The Swedish Financial Market

2009

SVERIGES RIKSBANK

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Content

Preface

The Swedish Financial Market is a description of the roles and functions of financial markets, institutions and infrastructure in the Swedish financial sector. It is published once a year and 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 to serve a dual function, a "reference book" for those needing statistical information and a simple "textbook" for those who wish to learn more about the Swedish 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 equity market, the fixed-income market and the foreign exchange market. In addition to an account of how trading takes place, there is a presentation of marketplaces and different types of instruments traded in these marketplaces, for example equities and bonds. A separate chapter is devoted to important financial intermediaries. These include banks, insurance companies, fund management companies, securities companies and private equity and venture capital companies. A separate chapter has also been included describing the financial infrastructure used for payments and securities transactions in Sweden. The latest year's financial crisis is described, in various manners, in all three chapters, as it has affected the entire Swedish financial market.

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 increasingly reaching across borders. However, the report is based on national statistics compiled annually for financial legal entities and this provides a natural set of Swedish parameters for the publication.

Stockholm, August 2009

Johanna Stenkula von Rosen
Editor

Introduction – The roles of the financial system

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

CONVERTING SAVINGS INTO FINANCING

Both private individuals and companies need to borrow money. Young people may need to borrow money for investments in housing and education. Companies may need to borrow to finance a project or to utilise an invention. At the same time, there are people who are in another phase of life and want to save for pensions and consumption. There are also companies who want to save for investments.

It would be inefficient if every saver had to seek out and analyse suitable business projects to invest in, and it would also be inefficient if every single entrepreneur had to seek out a large number of potential investors for his/her projects. The financial sector plays a key role by assisting in channelling savings into investments as efficiently as possible.

A financial intermediary is a specialised middleman, from which all parties can benefit. The clearest example of a financial intermediary in this role 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 occasion. At the same time, the bank can lend the saver's money to businesses and private individuals with a need for financing. Banks are specialists in valuing, monitoring and managing credit risks for the private individuals and in the companies to which they lend. 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 and the borrower do not have the same access to information. With a bank as an intermediary, the borrower or entrepreneur 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

[1] Asymmetrical information arises when a lender does not have sufficient information to make a rationally based decision on lending money to a borrower.

– in this simplified case, represented by a bank – contributes to more efficient allocation of capital in the economy. Other examples of financial intermediaries that contribute in this way are mortgage institutions and finance companies.

However, it is not always financial intermediaries that are the most efficient means of distributing financing. For example, financing can be provided even more efficiently by 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 sold 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 equities, bonds and money market instruments. In simplified terms, the issuers of bonds and other fixed-income instruments are the banks' borrowers. They can obtain cheaper financing for their projects than would have been available by borrowing from a bank.

Unlike bonds and other fixed-income instruments, equities do not generate interest. Instead, they represent shares in a company and the return determined by the future profits of the company. Given that these profits may vary considerably over time, equity investors 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 equity market is a market for venture capital.

MANAGING RISKS

However, not all financial services are equally suited to be converted into standardised contracts that can be traded in a market.[3] This is also why financial markets cannot entirely replace financial intermediaries; instead they complement each other. In addition, the markets create a need for a large number of other, more specialised intermediaries such as securities institutions and fund management companies. Fund management companies are an example of an intermediary that

[2] Securities is an overall term for shares, bonds and other financial instruments that represent an economic value and which are traded.
[3] Financial techniques are undergoing continuous development. In recent years, for example, securitisation of banks' loan portfolios has taken place in a number of places around the world.

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). Accordingly, the financial sector does not simply play a role in the intermediation of capital, but also contributes to more effective risk management.

Both companies and private individuals need to protect themselves against different kinds of risks. 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, such as undesirable changes in the future prices of raw materials or in exchange rates. The growth of the financial markets has created the conditions for trading in contracts – derivatives – that are specially designed to manage risks of this kind. These derivatives include options, forwards, and swaps.

EFFECTIVE, SECURE PAYMENTS

In addition to mediating capital flows and managing risks, financial companies create the conditions for more efficient processing of payments in the economy. By using the existing financial infrastructure, the banks can support private individuals and businesses via 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 stable 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 of intermediaries and markets is fundamental for this. The function of commercial banks as intermediaries is central to the financial system. At the same time,

however, the activities of the banks are special, as liquidity risk forms a natural part of their activities. Liquidity risk means that the banks normally finance themselves over the short term, for example with the aid of private individuals' savings which can be withdrawn with short notice, while issuing loans over the longer term, for example mortgages. This means that financing and lending do not have the same time perspective, which may entail problems. Furthermore, problems in one bank can easily spread to another bank.

