruments Accounts Act**. The accounts show, for instance, who owns the shares and other financial instruments. This Act includes provisions covering, for instance, the measures to be adopted after the clearing and settlement of a securities transaction, namely the recording of the securities that have been transferred at the new owner's securities account.

Securities trading is also regulated in, for example, the **Financial Instruments Trading Act** and the **Financial Instruments Trading (Market Abuse Penalties) Act**. Among its provisions, the Financial Instruments Trading Act

describes the conditions under which there arises the obligation to prepare a prospectus in the sale of financial instruments and the obligation, in certain cases, to declare holdings of equities. The Financial Instruments Trading (Market Abuse Penalties) Act includes penal provisions for the trading of financial instruments by parties having access to information that is not public and which influences the price of the instrument (insider trading), and for actions influencing the price of a financial instrument traded on the securities market (market manipulation).


The **Financial Advice to Consumers Act** ensures consumer protection in the event of investment advice, i.e. advice relating to investment in financial instruments. The **Investor Protection Act** contains rules which provide some financial protection to investors who have lost securities if the securities institution, fund company or management company managing them becomes bankrupt. Investment protection currently amounts to SEK 250 000 per customer and institution.

The **Investment Funds Act** contains provisions on fund

operations. A Swedish fund is a collection of securities, for example shares and bonds. The fund's assets are owned by those who have deposited money in the fund. The funds are administered by a fund management company. The fund management company, which requires a permit for its operations, selects the securities in which the fund is to invest. However, the assets of a fund, as well as incoming or outgoing payments relating to the fund, are administered by a depository. This also implements the decisions taken by the fund management company and, at the same time, ensures that these comply with the law or fund rules. The depository must be a bank or other credit institution. The fund management company and the depository operate independently of each other.

New regulations

In the wake of the financial crisis that culminated in 2008, comprehensive work has been initiated to reform the international framework for financial supervision and regulation. This means that major changes will take place to regulations in the years ahead.



In turn, these changes will have major effects on both financial companies and supervisory authorities. These will include the introduction of new rules requiring banks to have more capital of higher quality and rules stipulating entirely new requirements for the banks'

liquidity. At the start of 2013, a new EU Regulation (EMIR) will enter into force. Among other effects, this will require OTC derivatives to be cleared via a central counterparty to a greater extent and will also place new requirements on central counterparties.¹¹⁹

¹¹⁹ For information on central counterparties, see the box "*Central counterparties*".

■ The financial infrastructure

A smooth-functioning financial infrastructure is an important precondition for financial stability. The financial infrastructure consists of different systems and of routines governing the use of these systems.¹²⁰ This chapter begins with a general description of how a payment is made. We then describe in more detail transactions regarding trading in financial instruments and foreign-exchange trading. We also explain what retail payments are and how payment instruments are used. The chapter concludes with a description of the most important systems in the Swedish financial infrastructure and an illustration of payment flows in Sweden.

Different types of payment

There are different types of payment, for example simple payments such as those made in cash, or more complicated payments, for example card payments where one or more intermediaries are required to make the payments. Three different types of payment and the demands they impose on the financial infrastructure are described below.

A SIMPLE PAYMENT

In a *simple payment*, for example a cash payment, the claim is extinguished when the buyer pays the seller using banknotes or coins. No intermediary is required for such a payment and there is no time lag between the initiation and completion of the payment. Figure 1 provides an example of a simple payment.

A and B may be individuals, companies or authorities. A buys a product or service from B and pays for it by making some type of payment to B. These steps complete the payment.

PAYMENT USING AN INTERMEDIARY

The major difference between a simple payment and a *payment using an intermediary* is that the execution of the latter requires an

¹²⁰ The Riksbank defines the financial infrastructure as the systems that handle financial positions and/or process financial flows between different participants, their legal frameworks and routines and the participants' use of these systems.

underlying, supporting structure. More parties are thus required than those directly involved in the transaction.

An example of a payment using an intermediary is an account transfer between two individuals with accounts at the same bank where the payer initiates the payment by instructing the bank to transfer funds. The bank then transfers the funds from the payer's account to the recipient's account and informs the recipient that his/her account has been credited. When the transfer is executed the payment is settled and thus completed.

Figure 2 illustrates the transaction between A and B when A and B have accounts with the same bank. The bank receives information on the transaction, debits A's account and credits B's account by the same amount.

PAYMENT USING SEVERAL INTERMEDIARIES

The picture becomes more complicated if A and B have accounts with different banks. It is then necessary to have more systems and a more developed *financial infrastructure* in which information on the transaction can be transferred between the parties concerned. Such an infrastructure covers not only systems but also all the routines and regulations required to manage an account-based payment from beginning to end. Consequently, there is a time lag between the initiation and the completion of the payment. The financial

Figure 1. Example of a simple payment

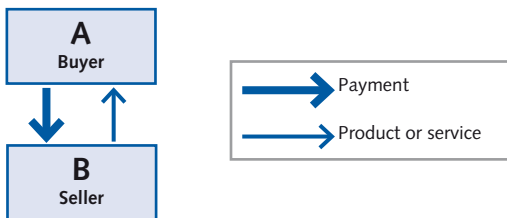
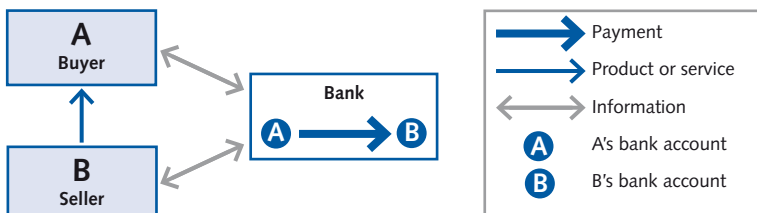


Figure 2. Example of a payment using an intermediary



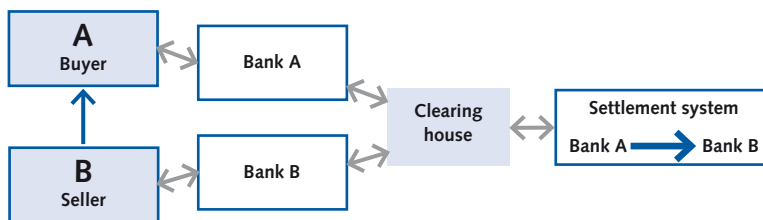
infrastructure that is required for this type of payment is illustrated in Figure 3.

The processes managed within this infrastructure can generally be summarised in three steps.¹²¹ In the first step the payment is *verified* and *authorised*. This often takes place in connection with the actual payment and involves verifying the identities of the parties and checking that the payment is valid. The balance in the account of the payer is also checked in this step. If the verification shows that there are sufficient funds the payment can be approved, i.e. authorised.¹²²

In the second step the transaction is *cleared*. This involves compiling instructions and information about the transfer. Clearing is performed by a *clearing organisation*. In the example shown in Figure 3, clearing involves a compilation of the transactions between two parties, A's and B's banks, and is therefore referred to as bilateral clearing. If more accounts and payment intermediaries are involved the compilation of transactions can be conducted for all the counterparties at the same time, so-called multilateral clearing.

Clearing orders can be calculated as either gross amounts or net amounts. A's bank may, for instance, need to pay B's bank SEK 100, while B's bank has to pay A's bank SEK 50. If the clearing order is calculated in gross amounts, that is in terms of the total sums, then this means that A's bank pays SEK 100 and B's bank pays SEK 50. Alternatively, the clearing organisation can use bilateral netting. This consists of two parties offsetting their debts and claims against one another. The effect is to reduce the parties' risk exposures to each other and thus their liquidity requirements. If the clearing positions are compiled, then A's bank will pay SEK 50 to B's bank. Multilateral netting involves all the participants' debts and claims being offset

Figure 3. Example of a payment using several intermediaries



121 The three sub-processes – verification/authorisation, clearing and settlement – are also performed when the payer and the recipient have accounts with the same bank, but in this case are handled using the bank's internal systems.

122 In the third step, which is described below, it is checked whether the bank participating in the settlement system has sufficient liquid funds to enable settlement of the payment.

against one another. Each participant will then have a single amount due from or payable to the other participants.¹²³ In some cases, clearing can instead be conducted through a central counterparty.¹²⁴

In the third and final step the payment is *settled*. This means that the actual transfer is made from the payer's account to the recipient's account. Prior to settlement, it is checked that there are liquid funds in the accounts that the banks themselves have for this purpose in a settlement system. The payment leads to the sender bank's account being *debited* and the recipient bank's account being *credited* with the amount transferred. The sending bank debits and the receiving bank credits the customers' accounts.

This settlement process is normally conducted using the accounts that the banks and some other financial companies, for example the clearing organisations, have with the relevant national central bank. Settlement is therefore carried out using central bank money in the accounts in a settlement system provided by the central bank and not by a commercial bank. This settlement system can thus be likened to a bank for the banks. Read more about this in the section on RIX.

When the three steps verification/authorisation, clearing and settlement have been carried out the payment is complete – it is usually said that the payment is *final* and *irrevocable* after settlement.

TRANSACTIONS WHEN TRADING IN FINANCIAL INSTRUMENTS

Financial instruments include securities such as shares, bonds and derivatives. In a transaction involving shares or bonds, the steps are largely the same as those in the example of a payment using more than one intermediary. This means that a similar infrastructure is also needed. The difference between a payment using several intermediaries and a transaction in financial instruments is that securities trading entails two flows. Apart from the transfer of the payment for the securities from the buyer to the seller (the payment process), there is also a transfer of the securities themselves from the seller to the buyer (the securities process). Securities trading is outlined in Figure 4.¹²⁵

A securities transaction consists of three steps. In the first step the transaction is initiated. This takes place when A and B have placed

123 If we instead assume that there are three participants, where A is to pay SEK 100 to B and SEK 120 to C, where B is to pay SEK 50 to A and SEK 20 to C and where C is to pay SEK 150 to B, the net positions that arise are as follows: for A -170, for B +180 and for C -10. The payment flows can then be simplified so that A pays SEK 170 to B and C pays SEK 10 to B.