The stability of the financial system is based on the confidence of both companies and private individuals. A loss of 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. When a market and its price mechanisms do not function it is said that a "black hole" appear in liquidity. This has a variety of consequences for the financial system. Market participants may have problems adjusting their financial positions and valuing their holdings, complicating their portfolio and risk management. Additionally, those companies that have issued securities on this market to obtain funding may encounter problems when those securities expire and more funding must be secured. The banks' increased dependence on markets for their risk management and funding mean that they are also more sensitive to liquidity problems in these markets.

Such gaps in liquidity have arisen on a number of occasions. Among other occasions, this happened 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 September 11, 2001. Uncertainty on the market has periodically been very high since the current financial turbulence started during the autumn of 2007. This has led to great strains being placed upon liquidity, and that trading in a number of markets has, at least temporarily, ceased entirely – entering a "black hole".

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 as regards avoiding or, when necessary, managing such situations. The Riksbank has the Riksdag's mandate to "promote safe and efficient payments". The Riksbank both takes preventative measures and acts in crisis situations. The interaction of various authorities is critical both in this preventative work and in crisis management. The same also applies to international cooperation as financial enterprises increasingly operate across national borders.

The financial markets

The equity market

The equity market enables investors to channel their savings into companies requiring capital. This provides the investor with access to an investment with relatively high, albeit fluctuating, yield. At the same time, the companies' founders redistribute a portion of the risk associated with the company to investors who are willing to take it. The equity market thereby contributes to two of the financial market's basic functions: converting savings into financing and managing risks.

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 equity capital. A share is essentially a claim on the company's assets and results after the company's creditors, for example the company's lenders, have received their due. As the value of this claim is determined by the profitability of the company, equity capital can be regarded as risk capital. However, the shareholders' liability for the company's operations is limited in the sense that they cannot lose more than the amount they invested in the company. Part of the company's profit is usually distributed directly to shareholders as dividends, which, in Sweden, are usually paid out once a year, while the rest is added to the company's equity capital. Holding of shares also entails rights of co-determination over the company; each share entails some form of voting rights at the company's annual general meeting.[4]

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

[4] 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.

To ensure that the intermediation of risk capital between companies and a broad range of investors is as efficient as possible, it is often advantageous to turn to an organised marketplace for equities, a stock exchange, for instance. Companies use stock exchanges to issue shares and investors to buy and sell shares.

A description of the equity market in Sweden follows. It starts with a description of the issuers and investors present on the equity market. After this, the role of the marketplaces in equity trading is presented, followed by a description of equity trading at NASDAQ OMX Stockholm and other marketplaces in Sweden. The section concludes with a description of the trade in equity-related derivatives. Integration of the European equity 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 could be defined as foreign companies, due to factors such as the overseas locations of their head offices, can still list their shares on Swedish marketplaces, which will thus still be designated as "Swedish" shares. Furthermore, Swedish shares may be traded abroad, even though they are listed on a Swedish marketplace.

ISSUERS

Far from all Swedish companies may obtain funding by issuing shares. In order to be classified as a limited company, a company must have capital amounting to at least SEK 100 000. Approximately one quarter of all Swedish companies are limited companies. Only those limited companies with at least SEK 500 000 in capital may offer their shares for public trading.

Limited companies whose shares are not for sale to the public are known as private limited companies. Both established companies and companies that are not yet ready for stock exchange listing or other forms of public equity trading can opt to be classified as private limited companies. They can occasionally 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*

Limited companies whose shares are for sale to the public are known as public companies. By the end of 2008, shares of 534 companies were traded publicly.

INVESTORS IN THE EQUITY MARKET

Shareholding in Sweden is widespread and extensive. At year-end 2008, the total value of equities listed on Swedish marketplaces amounted to approximately SEK 2 300 billion. This almost represents a halving of value as compared with 2007. Table 1 indicates that foreign investors owned 36 percent of equity value at the end of 2008, thereby being the single sector with the greatest holding. However, foreign investors reduced their holdings as compared with the previous year. Just over 14 per cent consisted of direct holdings by Swedish households. Households bought more equities than they sold during 2008. Households also hold equities indirectly through investment funds, insurance and pension savings. At year-end 2008, the proportion of holdings held by financial companies was approximately 27 per cent. Non-financial companies accounted for ten per cent of total equity assets.

Table 1. Shareholdings per sector, shares listed on Swedish marketplaces
Per cent

SECTOR	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Non-financial companies	6.9	6.8	6.8	8.2	8.5	9.2	8.7	8.4	9.0	9.4	9.5
Financial companies											
Banks, finance institutions, etc.	1.3	1.9	2.4	2.0	2.5	2.3	3.4	2.8	2.5	2.2	1.6
Investment companies[5]	6.3	5.9	6.4	6.1	5.6	5.6	5.3	5.3	5.2	5.6	5.4
Mutual funds	9.1	8.3	8.5	9.8	10.5	11.6	11.1	11.8	11.2	10.9	11.4
Insurance companies, pension institutions	12.2	12.0	9.8	11.6	10.4	9.2	8.7	8.7	8.1	8.3	9.0
Financial companies, total	28.9	28.1	27.2	29.5	29.0	28.7	28.5	28.6	27.0	27.0	27.4
Public sector											
Central government	2.6	1.8	4.9	5.4	5.7	5.5	5.2	4.4	4.5	4.5	4.6
Local government	0.6	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
Social insurance funds	4.5	4.3	4.1	3.7	4.1	4.1	3.8	3.5	3.2	3.2	3.5
Public sector, total	7.7	6.4	9.3	9.3	10.0	9.8	9.2	8.0	7.8	7.8	8.2
Households	15.0	15.0	13.1	13.7	14.3	14.4	15.0	14.8	14.3	13.4	14.5
Non-profit making organisations											
Companies	1.8	2.0	2.1	1.9	1.8	1.8	1.8	2.1	2.1	2.0	2.1
Households	5.1	2.8	2.6	2.9	2.9	2.9	2.8	2.7	2.7	2.4	2.5
Non-profit making organisations, total	6.9	4.7	4.7	4.7	4.7	4.7	4.6	4.8	4.8	4.4	4.6
Outside Sweden	34.6	39.0	39.0	34.6	33.5	33.1	33.9	35.3	37.2	38.0	35.8
ALL SECTORS, TOTAL	100	100	100	100	100	100	100	100	100	100	100

Source: Statistics Sweden

[5] Investment companies are defined as limited companies with ownership spread among a great number of physical 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.

Development trends in European equity trading[6]

Equity trading in Europe is currently undergoing major changes, partly due to mergers of existing stock exchanges and partly due to the establishment of new marketplaces. Three mergers, above all, have affected equity trading in Europe.

Sweden was particularly strongly affected by the wave of mergers when NASDAQ, the United State's second largest stock exchange, merged with OMX in 2008.[7] The new stock exchange group, NASDAQ OMX, covers markets in the United States, the Nordic region and the Baltic region. At present, equity transactions on the NASDAQ OMX exchanges are equivalent to 6 per cent of total turnover of equity trading in Europe.[8]

NYSE Euronext is the result of the 2007 merger of the largest US stock exchange, NYSE, and Euronext. Euronext was in turn the stock exchange arising from the merger of the French, Belgian, Dutch and Portuguese stock exchanges at the turn of the century. During 2008, equity transactions taking place through NYSE Euronext were equivalent to approximately 20 per cent of turnover in Europe.

During 2007, Borsa Italiana and the London Stock Exchange also underwent a merger. This stock exchange group covered as much as 29 per cent of European equity trading in 2008.

These mergers have implied great changes to the structure of equity trading activities. However, the competive situation has not been affected, since the exchanges active in most countries provided services on the basis of what was, in principle, a monopoly, just like after the mergers. For example, Swedish equities were only traded on NASDAQ OMX Stockholm.

In order to rectify the competitive situation, the MiFID directive was implemented during 2007, facilitating the establishment of new marketplaces,

[6] This section describes the situation at the end of the first quarter of 2009.
[7] OMX was, in turn, the result of a merger of the Stockholm stock exchange and HEX, the Finnish stock exchange company that had previously acquired the Latvian and Estonian stock exchanges. Furthermore, between 2003 and 2006, OMX had also acquired the Lithuanian, Danish and Icelandic stock exchanges.
[8] The market shares in this section have been calculated on the basis of FESE European Trading Statistics, December 2008.

and thus competition, for equity trading in the national markets. The implementation of this directive has resulted in the establishment of four new trading facilities by the end of 2008. All four platforms offer trading in Swedish equities. A small number of new trading facilities are expected to enter operation in 2009.