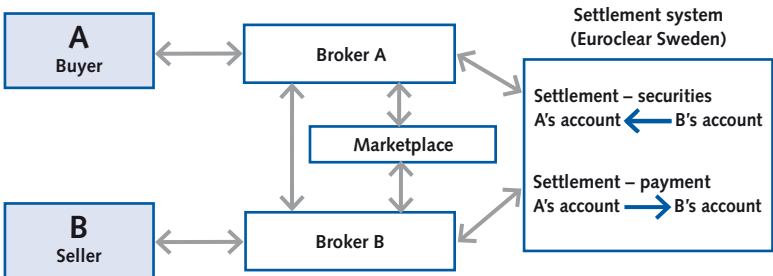
124 Read more about central counterparty clearing in the section on transactions in trading with financial instruments.

125 Figure 4 illustrates an example of a transaction without a central counterparty.

their buy and sell orders in the marketplace, through a broker, and the orders have been matched. A broker can also find a counterparty outside the marketplace, or itself act as a counterparty, and such transactions are then referred to as OTC transactions.¹²⁶ Given that securities trading involves large amounts of money, the safety aspect is especially important; any misunderstanding during such a trade could have serious financial consequences for the parties involved. In the second step the transaction is sent to the settlement system.¹²⁷ Here the identity of the parties is verified and the instructions for the transfers are then compiled. In the third and final step the transaction is completed with the settlement of the trade, which entails the simultaneous execution of the transfers in the payment process and the securities process. Settling the payment process and the securities process at the same time is referred to as *Delivery versus Payment* (DvP) and is a way of minimising the counterparty risks in a securities transaction. This eliminates the risk of a party paying for something that he or she does not receive, which could be the case if the two transactions were conducted at different times.

There are a number of important differences between transactions involving derivatives and transactions involving shares or bonds. In a derivatives transaction, the parties enter into a contract where the value of the contract is dependent on changes in the value of an underlying instrument.¹²⁸ Such a transaction does not thus necessarily involve, but may involve, a transfer of title to the underlying instrument, as is always the case in connection with a share or bond transaction. Moreover, in a derivatives transaction the investor is exposed to a counterparty risk for a longer period of time than in

Figure 4. Example of a financial instrument transaction



126 Over the Counter is a collective term for the transactions conducted outside a central marketplace (for example an exchange).

127 This is assuming that the transaction is conducted without using a central counterparty.

128 The underlying instrument may be a security, a certain currency or a commodity.

a share or bond transaction. The contract may be valid for several months, or even for years, and throughout this period the value of the claim on the counterparty may change. This increases the risk that the counterparty will be unable to pay as planned. This risk remains until the derivatives contract matures. Only then is the transaction settled.

The clearing and settlement of financial instruments sometimes involves a central counterparty (CCP). A central counterparty is said to improve the security of settlement by acting as a buyer to all the sellers and as a seller to all the buyers in securities transactions. Both the buying and the selling parties thus have the central counterparty as their counterparty. Counterparty risk in relation to many counterparties is thus replaced by counterparty risk in relation to only one, the central counterparty. Figures 5 and 6 illustrate the difference between not using and using a central counterparty in terms of turnover and the number of settlement transactions.

If the transactions are cleared and settled without using a central counterparty, as in Figure 5, each of the three participants

Figure 5. Exchange of funds in securities transactions without a central counterparty ¹²⁹

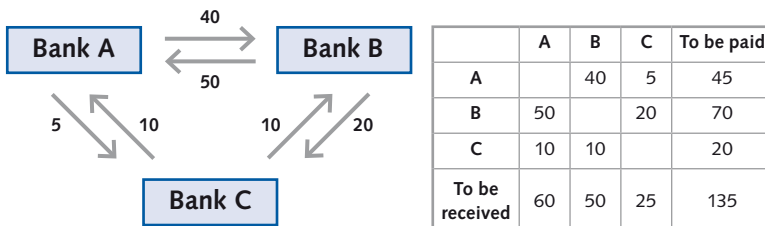
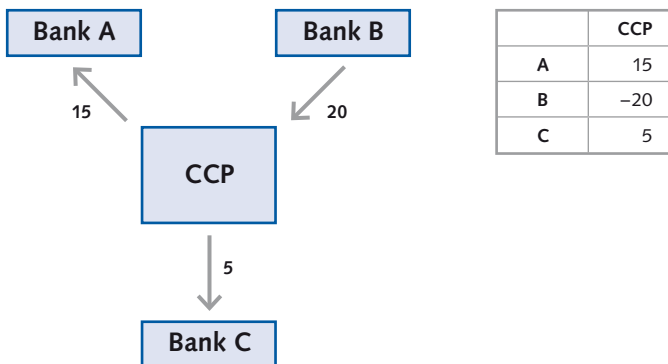


Figure 6. Exchange of funds in securities transactions with a central counterparty (CCP)



¹²⁹ An exchange of securities is handled in the same way.

will have to make and receive two payments. In total this will involve six transactions and the turnover will be SEK 135. If the transactions are instead cleared and settled through a central counterparty, as in Figure 6, the number of settlement transactions falls to three, which also reduces the exchange of funds between the participants. The participants' net position with the central counterparty is the difference between what each participant would have paid in total and what they would have received from the other participants if clearing and settlement had been conducted without a central counterparty. This is shown as the difference per participant between the last column and the last row of the table. In this way, the turnover is reduced to SEK 40.

Central counterparty clearing

*The G20 agreement in
September 2009*

Central counterparty clearing (CCP-clearing) has been in focus in recent years. The reason is that the G20 leaders signed an agreement on central counterparty clearing in September 2009. Under this agreement, by the end of 2012 all standardised OTC derivatives¹³⁰ must be traded on an exchange, or on an electronic trading platform when appropriate, and cleared at a central counterparty. OTC derivatives that are not cleared centrally must instead be subject to higher capital requirements. Information on OTC derivatives must also be reported to central trade repositories.

New legislation is being drawn up to implement the G20 agreement; in Europe in the EMIR¹³¹ and the MIFID II¹³² and in the United States in the Dodd-Frank Act and in legislation for consumer protection. The new EU regulation EMIR will come

into force at turn of the year 2012/2013.

*The central counterparty is the
legal counterparty in securities
transactions*

A central counterparty is a participant in the financial infrastructure that acts as an intermediary between buyers and sellers in the management of a securities transaction¹³³. In central counterparty clearing, the original contract between the buyer and the seller is replaced by two contracts with the central counterparty. This is usually referred to as novation. This means that the original counterparties in the transaction are no longer exposed to risk in relation to each other but instead in relation to the central counterparty.

The role of a central counterparty is to act as the legal counterparty in securities transactions until the transaction has been settled. In the case of share transactions settlement

¹³⁰ Over the Counter is a collective term for the transactions conducted outside a central marketplace.

¹³¹ EMIR stands for the European Market Infrastructure Regulation.

¹³² MiFID stands for the Markets in Financial Instruments Directive.

¹³³ A security is a document with a value that can be determined in money or be converted into money. Examples of securities are shares, bonds and derivatives.

takes place within only a few days of the trading day (T+3), while the settlement of derivative transactions may take place several months or years after the trading day. This means that a central counterparty that clears derivatives is often a legal counterparty for a longer period than a central counterparty that clears shares.

Multilateral netting reduces counterparty exposures

In central counterparty clearing, the positions are netted between the central counterparty and its counterparties, which means that all the positions are calculated as net positions instead of gross positions. This enables multilateral netting, which means that all the positions that exist between several participants are netted against each other. This reduces counterparty exposures and improves efficiency compared with bilateral netting. Reduced counterparty exposures in turn mean reduced counterparty risks.

Counterparty risk is concentrated to the central counterparty

Central counterparty clearing with multilateral netting gives

rise to two effects. First, it means that a smaller amount of collateral has to be pledged compared with bilateral netting. This in turn entails lower costs for risk management for the active participants on the financial markets. Second, the central counterparty becomes "the single point of failure" as the counterparty risk is concentrated to the central counterparty. The failure of a central counterparty may therefore have a severe impact on financial stability. Central counterparties must therefore have satisfactory risk management processes.

Risk management in a central counterparty

The main financial risk for a central counterparty is that one or more of its members fails, with the result that the securities or the payment is not provided to the central counterparty. In such a case, the central counterparty must then replace these securities or make the payment itself in order to meet its commitments to the remaining members. This means that the central counterparty may suffer direct losses and that it will be exposed to market risk.

The failure of a member can cause major losses and it is therefore important that a central counterparty has robust risk management methods.¹³⁴ In order to protect itself against direct losses a central counterparty requires collateral from its members, sets up a default fund and maintains a buffer of its own financial resources.

The collateral is of two types: initial margin and variation margin. The initial margin is the collateral that each member must pledge to the central counterparty to cover the exposure that the central counterparty takes on when a contract is cleared. The variation margin is the ongoing adjustment of the collateral in line with the increase or decrease in value of the cleared securities. The central counterparty either requires more collateral or reduces the collateral required from a member. All collateral is covered by a so-called haircut, which means that the collateral requirement is higher than the central counterparty's exposures. The haircuts are adjusted continuously depending on the market – if volatility

increases then the haircuts also often increase.

The default fund (insolvency fund) contains the capital that is intended to cover potential losses if the collateral is unable to fully cover the losses that arise when a member fails. Most of the European central counterparties demand that all of the members contribute to the default fund in proportion to the central counterparty's exposures to them. The EMIR contains specific requirements regarding the size of the default fund at a central counterparty.

Players in Sweden

There is one Swedish central counterparty, NASDAQ OMX Derivatives Markets, which clears derivative contracts and repos in Sweden. In addition to central counterparty clearing, NASDAQ OMX DM also provides a central marketplace for derivative contracts. There is no local central counterparty for the stock market, but since 2009 EMCF¹³⁵ has offered central counterparty clearing of the share transactions conducted on the NASDAQ OMX Large Cap list¹³⁶.

134 Specific requirements for central counterparties' risk management are stipulated in the EMIR.

135 The European Multilateral Clearing Facility is a clearing organisation based in the Netherlands.

136 The list on the NASDAQ OMX stock exchange where the largest companies are listed.

TRANSACTIONS IN FOREIGN EXCHANGE TRADING

The infrastructure for foreign exchange trading is essentially similar to that for trading in financial instruments. Here too, there are two flows that have to be cleared and settled. The difference is that two payments are exchanged for one another, one in each currency.

The settlement of foreign exchange transactions can give rise to substantial risks. If the banks trading with one another are in different time zones, there is a risk that one party in a foreign exchange transaction will pay in the sold currency without receiving the bought currency. This entails full credit risk.¹³⁷ However, there are systems in the infrastructure that manage this and that can eliminate credit risk by settling both sides of a foreign exchange transaction at the same time. CLS, Continuous Linked Settlement, is one such system and is presented in more detail below.

Foreign exchange payments that are not settled using a special infrastructure require mediation by banks in other countries. Such mediation is common when foreign exchange transactions derive from ordinary payments and not from trading in financial instruments, for instance. As an example, if a foreign bank wants to make payments in Swedish kronor on its own behalf or on behalf of a customer, it opens an account with a Swedish bank. The Swedish bank then becomes what is known as a correspondent bank. The foreign bank sends a payment instruction to the Swedish correspondent bank with information regarding the amount and final recipient. The Swedish bank in turn withdraws the specified amount in kronor from the foreign bank's account. If the recipient of the payment has an account in the same bank as the foreign bank, the amount is credited directly to this account. The payment is thereby settled. However, if the recipient is another Swedish bank or has an account with another bank, the payment must first pass through the Swedish financial infrastructure before it reaches the recipient.

¹³⁷ Credit risk is the risk of a borrower failing to meet his commitments. In foreign exchange transactions this risk is often called *Herstatt risk*.

Risks in the financial infrastructure

The payment and transaction flows managed in the systems in the financial infrastructure represent very substantial values. It is therefore of central importance that these systems work and that they do not entail risks that may adversely affect the participants. Preventing risks that arise in one system from spreading to other systems is also very important.

In recent years, a lot has been done to improve the ability of the systems to manage different types of counterparty and settlement risks. These risks can arise in different ways, for example in securities systems if the delivery of and payment for a security do not occur simultaneously, or in a payment system where the two parts of a payment are not conducted at the same time.

A number of functions have been created to manage these risks, for example Delivery-versus-Payment (DvP) where payment and delivery are executed simultaneously in a securities system, or Real-time gross settlement (RTGS) for a payment system where settlement is

conducted in real time on a gross basis. These functions are also available in the Swedish systems and consequently the risk of losses arising as the result of counterparty and settlement risks has decreased considerably.

The systems certainly still entail risks, but the focus is now instead on the large amounts of liquidity that these systems handle every day. Today's clearing and settlement systems require that large amounts of liquidity can be delivered at specific times during the day. The fact that today's markets are interlinked and that a participant may quickly need to transfer the liquidity received in one system in order to meet commitments in another system, creates liquidity risks. If a participant lacks liquidity, this may lead to liquidity shocks rapidly spreading from one system to another and thus also from one market to another. This contagion effect has been identified as a significant risk in the financial system and is something that the system owners as well as the central banks and supervisory authorities analyse carefully.

Retail payments

Retail payments is a term used for payments of relatively small amounts that are made in very large numbers. These can be made in two ways. Either the payment is made directly, for example by paying in cash. Or the payment is made through a bank account, for example by paying by card – in which case a payment instrument is used. These two types of payment differ in that cash represents a value while a card – a payment instrument – is instead a way of handling or accessing value by initiating a transfer between accounts.

In a direct payment involving the use of cash or, for example, a prepaid card, no financial infrastructure is needed for the actual transaction. However, such an infrastructure is required when using a payment instrument that initiates a transfer between accounts, otherwise it will not be possible to carry out the payment. A retail payment can be paper-based, that is initiated via a cheque or a giro form, or electronic, which means that it is initiated electronically through a card or online banking, for instance.

New payment instruments have appeared in recent years, for example electronic money (e-money), payment using mobile phones (m-payment) and new types of prepaid card. This section describes the types of retail payments used in Sweden. The different ways that retail payments can be made are outlined in Figure 7.

CASH AND PREPAID CARDS

Cash is primarily used for the payment of small amounts and accounts for a large share of the total number of payments. However, this

Figure 7. Outline of retail payments

	Account-based	Direct
Electronic	Credit transfers Direct debit Transfers Debit cards Charge cards Credit cards (E-money)* (Mobile payments)*	Prepaid cards (E-money)*
Paper-based	Paper-based credit transfers Money orders Cheques*	Cash

* These methods are not very common in Sweden.

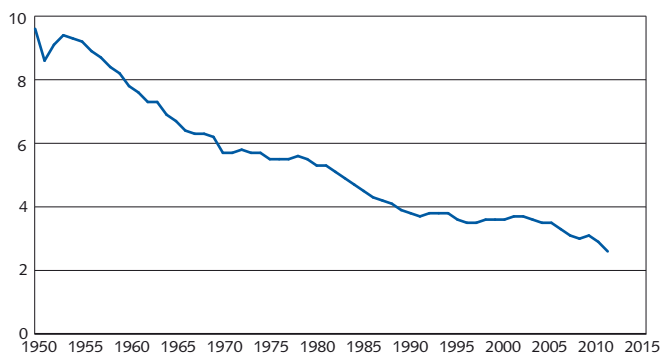
share has declined in recent years as the share of card payments has increased. As there are no overall statistics on cash usage, this can only be estimated. Measuring the amount of banknotes and coins in circulation¹³⁸ in relation to gross domestic product (GDP) gives an indication of the extent of the use of cash. Such a measurement shows that the share of banknotes and coins in circulation in Sweden has fallen from 10 per cent in 1950 to just below 2.6 per cent today. In 2011, the share of banknotes and coins in circulation declined while GDP increased and the curve thus continued downwards from 2010 (see Chart 32).

Statistics on cash withdrawals from ATMs show that the total transaction value has fallen in recent years. Between 2004 and 2011 it fell by almost 30 per cent. On the other hand, the number of transactions using ATMs has not fallen to the same extent, which indicates that the size of the cash withdrawals is decreasing (see Chart 33). Prepaid cards are of two types: internal and external. An internal card can only be used at one or a few places, for example within the same chain of shops, and can act either as an electronic wallet or as a traditional charge card for an individual issuer. An external card can also be used as a means of payment at companies other than the one that issued the card. Prepaid cards have an important similarity to cash in that the customer is able to remain anonymous.

PAYMENT INSTRUMENTS: ELECTRONIC AND PAPER-BASED

Irrespective of which payment instrument is used to initiate a payment, they are all based on the same principle; that is that money is

Chart 32. Banknotes and coins in circulation relative to GDP
Per cent



Source: Statistics Sweden

¹³⁸ Previously, the term M0 was used to denote the amount of banknotes and coins in circulation.

transferred from the buyer's account to the seller's account. This entails three important differences compared to cash:

- A payment instrument, for example a debit card, represents no intrinsic physical value.
- A financial infrastructure is needed to access the accounts.
- There is often a time lag between the time of payment and the final settlement of the payment.

Electronic payment instruments

Card payments

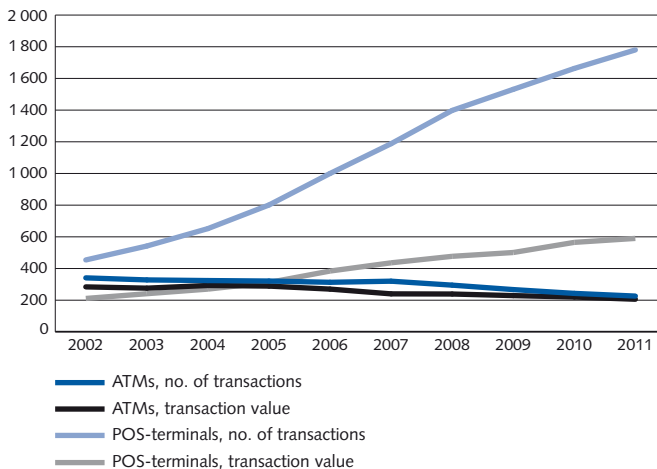
Cards are primarily used for payments made at the time of the transaction where the buyer and seller meet directly. However, cards are also used for remote payments, such as online payments, and for cash withdrawals from ATMs.

The cards issued by banks in Sweden are debit cards or credit cards which are tied to an international card system, usually Visa or MasterCard. Some non-financial companies also issue cards, so-called charge cards. These include, for example, retailers and petroleum companies. The three types of cards are described below.

A *debit card* debits the transaction amount from the card holder's bank account directly and does not give the holder any credit.

A *credit card* gives the card holder the option of having credit up to a certain limit. Either the entire debt or a portion of it is paid after a

Chart 33. Card transactions in payment terminals and ATM withdrawals
Million transactions and SEK billion



Source: The Riksbank

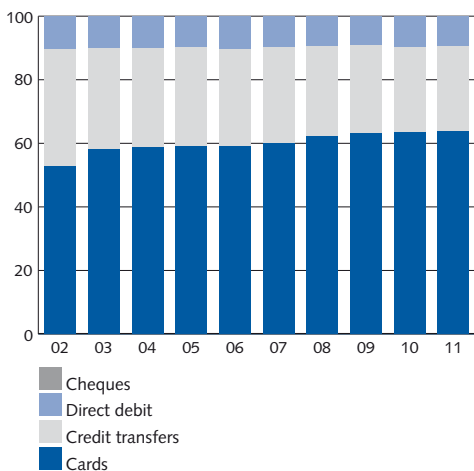
specified period. In the latter case, the outstanding debt is rolled over into a new period. Interest must then be paid on the remaining debt.

A *charge card* works in a similar way to a credit card with the difference that the entire debt must be paid in full after a specified period and thus cannot be rolled over. A charge card can only be used in the retail chain that issued it and cannot be used to withdraw cash from an ATM.

The use of cards has increased rapidly in Sweden in recent years. Between 2002 and 2011, the number of card payments increased threefold, from 621 million transactions in 2002 to 1 956 million in 2011. The value of these transactions has more than doubled, from SEK 365 billion in 2002 to SEK 779 billion in 2011 (see Appendix Table X). Previously, cards were used more often to withdraw cash from ATMs than to make payments. In recent years, however, there has been a marked change. In 2004, the transaction value in card payment terminals exceeded the transaction value of cash withdrawals from ATMs. According to statistics from 2011, the number of card transactions in point of sale (POS) terminals was seven times higher than the number of cash withdrawals from ATMs (see Chart 33). In terms of the number of payments and the transaction value, cards are the most widely used payment instrument (see Chart 34).

The value of an average card payment has fallen over the last ten years, from approximately SEK 600 to around SEK 400 (see Chart 35). Swedes are thus using cards to a greater degree to pay smaller amounts. Cards are thus increasingly acting as a substitute for cash.