Certain European trading facilities have been started by individual financial companies, for example Chi-x, which is owned by the Japanese financial group Nomura Holdings, Inc. Others are operated by companies formed by market participants for the sole purpose of operating a trading facility, for example Turquoise, which is owned by nine major market participants. Furthermore, the established European stock exchanges have started their own trading facilities with the aim of offering equity trading on a number of European markets.[9] One example of this is NASDAQ OMX Europe, which is operated by NASDAQ OMX.

These new trading facilities have a great deal in common. They all attempt to compete for national market share by offering low transaction fees, rapid trading systems and many different equities under one roof. Furthermore, these new trading facilities offer a clearing service. This clearing service forms an important area of their offering as clearing has the advantage of simplifying transactions and managing counterparty risks.

The new trading facilities offers lower fees for the execution of transactions. The cost of a share transaction is formed partly by these direct transaction costs and partly by the spread (that is, the differential) between buy and sell rates. The greater the turnover on an equity, the lower the spread becomes. Consequently, it is often possible for a marketplace with high transaction volumes to offer lower costs for an equity transaction, even if its transaction fees are high.

The new trading facilities attempt to attract trade volumes by offering low direct costs. However, it remains difficult to compete with the established stock exchanges in terms of turnover. By December 2008, the four newly-

[9] The established stock exchanges had previously established trading facilities to offer trading in equities issued by minor companies. One such trading facility is NASDAQ OMX's First North, which is described in the section TRADING IN EQUITIES ON OTHER SWEDISH MARKETPLACES.

established trading facilities had attracted six per cent of Europe's equity trading, measured in terms of turnover, and, during the first two months of 2009, this figure reached 14 per cent.[10] The oldest trading facility, Chi-x, has the greatest market share, attaining five percent of European turnover in 2008 and eight per cent during January and February 2009.

Equity trading in Sweden has been affected by this development. Apart from the possibility of trading Swedish shares on all four of the newly-established trading facilities, it will also become possible to trade on a new Nordic trading facility, Burgundy (which will enter into operation during 2009). Burgundy is owned by Nordic market participants whose trading activities are equivalent to 47 per cent of equity trading on the NASDAQ OMX Nordic Exchange. Burgundy intends to offer shares from all the Nordic markets in a similar manner to NASDAQ OMX.

It is too early to say what the final market structure will be, following the implementation of MiFID. However, probably not all trading facilities that have started or are starting will survive over the long-term. It similarly seems unlikely that the established exchanges will regain as strong market positions as previously.

[10] These market shares are based on FESE European Trading Statistics, December 2008, and European Trading Statistics February 2009. Market shares have been calculated as BATS Europe, Chi-x, NASDAQ OMX Europe and Turquoise's collected share of total equity turnover in Europe.

MARKETPLACES

Marketplaces typically provide two main services. They both provide assistance to companies wishing to offer shares for sale and administer the technical system and regulatory framework that make equity trading possible. There are currently two categories of marketplace: regulated marketplace (a category which includes traditional stock exchanges) and trading facility (Multilateral Trading Facility, MTF).[11] Trading facilities are marketplaces that may be operated by a stock exchange or a securities institution and which offer a simpler trading environment than a regulated marketplace. When listing on a regulated marketplace, companies must comply with the requirements placed both by Swedish legislation and by the marketplace. These requirements refer to the company's size, presentation of information and governance, among other factors. The regulations for trading facilities are not as detailed, although trading facilities can themselves choose to adopt the more stringent rules applied to regulated marketplaces. The simpler regulations applied by trading facilities mean that it is usually less trouble to offer equities on these, although, in return, this usually entails more risk for investors.[12] In 2008, there were 534 public limited companies. Of these, 301 were listed on a regulated marketplace and 233 were traded on a trading facility. Trading facilities, with their lower requirements, are usually more appropriate for newer and smaller companies.

Regulated markets and trading facilities must also adopt regulations covering 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 equity prices. The reason for this is that all traders should have access to the same information. This is intended to create confidence in the market and protect investors.

There are two regulated marketplaces in Sweden: NASDAQ OMX Stockholm, which has a dominant position, and NGM Equity. At year-end 2008, there were three mulitaleral trading facilities in Sweden: *Aktietorget, First North* and *Nordic MTF*. Table 2 indicates that the market capitalisation of NASDAQ OMX Stockholm was 2 239 or 97

[11] With the EU directive MiFID, which was incorporated into Swedish legislation in November 2007, the rules were changed as to how different marketplaces should be organised, with two categories of marketplace, regulated marketplaces and trading facilities, being confirmed by law. Under the old legislation, trading could take place at three categories of marketplace: the stock exchange, an authorised marketplace and an unregulated marketplace.