Chart 34. Use of payment instruments
Per cent



Source: The Riksbank

Credit transfers

Credit transfers are used for remote payments, that is for payments where the payer and the recipient do not meet directly. In a credit transfer, the payer instructs his bank to transfer a certain sum from his bank account to the recipient's bank account. Credit transfers are used for recurring payments, often in a contractual relationship, for example with an electricity or telecom company.

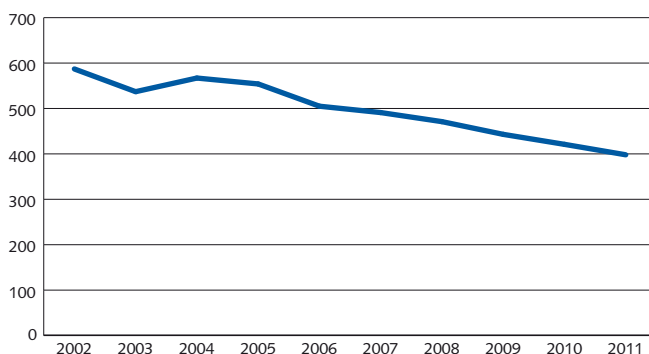
In 2011, the transaction value of credit transfers and direct debits amounted to SEK 13 147 billion, and the total number of such transactions was 1 120 million. The number of credit transfers is relatively low compared, for example, to the number of card payments (see Chart 34). However, in terms of value credit transfers and direct debits account for 94 per cent of the total transaction value for the account-based payment instruments.¹³⁹

Most credit transfers and account-to-account transfers are now initiated electronically (see Chart 36).¹⁴⁰ Usually they are initiated using an online bank or via data files that can be used by companies. A few credit transfers are still paper-based and are mainly initiated by households using credit transfer forms that are posted, or over the counter at a bank.

Direct debits

Direct debits are based on an agreement between the payer and the recipient on the automatic debiting of the payer's account. Direct

Chart 35. Average value of a card payment
SEK



Source: The Riksbank

¹³⁹ This statistic does not include transfers between accounts within the same bank or transfers between PlusGiro accounts in Nordea.

¹⁴⁰ 91 per cent of the transaction volume and 99 per cent of the transaction value.

debits, like credit transfers and account-to-account transfers, are used for remote payments and usually for recurring payments to a party that the payer has a contractual relationship with, such as a landlord or insurance company.

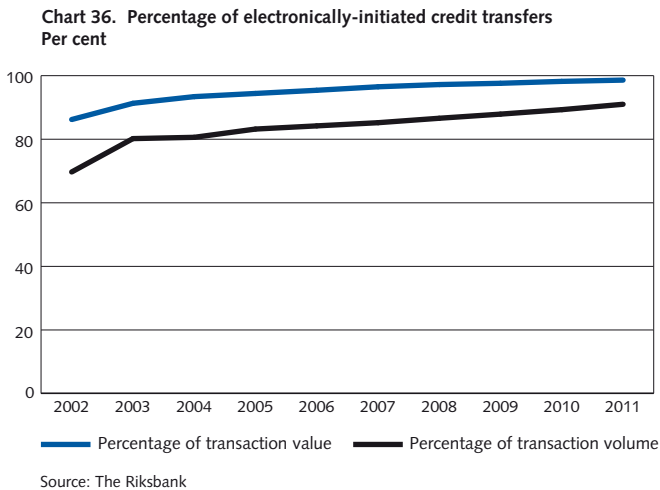
E-money

In theory, e-money is an electronic substitute for cash in the form of digital value units¹⁴¹ that exist independently on a card or a computer. In practice, however, cash and e-money do not have exactly the same characteristics, as e-money also has many similarities with account-based payments. Like a card payment, e-money also requires a financial infrastructure and the real difference compared with an account-based payment is that the money is deposited with an e-payment company rather than in a bank account. The e-payment company acts as an intermediary between the buyer and seller. More information on e-payment companies is presented in the section on payment channels.

Paper-based payment instruments

Credit transfers

As mentioned above, credit transfers and account-to-account transfers are initiated either electronically or using a paper form. Paper-based credit transfers and account-to-account transfers are usually initiated by sending a completed credit transfer form by post or over the counter at a bank. They constitute only a small proportion of all credit transfers.



¹⁴¹ Electronic registration of funds that can be used for payments without being linked to an individual account.

Cheques and money orders

A cheque is a written instruction from the writer of the cheque to the redeeming bank to pay a certain amount, either to the person writing the cheque or a third party specified by this person. These days, cheques are used to a very limited extent.

Money orders, which unlike cheques are still common, are a secure form of payment instrument that is used in connection with major purchases that are paid in cash, for example car purchases. A money order is bought at one of the Swedish banks for the desired amount and is made out to the recipient or to the buyer of the money order. If the money order is made out to the buyer it can later be assigned to the recipient and thus constitutes a secure form of payment as it has already been paid for.

PAYMENT CHANNELS – DIFFERENT WAYS OF MAKING A PAYMENT

An electronic payment can be made using different types of payment channel. These are described below.

Online banking

The public uses online banking services to a great extent in Sweden. A survey conducted by the Riksbank in the autumn of 2010 estimated that approximately 70 per cent of the Swedish public use online banking services to make various types of payment. The number of credit transfers and account-to-account transfers made over the Internet is increasing rapidly, which in turn is reducing the percentage of paper-based payments and increasing the percentage of electronically-initiated payments. Swedish banks are also increasingly offering various forms of online payment services. The trend is towards giving private individuals greater opportunities to overview their financial situation and make use of various financial services online.

E-payment companies

As e-commerce and Internet auctions between private individuals have become increasingly common, the need for a quick and simple way to make payments between two unknown parties has arisen. E-payment companies focus on securing payments online by acting as a link between, for example, the buyer's debit card and the payee. The companies provide a type of e-wallet to which money is transferred and then converted to e-money. This reduces the risk of card fraud. Transfers between different accounts and international payments in

different currencies are possible. The best-known e-payment company is PayPal, which is registered in Luxembourg but is also active on the international market.

M-payments

M-payments is the collective term for payments made using a mobile phone as a payment intermediary. The mobile phone can thus be regarded as a payment channel, a payment instrument or a prepaid card depending on how it is used and on how one views this. The mobile phone can also act as an information bearer in that it provides direct access to the banking services offered online and can use functions that can be likened to those of a payment instrument or a prepaid card. There are many indications that m-payments will become increasingly common and a number of initiatives and market collaborations are emerging in various forms.

Generally speaking, an m-payment can be made in four different ways. The first is when the phone is used for payments that are debited directly from a debit card. The second is for payments that circumvent the traditional infrastructure for card payments and point directly to a bank account. The third is when payments are made using SMS. In this case the telecom operator charges the customer, usually on the regular telephone bill. The fourth way is when the mobile application acts as a prepaid card that can be loaded in advance.

Two different technologies for handling information transfer, for example between a cash register and a mobile phone, are NFC and QR codes¹⁴². These are mainly intended to be used for small payments in shops. The NFC technology entails the payer holding the telephone against the cash register's NFC unit. QR codes are bar codes that the payer scans with the telephone. The sum is then withdrawn either directly from the payer's bank account or from a prepaid "card", usually by using a mobile application. However, development has not reached such a stage that the technologies have come into use to any great extent as yet.

¹⁴² NFC stands for Near Field Communication and is a technology used to send information between two units in close proximity to each other. This can be in the form of a card or something that is attached to or inbuilt into a mobile phone. QR stands for Quick Response and the two-dimensional bar codes can be read by most modern mobile phones, so-called smartphones.

What is the cost of a payment?¹⁴³

The possibility to make quick, simple, safe and inexpensive payments is a fundamental prerequisite for an effective economy. The consumers choose how they want to pay but are not usually subject to any transaction charges. It is therefore far from certain that the least expensive payment method is always chosen.

However, the total cost of payments to the economy may amount to more than 1 per cent of GDP, which in Sweden's case is equivalent to approximately SEK 36 billion. The studies of the cost of payments conducted in Sweden and other countries have been carried out at different times and using different methods so, not surprisingly, the results of these studies also differ. Nor can they simply be compared to each other. The Riksbank therefore chose to participate together with a number of other European central banks in a study led by the ECB of the costs of different types of payment from households to companies. The payment methods studied were cash, debit

cards, credit cards, credit transfers and direct debits.

Statistics on costs were collected from the Riksbank, cash-in-transit companies, banks and other companies. Information on the payment behaviour of the households was collected from banks, companies and households. Table 15 shows the estimated number of payments and the total mediated value for each of the different payment methods.

Each sector reports its own costs. However, these cannot simply be added together to reach a total cost as some costs are counted double. If, for example, a bank purchases cash transport services from a cash-in-transit company the bank will specify the fee it has paid for these services and the cash-in-transit company will specify the costs it has incurred when carrying out the services. The solution is to not include the different participants' payments for the services they purchase from each other. The calculated cost will then reflect the so-called economic cost,

¹⁴³ Segendorf, B. and T. Jansson (2012). "The cost of consumer payments in Sweden". Sveriges Riksbank Working Paper Series, no. 262, May 2012.

that is the total value of the real resources required by a certain payment method. The economic cost of the different payment methods is presented in Table 16.¹⁴⁴ The economic cost totalled SEK 20.9 billion, which was equivalent to 0.68 of Sweden's GDP in 2009.