[12] As described in the box "Development trends in European equity trading", certain trading facilities have the business concept of offering trading in equities that are already listed on a stock exchange. These companies already fulfil the requirements for market trading on a regulated market and do not entail increased risk.

per cent, measured as market capitalisation of the equities traded in Sweden. At the same time, only 49 per cent of public companies are listed on NASDAQ OMX Stockholm. Swedish shares can also be traded on certain overseas trading facilities that are specialised in providing a marketplace for shares that are already listed on a stock exchange and thereby fulfil listing requirements.

The great majority of equity trading in Sweden takes place through electronic trading systems belonging to a stock exchange or trading facility, but it is also possible to trade equities outside these systems. A portion of the trade taking place outside these systems takes place in accordance with NASDAQ OMX Stockholm's regulations and is reported to NASDAQ OMX Stockholm as normal stock exchange transactions. The remaining portion of trade taking place outside the system takes place directly between the buyer and the seller (a practice also known as OTC trade) and is not subject to the regulations of any marketplace.

Table 2. Swedish marketplaces 2008 (2007 within parentheses)

	NUMBER OF COMPANIES		MARKET CAPITALISATION SEK BILLION	
NASDAQ OMX Stockholm	263	(275)	2 239	(3 959)
NGM Equity	38	(47)	6	(12)
Aktietorget	107	(81)	4	(6)
First North	100	(99)	13	(36)
NGM Nordic MTF	26	(28)	0.5	(1)

Sources: NASDAQ OMX and Statistics Sweden

Equity trading via an electronic system

Trading in equities via an electronic system is conducted by issuing different types of orders. An order can be entered into the system as a so called *limit order.* This means that the customer pre-specifies a maximum acceptable bid price or a minimum ask price. Alternatively, it can be entered as a *market order,* which instructs the broker to trade at the best available price.

The system sorts the limit orders according to price and time, the highest bid prices and lowest ask prices being placed first in the order book. If the price of several orders is the same, they are sorted according to the time at which they were registered in the system. How long an order remains in the system depends on whether there is a corresponding order in the order book with which to close the deal. When a market order reaches the automatic trading system it is in principle matched chronologically with the limit orders that have been placed. Before this, however, it will have been dealt with by a broker who assesses when its various elements are to be registered in the system.

Even though limit orders and market orders are the only types of orders that exist in the stock exchange trading system, they can be executed in different manners. For instance, it is not unusual for a customer to want a major order to be broken down in the system into smaller units. The reason for this is, above all, to avoid too great impact on prices. It is then possible for the customer's broker to enter what is called an iceberg order into the system, when only part of the total volume of the order ("the tip of the iceberg") is visible to other participants. When one unit has been executed, the next is automatically entered into the system, and so on until the entire order has been completed. In the stage between the customer and the broker, pure limit orders and market orders are not the only forms of order that are placed.

TRADING IN EQUITIES ON NASDAQ OMX STOCKHOLM

NASDAQ OMX Stockholm is the dominant 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 equities. The members consist of Swedish securities institutions, i.e. securities companies and credit institutions which are licensed by the Swedish Financial Suopervisory Authority (*Finansinspektionen*) 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 around eighty (85)[13] equity trading members. In principle, non-financial companies and branches of foreign companies can be members of the stock exchange. At present, there are no members in this category in NASDAQ OMX Stockholm.

Trading structure

Equity trading on NASDAQ OMX Stockholm takes place electronically through the maching of orders in the trading system SAXESS.[14] 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 every equity. During the trading day, buyers or 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.

Table 3. Some key ratios for equity trading on NASDAQ OMX Stockholm

	2007	2008
Market capitalisation, SEK billion	3959	2239
Turnover, SEK billion	6525	4694
Average daily turnover, SEK billion	26.1	18.6
Annual turnover, billion equities	87	68
Total number of deals closed during the year, million	24.9	28.8
Average amount per deal	261915	163332
Average number of deals per day	99640	114046
Rate of stock turnover, per cent	139	152

Source: NASDAQ OMX

[13] Source: NASDAQ OMX member statistics, April 1, 2009.
[14] During 2009, NASDAQ OMX is working on the introduction of a new trading system, INET, with a start date of December 7, 2009. This is the same system used by NASDAQ OMX on its US stock exchange and on its European trading facility NASDAQ OMX Europe.