The average economic cost in Table 16 is based on the transaction value being the average value presented in Table 15. In practice, however, the

cost of a cash payment increases with the transaction value, partly because it generally entails more manual handling of cash and more transportation. However, the cost of making a debit card payment is constant as the time it takes to make the payment is not dependent on the value and the electronic information-management process is not changed either. It is therefore possible to calculate a cut-off point in the transaction value

Table 15. Estimated total transaction value, number of payments and average transaction value for different payments from households to companies in Sweden (2009)

	CASH	CARDS			CREDIT TRANSFERS	DIRECT DEBITS	TOTAL
		BANK	CREDIT	TOTAL			
Transaction value, SEK billion	261	550	123	673	491	232	1 657
Number of transactions, million	1 034	1 337	240	1 577	274	190	3 075
Average transaction value, SEK	252	411	513	427	1 792	1 221	539

Source: Segendorf and Jansson, 2012

Table 16. Estimated economic cost for the different payment methods and average economic unit cost (2009)

	CASH	CARDS			CREDIT TRANSFERS	DIRECT DEBITS	TOTAL
		BANK	CREDIT	TOTAL			
Economic cost, SEK billion	8.6	6.0	2.8	8.7	3.0	0.5	20.9
Number of transactions, million	1 034	1 337	240	1 577	274	190	3 075
Average economic cost, SEK	8.32	4.45	11.65	5.55	10.93	2.76	6.80

Source: Segendorf and Jansson, 2012

¹⁴⁴ The Swedish costs for cash and debit cards are very close to the corresponding costs in Denmark, see Danmarks Nationalbank (2011), *Omkostninger ved betalninger i Danmark*. Differences in payment systems make it impossible to make simple comparisons for other payment methods.

below which it is economically less expensive to pay with cash and above which the debit card is less expensive. For cash and debit cards this cut-off point was SEK 43.50 in 2009. The corresponding cut-off point between cash and credit cards was SEK 500. Note that in Table 15 the average

transaction value for cash was SEK 252 and that the average credit card transaction was SEK 513. The conclusion is that, from an economic point of view, consumers tend to use cash and credit cards too much and debit cards too little.

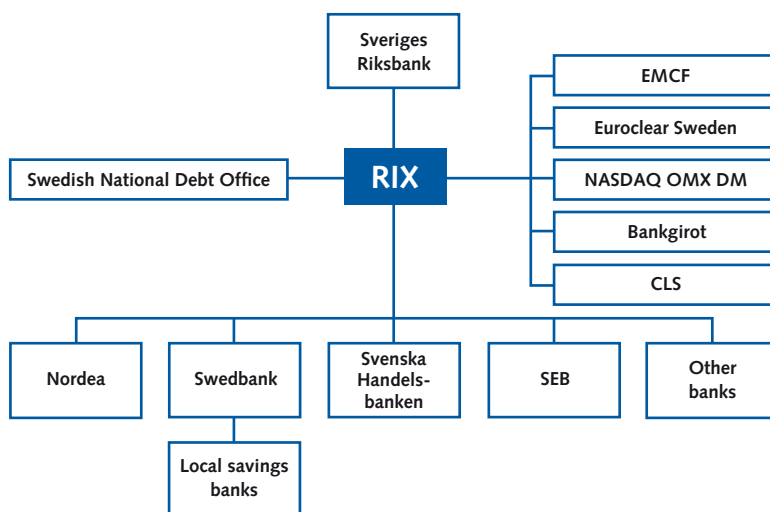
Systems in the financial infrastructure

The systems that are used to manage payments and trading in financial instruments in Sweden today are described below. These systems form the cornerstones of the Swedish financial infrastructure.

RIX – THE SYSTEM FOR LARGE-VALUE PAYMENTS¹⁴⁵

A large proportion of the banks' payments are made via their accounts in the Riksbank's system for large-value payments, RIX. All of the banks and clearing organisations participate in the system (see Figure 8).¹⁴⁶ The Riksbank owns and runs RIX and is also a participant. RIX constitutes an important hub in the infrastructure. The banks' accounts with the Riksbank are used for both the direct payments between the banks and for the final settlement of payment orders from bank customers. This means that all payments involving a transfer from an account in one bank to an account in another bank are settled through the banks' accounts in RIX. Payments arising from transactions in financial instruments are also settled in RIX.

Figure 8. The Swedish payment system



¹⁴⁵ For more information on the Riksbank's payment system for large-value payments, RIX, see www.riksbank.se.

¹⁴⁶ The banks participate either as direct or indirect participants. 16 Swedish credit institutions and Bankgirot, EMCF, Euroclear Sweden, NASDAQ OMX DM, CLS, the Swedish National Debt Office and the Riksbank are participants in RIX.

Settlement is based on the principle of Real-time gross settlement (RTGS). This means that the payments are settled immediately, one by one, on condition that the payer has sufficient liquid funds, that is money in his account. This settlement method reduces the risk associated with settlement, but on the other hand requires large amounts of liquidity.¹⁴⁷ In order to ensure the smooth settlement of payments, the banks are able to cover their liquidity requirements by borrowing intraday funds from the Riksbank. All such borrowing is fully secured.

Some payments are first processed at one of the clearing organisations, i.e. Bankgirot, Euroclear Sweden, NASDAQ OMX DM, EMCF or CLS (more information on these systems is presented below). Thereafter, only the remaining net sum is settled in RIX. However, the majority of the payments are sent directly from the participants for settlement in RIX. In 2011, the average number of transactions in RIX was approximately 13 700 per bank day and the average turnover per day was SEK 448 billion.

BANKGIROT¹⁴⁸ – THE SYSTEM FOR RETAIL PAYMENTS

Bankgirot is a bank-owned clearing organisation that was established in 1959 and which owns and operates a general payment system, the Bankgirot system. As clearing organisation, Bankgirot also offers a clearing and settlement service which, together with the Bankgirot system, forms Bankgirot's payment system. Retail payments, consisting of both its own Bankgirot products and payment products with external owners, are mediated via Bankgirot's payment system. In addition to this, Bankgirot offers services unconnected with ordinary payments, such as electronic identification and electronic invoicing.

Bankgirot compiles and mediates information to the banks regarding the size of the transfers that are to be made and to which account transfers shall be made. The payments are settled in SEK or EUR. The settlement of SEK payments is carried out in RIX on a Real-time gross settlement basis. As regards payment orders in EUR, each paying bank receives settlement documentation from Bankgirot and subsequently forwards this documentation to the European Central Bank's settlement system TARGET2, either directly or via its custodial bank. Bankgirot is then responsible for matching and confirming the

¹⁴⁷ In multilateral net settlement, all the participants' debts are offset against one another. This method requires less liquidity, but entails a higher level of risk, as the entire settlement process is stopped if one participant – regardless of size – cannot meet its obligations.

¹⁴⁸ In 2012, BGC changed its name and brand to Bankgirot. For more information on Bankgirot, see www.bgc.se.

implementation of the settlement. This procedure is performed for a number of different payment products that are designed to meet different needs. These include credit transfers, direct debits, payments from companies, salary payments into accounts and tax payments. Bankgirot also provides clearing and settlement services for additional payment products. These are account-to-account transfers via Dataclearingen, form payments via Privatgiro, cash withdrawals via Evry¹⁴⁹ and Swedbank, card payments via MasterCard and some parts of the Riksbank's cash management services.

In 2011, an average of 3.6 million payment transactions per bank day, amounting to an average of SEK 42.7 billion, were mediated via Bankgirot's payment system.

EUROCLEAR SWEDEN – CENTRAL SECURITIES DEPOSITORY¹⁵⁰

As mentioned earlier, transactions relating to financial instruments require settlement in two phases: one for the securities and one for the payments. Systems for the registration of the securities and for keeping them in accounts are also required. In Sweden, it is Euroclear Sweden that registers and holds securities in accounts and settles transactions on the stock market and fixed income market. Some transactions on the derivatives market are also settled in this system.

Securities exist almost exclusively as electronic records. The institution that keeps the central register for the various participants' holdings is therefore very important to the financial infrastructure. Euroclear Sweden registers all transactions arising from issues in Swedish kronor and the pledging of and trading in securities in Sweden.

A transaction involving shares or debt securities begins with an investor placing an order with a broker to buy or sell, for example through online banking. The brokers can themselves take on the role of counterparty or seek a counterparty on a marketplace, for example a stock exchange. When the broker has found a counterparty to trade with and the transaction is completed, the broker informs Euroclear Sweden. This marks the start of a matching process in which the buy and sell orders are paired. Euroclear Sweden verifies the identity of the broker and that the broker and the counterparty (broker or central counterparty) are in agreement on the securities concerned, the number/nominal amount, payment, trading date and settlement date. On the settlement date, all the matched instructions that have been registered under this particular settlement date are verified.

¹⁴⁹ Previous company names were EDB and CEKAB.

¹⁵⁰ Usually designated CSD. For more information on Euroclear Sweden, see www.ncsd.eu.

Euroclear Sweden checks that the seller can deliver the securities and that the buyer can pay; the transaction is then settled, and money and securities exchange owners. Euroclear Sweden's system comprises a number of processes that reduce the need for liquidity and securities. These optimisation processes are run continuously throughout the day so that several orders can be settled at the same time. This makes it possible for parties that have both bought and sold to have these orders settled without needing gross liquidity or holdings in the securities concerned.

As transactions in financial instruments often involve large sums, it is important that both phases of the transaction are completed at the same time, that is that money and securities are transferred simultaneously.¹⁵¹ To further reduce the risks, the settlement is carried out using accounts provided by the central bank, which means that the settlement is made in central bank money. For this purpose, the Riksbank permits Euroclear Sweden to administer accounts in RIX. In order to cover its liquidity needs in connection with securities settlement, a participant may transfer liquid funds between the Riksbank accounts administered by Euroclear Sweden and its regular RIX accounts at any time during the day. The Riksbank can also grant credit on these accounts during the day.

In 2011, the average gross sum for the settlement of share transactions amounted to SEK 30 billion per day. The corresponding figure for fixed income market transactions was SEK 341 billion.¹⁵² The value of fixed income market transactions is thus higher than that of transactions on the stock market. However, the number of transactions is much higher on the stock market, with an average of 47 500 transactions per day, compared to an average of 1 300 per day on the fixed income market.

NASDAQ OMX DM – THE CENTRAL COUNTERPARTY IN DERIVATIVES CLEARING¹⁵³

NASDAQ OMX Derivatives Markets (NASDAQ OMX DM) handles standardised derivatives contracts and repos by acting as the central counterparty and thus manages the risks associated with open exposure to a transaction counterparty. When NASDAQ OMX DM acts as central counterparty in the deal between buyer and seller, each

¹⁵¹ This is called DvP (Delivery versus Payment).

¹⁵² In addition to the debt securities traded by institutional investors on the fixed income market, Euroclear Sweden handles certain fixed income instruments that are mainly aimed at private individuals in the same way as share transactions. These are included in the stock market statistics and not in the fixed income market statistics.

¹⁵³ For more information on NASDAQ OMX DM, see www.nasdaqomxnordic.com.

transaction is replaced by two new deals, where NASDAQ OMX DM is the seller to all buyers and the buyer to all sellers. Consequently, the original parties have a claim on or a debt to NASDAQ OMX DM instead of on or to each other. This means that the settlement risks that the parties would have been exposed to in relation to each other are transferred to NASDAQ OMX DM.

The signing of a derivatives contract usually creates payment flows, for example an option transaction gives rise to an option premium.¹⁵⁴ Payments can also arise during the term of a derivatives contract. These payments are cleared on NASDAQ OMX DM and settled in RIX.

When a derivatives contract matures, the contract is settled, either by making a cash payment or by delivering the agreed amount of the underlying instrument. In the case of cash settlement, the amount is cleared on NASDAQ OMX DM and settled directly in RIX. In connection with the delivery of the underlying security, the securities phase of the deal is settled by transferring the securities concerned in Euroclear Sweden's system, while the payment phase is settled through the RIX accounts administered by Euroclear Sweden.

NASDAQ OMX DM is a secondary legal name of NASDAQ OMX Stockholm AB.¹⁵⁵ NASDAQ OMX Stockholm AB offers trading in several different types of instrument and on several markets.¹⁵⁶ In 2011, an average of approximately 460 000 derivatives contracts were traded on NASDAQ OMX DM each day.

EMCF – THE CENTRAL COUNTERPARTY FOR EQUITIES CLEARING¹⁵⁷

The European Multilateral Clearing Facility (EMCF) is the central counterparty that provides an obligatory clearing service for certain share transactions on the Nordic exchanges of NASDAQ OMX and for European marketplaces such as Chi-X Europe, BATS Europe and Burgundy. The shares on the stock exchange in Stockholm that are cleared by the EMCF are those on the Large Cap list. The clearing service offered by the EMCF entails the EMCF acting as the central counterparty in share transactions in place of the members. The counterparty risk (the risk that the buying or selling counterparty cannot deliver shares or money in accordance with the agreed share

¹⁵⁴ The price of an option is called the option premium. It reflects the compensation for the risk that the issuer of the option takes.

¹⁵⁵ A secondary name is not a separate legal entity but relates to a particular part of a company's activity. A secondary name is registered with the Swedish Companies Registration Office.

¹⁵⁶ See the section on the stock market in the chapter on the financial markets.

¹⁵⁷ For more information on EMCF, see www.euromcf.nl.

deal) that the parties would have had in relation to each other is transferred to the central counterparty. Clearing is performed in line with the multilateral netting principle. The final settlement of the share transaction is conducted by Euroclear Sweden. In 2011, Swedish share transactions amounting to a value of SEK 19 billion per day were cleared in EMCF.

EMCF is a subsidiary of Fortis Bank in the Netherlands and is 22 per cent owned by NASDAQ OMX.

CLS – THE SYSTEM FOR FOREIGN EXCHANGE SETTLEMENT¹⁵⁸

As mentioned above, the settlement of foreign exchange transactions can give rise to substantial risks if the two phases in a transaction are settled separately in the respective countries. The time lag that arises leads to major exposures between the banks. To reduce these risks, Continuous Linked Settlement (CLS) was started in September 2002. In CLS, foreign exchange transactions are settled in accordance with the principal of Payment versus Payment (PvP). This entails the participating banks having accounts – one for each currency – with CLS through which the two currencies in a transaction are transferred simultaneously. In turn, CLS has accounts with the central banks for the respective participating currency areas. The net balance of each member's transactions is paid to or by CLS using each country's system for large-value payments – in Sweden's case RIX. This eliminates the settlement risks.

The system is run by CLS Bank, which is domiciled in the United States. In 2011, average turnover per day in CLS as a whole amounted to USD 4 769 billion. Daily turnover in the system is thus significantly higher than Sweden's annual GDP.¹⁵⁹ The Swedish krona accounts for only 1.4 per cent of the total turnover, which is SEK 439 billion. Three Swedish banks are direct participants in CLS and several currencies are included in the system.¹⁶⁰

158 Read more about CLS and the elimination of settlement risks in connection with foreign exchange transactions in "Progress in reducing foreign exchange settlement risk", *Committee on Payment and Settlement Systems*, BIS, May 2008.

159 In 2011, Sweden's GDP amounted to approximately USD 538 billion (calculated using an average exchange rate of 6.50) or to around SEK 3 495 billion.

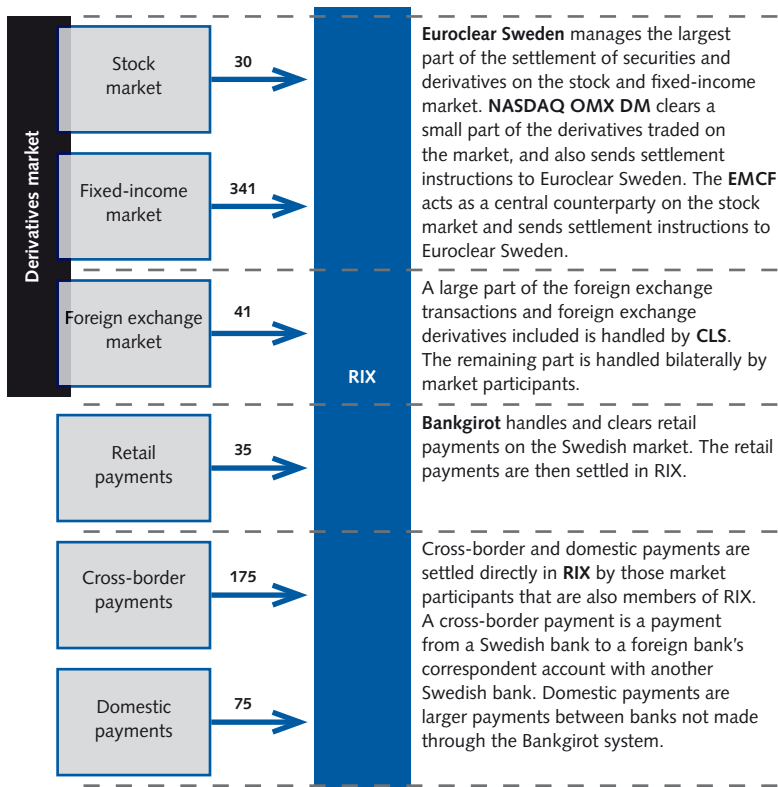
160 The currencies included in the system at present are the US Dollar, the Australian Dollar, the Canadian Dollar, the Danish Krone, the Euro, the GB Pound, the Hong Kong Dollar, the Israeli Shekel, the Japanese Yen, the Korean Won, the Mexican Peso, the Norwegian Krone, the New Zealand Dollar, the South African Rand, the Singapore Dollar, the Swedish Krona and the Swiss Franc.

Payment flows in the Swedish financial infrastructure

The Riksbank's payment system, RIX, is the central system in the financial infrastructure. In 2011, an average of approximately SEK 448 billion was settled per day. This means that a value corresponding to Sweden's GDP passes through RIX in the course of roughly eight days. The banks account for the largest flows in RIX. It is through the banks that households, companies and authorities manage most of their payments.

Figure 9 presents the different types of payment that are settled in RIX. Payments are either made directly in RIX or via clearing in Euroclear Sweden, NASDAQ OMX DM, Bankgirot, EMCF or CLS before they are passed on for settlement in RIX. The amounts presented in the figure are indicative and provide an estimate of the amounts for the different types of payment that were settled in RIX on an average day in 2011. The figures for CLS are counted double. The reason for this is that both of the values in a foreign exchange

Figure 9. Payment flows in the Swedish financial infrastructure
SEK billion, daily averages 2011



transaction, that is both the part in Swedish currency and the part in foreign currency, generate a payment flow.

The different systems may in some cases reduce the total flows by converting gross positions to net positions, which is described below.

As shown in the figure, trade in the fixed income market gives rise to the largest payment flows in the infrastructure. In 2011, Euroclear Sweden settled an average of SEK 341 billion per day from the fixed income market.¹⁶¹ The fixed income market refers to spot trading and derivatives trading to the extent that these lead to the delivery of an underlying security. Euroclear Sweden also settled SEK 30 billion per day from transactions relating to the stock market.¹⁶² These values were settled using the accounts that Euroclear Sweden administers in RIX and relate to the delivery of underlying securities, excluding internal transactions in which a clearing member is its own counterparty on the exchange. The figure includes trade both on and outside the exchange.

The EMCF, which acts as a central counterparty on the stock market, cleared transactions amounting to SEK 19 billion in 2011. After clearing and netting, SEK 6 billion of this sum was then settled through Euroclear Sweden.

Derivatives trading on NASDAQ OMX DM generates relatively small payment flows. These consist of payments for derivative transactions, for example equity options, equity futures, index options and index futures. Only a small proportion of the turnover from derivative transactions generates an actual payment as derivative positions are largely netted between the participants concerned. The underlying values may be significant in many cases, but the values that are actually settled, and thus paid, are very limited. The amounts are netted in NASDAQ OMX DM's system and only a small portion is finally settled in RIX. The figure for 2011 was SEK 290 million.

The account-based retail payments are managed through Bankgirot. This covers the majority of all payments to and from individuals and most companies, such as salary payments, card purchases and supplier payments. An average of SEK 43 billion a day was cleared in the Bankgirot system in 2011. After netting in Bankgirot, SEK 35 billion per day (which is settled in RIX) remained to be paid between the major banks.

¹⁶¹ In addition to the debt securities traded by institutional investors on the fixed income market, Euroclear Sweden handles certain fixed income instruments that are mainly aimed at private individuals in the same way as share transactions. These are included in the stock market statistics and not in the fixed income market statistics.

¹⁶² SEK 6 billion related to transactions cleared and netted by the EMCF.

The clearing and settlement of foreign exchange transactions can be managed in two different ways, in CLS or through a correspondent bank. Payments in Swedish kronor for foreign exchange transactions are usually based on foreign exchange contracts, either spot or forward contracts, or are handled as foreign exchange swaps or options. Most of the payments are made through CLS. The foreign payments that arise directly from foreign exchange transactions are also largely made through CLS. The majority of these payments, SEK 439 billion a day, were also cleared in CLS. After netting, only SEK 17 billion per day remained to be finally settled in RIX. The foreign exchange transactions cleared through a correspondent bank and settled in RIX amounted to SEK 24 billion per day in 2011. These transactions consist of interbank payments in connection with foreign exchange trading, for example a transfer between a Swedish bank and a foreign bank's account with another Swedish bank. In total, the sums settled in RIX stemming from foreign exchange trading thus amounted to SEK 41 billion per day.

One of the largest items in RIX is foreign payments, that is payments in Swedish kronor that go to a Swedish bank which, in turn, is a correspondent bank for a foreign bank, also known as foreign clearing. These accounted for SEK 175 billion per day. If the recipient Swedish bank has accounts with the foreign bank, no transaction in RIX occurs. The reported value of SEK 175 billion per day therefore relates only to the payments that are made between Swedish banks in cases where one of the banks has acted as a correspondent bank for a foreign bank. The total value of foreign payments is therefore probably much higher.

Domestic payments, which gave rise to an average of SEK 75 billion per day in 2011, refer partly to payments stemming from the shortest segment of the money market and partly to pure interbank payments. These payments are in SEK and arise between Swedish banks in Sweden. An interbank payment can arise, for instance, when a company needs to make a payment to another company quickly and the sending and receiving companies have different banks. In this case, the payment will go through RIX. Smaller payments that are not urgent usually go through Bankgirot.

Appendix 1. Tables

Table A. Share turnover and market value on NASDAQ OMX Stockholm SEK billion

	SHARE TURNOVER	MARKET VALUE
2002	2 702	1 780
2003	2 453	2 314
2004	3 391	2 699
2005	3 764	3 507
2006	5 519	4 227
2007	6 525	3 959
2008	4 694	2 239
2009	3 393	3 413
2010	3 627	4 230
2011	3 684	3 496

Source: NASDAQ OMX

Table B. Issuers and investors in the bond and money markets SEK billion

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Issuers in the bond market										
Central government	660	732	772	769	766	730	717	703	802	796
Mortgage institutions	488	549	565	706	770	826	953	1 035	1 087	1 233
Other credit market companies	45	52	59	61	73	79	81	75	78	380
Non-financial companies	119	122	113	137	130	143	164	176	154	30
Local government	13	14	13	16	20	21	18	20	18	191
Banks	36	46	66	89	112	192	261	256	376	94
Total	1 374	1 516	1 587	1 777	1 870	1 991	2 193	2 265	2 516	2 723
Issuers in the money market										
Central government	240	269	267	294	259	180	139	116	92	72
The Riksbank	0	0	0	0	0	0	49	192	0	0
Mortgage institutions	88	104	93	72	113	106	105	72	14	9
Other credit market companies	18	16	9	10	9	19	45	12	12	34
Non-financial companies	78	51	62	62	66	96	97	73	58	68
Local government	6	5	5	6	11	5	9	6	10	14
Banks	32	45	47	69	62	108	96	62	37	48
Total	462	490	483	515	520	515	540	533	223	246
Investors in the bond market										
AP funds	93	113	126	134	157	148	138	129	168	185
Insurance companies	493	542	599	613	701	744	834	1 125	1 087	1 205
Banks	137	177	129	262	281	337	475	471	346	364
Non-residents	402	455	529	647	545	535	497	466	581	762
Companies and others	246	228	205	121	185	227	249	74	334	207
Total	1 371	1 516	1 587	1 777	1 870	1 991	2 193	2 265	2 516	2 723
Investors in the money market										
AP funds	2	2	2	7	3	4	6	0	1	0
Insurance companies	126	116	108	135	88	92	42	33	35	30
Banks	141	138	152	129	151	87	133	119	64	61
Non-residents	75	85	82	75	52	43	75	54	23	39
Companies and others	119	149	133	168	226	289	268	169	113	115
Total	462	490	483	515	520	515	540	533	223	246

Sources: Statistics Sweden, annual reports (AP funds) and the Riksbank

**Table C. Average turnover per day in the bond market
SEK billion**

	GOVERNMENT BONDS	MORTGAGE BONDS
2002	20	7
2003	20	10
2004	22	9
2005	28	9
2006	30	10
2007	30	13
2008	22	15
2009	17	12
2010	18	13
2011	18	13

Source: The Riksbank

**Table D. Average turnover per day in the money market
SEK billion**

	TREASURY BILLS	MORTGAGE CERTIFICATES
2002	9.0	3.6
2003	10.6	3.4
2004	12.2	3.1
2005	9.9	2.0
2006	10.4	2.7
2007	8.3	2.2
2008	7.4	2.1
2009	4.0	1.7
2010	4.1	0.7
2011	3.1	0.4

Source: The Riksbank

**Table E. Average turnover per day in repos
SEK billion**

2002	131
2003	124
2004	123
2005	141
2006	176
2007	196
2008	170
2009	92
2010	119
2011	120

Source: The Riksbank

Table F. The monetary base in Sweden 2011
SEK billion

	BANKNOTES AND COINS IN CIRCULATION	THE BANKS CLAIMS ON THE RIKSBANK	THE MONETARY BASE
Jan	100.1	10.0	110.1
Feb	99.2	10.7	110.0
Mar	98.6	11.6	110.2
Apr	99.6	16.9	116.4
May	98.5	18.0	116.5
Jun	100.2	16.3	116.5
Jul	99.6	17.0	116.6
Aug	99.1	17.6	116.7
Sep	97.8	18.9	116.7
Oct	97.6	19.3	116.9
Nov	97.4	19.6	116.9
Dec	100.3	17.2	117.5

Source: The Riksbank

Table G. Average daily turnover in the Swedish foreign exchange market
SEK billion

	SPOT	FORWARDS	OPTIONS	LONG-TERM FX-SWAPS	LONG-TERM FX-SWAPS
2002	37	14	13	56	76
2003	41	14	31	49	74
2004	50	14	8	55	79
2005	58	17	12	66	116
2006	70	23	14	75	128
2007	84	39	14	91	141
2008	81	34	9	103	137
2009	70	28	13	112	108
2010	72	26	13	121	96
2011	77	28	13	126	96

Note. This is the definition of short and long FX swaps used by the Riksbank when collecting turnover statistics. The distinctions made by the market participants with regard to maturity periods for FX swaps are described in the section on derivatives

Source: The Riksbank

Table H. Total assets of the financial intermediaries at year-end 2011
SEK billion

	TOTAL ASSETS/ INVESTMENT ASSETS	LENDING TO THE PUBLIC	OTHER LENDING	INTEREST- BEARING SECURITIES	EQUITIES	OTHER
Credit institutions						
Banks	5 997	2 543	1 079	778	391	1 207
Mortgage institutions	2 366	2 193	62	24	0	87
Other credit market companies	920	484	55	301	7	73
Total credit institutions	9 283	5 219	1 196	1 103	398	1 367
Investors						
Insurance companies	2 943	47	22	1 252	1 383	239
AP funds	1 005	-	-	367	577	61
Fund management companies	1 574	-	-	385	920	269
Total investors	5 522	47	22	2 005	2 880	569
Securities companies	22	0.9	5	0.5	0.9	15

Note. Column one shows the balance sheet totals for banks, mortgage institutions, other credit market companies and securities companies, while the column for insurance companies and AP funds shows investment assets and the one for mutual funds shows the funds managed.

Sources: Statistics Sweden, annual reports and the Riksbank

Table I. Geographical breakdown of the major banks' lending 2011
Per cent

	SWEDEN	OTHER NORDIC COUNTRIES	THE BALTIC STATES	GERMANY	UK	REST OF THE WORLD
Swedbank	85.8	2.7	10.2	0.0	0.0	1.4
SEB	69.9	3.7	9.8	14.0	0.0	2.7
Nordea	23.2	54.6	2.3	0.0	0.0	19.9
Handelsbanken	67.1	21.9	0.0	0.5	5.9	4.6
Four major banks	50.3	31.1	4.2	2.3	1.3	10.8

Source: Annual reports and the Riksbank

Table J. Lending to the public by credit institutions
SEK billion

	TOTAL	BANKS	MORTGAGE INSTITUTIONS	OTHER CREDIT MARKET COMPANIES
2002	2 603	1 177	1 197	229
2003	2 688	1 160	1 284	245
2004	2 874	1 217	1 393	263
2005	3 237	1 419	1 529	289
2006	3 652	1 668	1 664	320
2007	4 185	2 259	1 595	331
2008	4 621	2 497	1 765	360
2009	4 719	2 355	1 972	392
2010	4 923	2 402	2 107	414
2011	5 219	2 543	2 193	484

Source: The Riksbank

Table K. The banks' assets
SEK billion

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Loans to Swedish public	1 031	1 027	1 042	1 181	1 345	1 880	2 027	1 890	2 005	2 136
Swedish National Debt Office	123	127	170	224	291	323	415	359	354	365
Loans to public abroad	23	12	11	14	32	56	262	265	54	63
Loans to Swedish financial institutions	458	451	615	669	721	621	964	940	920	806
The Riksbank	54	298	352	442	547	748	713	737	545	582
Loans to foreign banks	318	361	369	503	569	634	927	1 021	864	778
Interest-bearing securities	506	313	605	609	681	691	969	668	1 155	1 267
Other	2 514	2 590	3 163	3 642	4 185	4 952	6 282	5 880	5 896	5 997
Total	2 458	2 514	2 590	3 163	3 643	4 185	4 952	6 282	5 863	5 858

Source: The Riksbank

**Table L. The banks' lending to and borrowing from the public
SEK billion**

LENDING	NON-FINANCIAL COMPANIES	HOUSEHOLDS	SWEDISH PUBLIC SECTOR	PUBLIC ABROAD	OTHER
2002	636	295	60	123	64
2003	612	298	39	127	83
2004	627	313	42	170	65
2005	741	351	49	224	53
2006	827	401	68	291	81
2007	1 093	648	97	323	98
2008	1 218	717	93	415	53
2009	1 050	761	128	359	57
2010	1 058	817	64	354	110
2011	1 144	866	68	365	101

BORROWING	NON-FINANCIAL COMPANIES	HOUSEHOLDS	SWEDISH PUBLIC SECTOR	PUBLIC ABROAD	OTHER
2002	391	493	37	70	81
2003	378	521	43	115	54
2004	388	537	42	134	76
2005	451	584	56	134	82
2006	505	676	70	162	60
2007	520	829	63	145	200
2008	603	900	93	132	214
2009	610	942	84	142	193
2010	625	1 030	68	144	265
2011	660	1 123	68	182	264

Source: The Riksbank

**Table M. The banks' liabilities and equity
SEK billion**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Deposits from Swedish public	1 034	1 082	1 111	1 266	1 439	1 612	1 810	1 829	1 987	2 114
Deposits from the public abroad	70	115	134	134	162	145	132	142	144	182
Deposits from Swedish financial institutions	157	157	168	181	221	307	748	572	264	234
Deposits from foreign banks	488	473	735	825	925	983	1 113	963	859	845
Securities issued	203	222	349	548	659	956	1 226	1 372	1 524	1 626
Other	409	376	458	467	552	666	937	617	733	593
Equity	154	165	208	221	227	283	310	384	385	403
Total	2 514	2 590	3 163	3 642	4 185	4 952	6 277	5 880	5 896	5 997

Source: The Riksbank

Table N. The banks' deposits from the public by depositor category
SEK billion

	SWEDISH NON-FINANCIAL COMPANIES	SWEDISH HOUSEHOLDS	SWEDISH PUBLIC SECTOR	PUBLIC ABROAD	OTHER SWEDISH DEPOSITS
2002	391	493	37	70	81
2003	378	521	43	115	54
2004	388	537	42	134	76
2005	451	584	56	134	82
2006	505	676	70	162	60
2007	520	829	63	145	200
2008	603	900	93	132	214
2009	610	942	84	142	193
2010	625	1 030	68	144	265
2011	660	1 123	68	182	264

Source: The Riksbank

Table O. The banks' average deposit and lending rates and treasury bill yields
Per cent

	LENDING RATES	DEPOSIT RATES	TREASURY BILL YIELDS 6 MONTHS
2002	5.59	2.19	3.58
2003	4.71	1.41	2.65
2004	3.91	0.93	2.03
2005	3.30	0.73	1.95
2006	4.37	1.82	3.13
2007	5.17	2.78	4.19
2008	4.28	1.73	1.15
2009	2.35	0.27	0.22
2010	3.42	0.95	1.54
2011	4.28	1.59	1.31

Note. Several major amendments have been made to the statistics since September 2005.

Source: The Riksbank

Table P. Mortgage institutions' lending to the public
SEK billion

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Single-family dwellings	603	673	749	869	966	915	979	1 069	1 135	1 184
Multi-family dwellings	96	119	152	196	240	241	279	329	372	395
Commercial and office buildings	415	400	400	395	391	369	389	432	434	441
Tenant-owner apartments	34	33	28	28	28	31	35	52	62	71
Other	40	42	40	40	37	39	83	88	103	102
Total	1 187	1 267	1 369	1 528	1 662	1 595	1 763	1 970	2 106	2 193

Source: The Riksbank

Table Q. New lending by mortgage institutions by original fixed-rate term
Per cent

NEW LOANS PER MONTH	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Variable rate	53.5	40.4	54.8	50.3	55.8	47.9	66.5	83.5	67.2	52.1
Fixed-rate term ≤ 5 years	31.7	42.0	32.3	31.0	26.5	29.4	25.1	13.5	25.4	42.8
Fixed-rate term > 5 years	14.7	17.6	13.0	18.7	17.8	22.6	8.5	3.0	7.4	5.2

Source: The Riksbank

Table R. Mortgage institutions' loan stock by original fixed-rate term
SEK billion

AT MONTH END	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Variable rate	426	402	496	604	705	645	799	1130	1153	1040
Fixed-rate term ≤ 5 years	356	487	615	598	603	579	616	523	790	992
Fixed-rate term > 5 years	415	395	283	327	356	370	348	319	140	131
Total	1 196	1 283	1 393	1 528	1 663	1 595	1 763	1 972	2 083	2 163

Source: The Riksbank

Table S. Mortgage institutions' funding
SEK billion

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Certificates	171	182	171	175	146	167	81	116	10	27
Bonds and subordinated loans	653	746	738	853	1 043	1 137	1 286	1 393	1 432	1 619
Intra-group funding	–	–	–	–	–	–	–	–	1 431	1 618
Other funding	0	0	0	0	0	0	0	0	0	0
Total	824	928	910	1 028	1 189	1 304	1 367	1 509	1 442	1 646

Source: The Riksbank

Table T. Lending by other credit market companies to the public
SEK billion

	SWEDISH NON- FINANCIAL COMPANIES	SWEDISH HOUSEHOLDS	SWEDISH PUBLIC SECTOR	PUBLIC ABROAD	OTHER SWEDISH DEPOSITS
2002	133	94	29	40	10
2003	141	104	34	31	9
2004	144	115	37	30	8
2005	161	118	38	37	8
2006	179	123	41	46	8
2007	180	126	42	57	6
2008	204	93	49	89	7
2009	218	100	54	99	7
2010	225	107	54	44	6
2011	251	113	76	51	5

Source: The Riksbank

Table U. Insurance companies' investment assets
SEK billion

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Non-life insurance companies	1 281	1 443	1 567	1 833	1 990	2 132	1 931	2 246	2 459	2 447
Life insurance companies	331	329	363	420	439	468	447	485	498	497
Total	1 612	1 771	1 930	2 253	2 429	2 600	2 379	2 731	2 956	2 943

Source: Statistics Sweden

Table V. The insurance companies' allocation of investment assets
SEK billion

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Equities	589	697	807	1 051	1 215	1 282	947	1 344	1 546	1 383
Bonds	725	783	844	894	953	1 016	1 164	1 114	1 087	1 205
Short-term investments	175	176	160	188	140	148	133	90	94	112
Loans ¹	55	57	59	51	49	78	68	120	164	173
Properties	68	59	61	70	72	76	65	63	66	70
Total	1 612	1 771	1 930	2 253	2 429	2 600	2 378	2 731	2 956	2 943

1. New definition since the first quarter of 2009. The current definition includes lending, derivatives and repos.

Source: Statistics Sweden

Table X. Use of different payment instruments

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Number of transactions, millions										
Cards	621	759	845	970	1 114	1 293	1 527	1 653	1 800	1 956
Debit cards	541	670	674	777	873	1 017	1 226	1 337	1 448	1 606
Credit cards	80	89	172	193	240	276	301	316	352	350
Credit transfers	436	418	453	517	575	651	699	726	768	831
Electronic	304	335	365	430	484	555	605	638	686	756
Forms	132	83	88	87	91	96	94	88	82	75
Direct debit	119	130	143	160	197	208	229	241	272	289
Cheques, including money orders	2	1	1	1	1	1	1	1	0	0
Total	1 178	1 308	1 442	1 648	1 886	2 153	2 455	2 621	2 840	3 076
Transaction value, SEK billion										
Cards	365	408	479	537	562	634	719	732	758	779
Debit cards	297	331	369	413	432	477	538	550	563	575
Credit cards	68	77	110	124	130	157	181	182	195	204
Credit transfers	6 202	6 355	7 204	8 090	8 666	10 020	10 806	10 615	11 528	12 604
Electronic	5 348	5 803	6 732	7 635	8 269	9 674	10 499	10 358	11 315	12 430
Forms	854	552	472	456	397	346	307	257	213	174
Direct debit	250	268	302	344	384	424	452	469	507	543
Cheques, including money orders	21	46	59	55	54	60	69	42	27	30
Total	6 838	7 077	8 044	9 027	9 666	11 138	12 045	11 858	12 820	13 956

Source: The Riksbank

Table Y. Card transactions in POS-terminals and ATM withdrawals
Number of transactions (millions) and SEK billion

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
ATMs										
No. of ATMs	2 669	2 699	2 716	2 814	2 816	3 085	3 236	3 319	3 351	3 566
No. of transactions	341	328	324	321	313	320	295	267	243	226
Transaction value	284	276	293	289	270	240	239	229	220	206
Payment terminals										
No. of POS-terminals	142 021	153 055	161 098	176 637	184 590	187 330	194 776	217 760	203 117	209 631
No. of transactions	454	542	652	801	1 000	1 188	1 398	1 531	1 663	1 780
Transaction value	211	241	270	312	384	436	477	501	565	590

Source: The Riksbank

Table Z. Average value of a card payment
SEK

2002	587
2003	537
2004	567
2005	554
2006	505
2007	491
2008	471
2009	443
2010	421
2011	398

Source: The Riksbank

Table AA. Percentage of electronically initiated credit transfers
Per cent

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Percentage of transaction value	86.2	91.3	93.4	94.4	95.4	96.5	97.2	97.6	98.2	98.6
Percentage of transaction value	69.7	80.2	80.6	83.2	84.2	85.2	86.6	87.9	89.3	91.0

Source: The Riksbank

■ Appendix 2. Market conventions in the Swedish fixed income and foreign exchange markets in SEK

A. Conventions in the Swedish bond market

Day count basis: Bonds have 30E/360 days per year, where 30E refers to "End-of-month".

Coupon Frequency: Annual coupon.

Quotations Basis: Prices/interest rates are expressed in decimals.

Trade date: Designated as T0.

Maturities: The designation of the bond indicates the maturity. Common maturities are for example 2, 5 or 10 years. Longer maturities also exist.

Settlement date: Three business days from the trade date (also called T+3). When the maturity of a bond falls below one year the bond is termed a "period bond" (the bond is traded T+2).

B. Conventions in the Swedish money market

Day count basis: Deposits, repo rates, treasury bills and bank, mortgage and Riksbank certificates, actual number of days /360 days per year (Actual/360).

Quotations Basis: Prices/interest rates are expressed in decimals.

Trade date: Designated as T0.

Maturities: Up to 12 months. Common maturities are 1, 3, 6, 9 or 12 months.

Settlement date: Two business days from the trade date (also called T+2).

C. Conventions in the shortest maturity segment of the money market

Day count basis: Deposits and repos and the Riksbank's repos: actual number of days/360 days per year (Actual/360).

Quotations Basis: Prices/interest rates are expressed in decimals.

Trade date: Designated as T0.

Maturities:

O/N (Overnight) = today (T0) to tomorrow (T1).

T/N (Tomorrow/next) = tomorrow (T1) to the day after tomorrow (T2).

S/N (Spot/next) = the day after tomorrow (T2) to the day after (T3).

1w (One week) = the day after tomorrow (T2) and one week thereafter (T2 to T9).

D. Conventions for the foreign exchange market in SEK

Foreign Exchange Quotation:

1 euro = x units SEK.

Quotations Basis: Prices/interest rates are expressed in decimals.

Trade date: Designated as T.

Value date: Two business days from the trade date (also called T+2).

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Sveriges Riksbank
SE-103 37 Stockholm
(Brunkebergstorg 11)

Phone +46 8 787 00 00
Fax +46 8 21 05 31
registratorn@riksbank.se
www.riksbank.com