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

When a deal is closed, information is sent to Euroclear Sweden (previously VPC AB), where the transaction is settled. Settlement entails the shares being deregistered from the seller's Euroclear Sweden 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*.

Companies listed on NASDAQ OMX Stockholm

At the end of 2008, there were 263 companies listed on NASDAQ OMX Stockholm, following a certain amount of reduction during the year.[15] Public companies listed on NASDAQ OMX Stockholm are presented on the Nordic list, which also presents the public companies listed on the stock exchanges in Helsinki, Copenhagen and Reykjavik.

The Nordic list represents a harmonisation of the listing requirements. To be listed on the Nordic Exchange, the expected market value of the equities must be no less than EUR 1 million. Further requirements are that the ownership must be sufficiently spread and that the business must have existed for a sufficiently long period (three years) and must show stable profitability, or have financial resources to cover operations for at least twelve months.

The Nordic list is divided into three segments – Large Cap, Mid Cap and Small Cap – based on a market capitalisation of the companies. The Nordic Large Cap segment comprises companies with a market capitalisation of more than EUR 1 billion. Companies with a market capitalisation of between EUR 150 million and EUR 1 billion are placed in the Mid Cap segment and companies with a market capitalisation of less than EUR 150 million are listed in the Small Cap segment.

New capital can be raised on the stock exchange 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.

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

Turnover and market capitalisation on NASDAQ OMX Stockholm

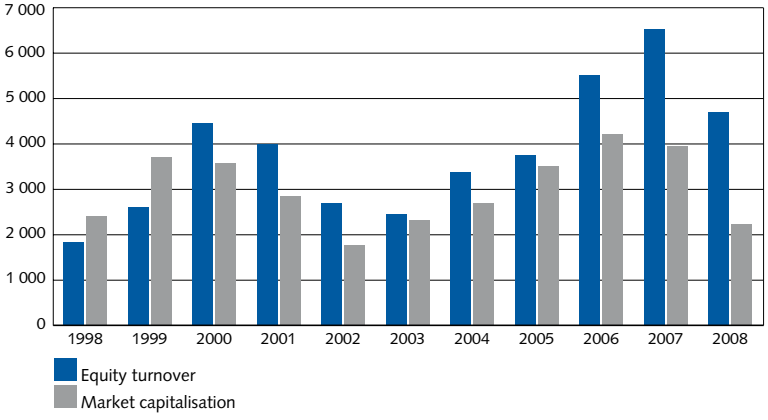
Equity turnover on NASDAQ OMX Stockholm was SEK 4 694 billion in 2008, a decrease of almost 30 per cent compared with the previous year. This decrease was due to the decline in equity value, rather than any decline in activity. In actual fact, the number of transactions closed increased by 15 per cent to just under 29 million. The average turnover per trading day thus amounted to just over SEK 18 billion. The value of turnover on the equity market is slightly less than half that of the fixed income market. On the other hand, the number of transactions is considerably higher (see the section on the fixed-income market). At year-end 2008, market capitalisation amounted to SEK 2 239 billion, a decrease of 43 per cent compared with the previous year.

EQUITY TRADING ON OTHER SWEDISH MARKETPLACES

Regulated marketplaces

There are two regulated marketplaces in Sweden. Besides *NASDAQ OMX Stockholm*, *Nordic Growth Market* (NGM AB) has also been licensed by Finansinspektionen to operate a regulated market in Sweden. NGM AB was acquired by Börse Stuttgart in the autumn of 2008 after Finansinspektionen withdrew the previous owners' license. NGM has specialised in smaller growth companies and offers listing and equity trading on the NGM Equity list. There are some thirty (38) equities listed on NGM Equity. In addition, NGM offers derivatives trading on the Nordic Derivatives Exchange (NDX) list.

Chart 1. Equity turnover and market capitalisation on NASDAQ OMX Stockholm
SEK billion



Source: NASDAQ OMX

Trading facilities (MTFs)

At year-end 2008, there were three multilateral trading facilities in Sweden: *First North*, *Nordic MTF* and *Aktietorget*.

First North is intended for smaller companies and growth companies and is operated by NASDAQ OMX 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, although trading takes place using the trading system SAXESS, as on NASDAQ OMX Stockholm. Information about prices, volumes and order depth[16] is published in real time through the same channels as for equities 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 "sponsor" which, by agreement with with NASDAQ OMX Stockholm, is responsible for that company's compliance with the requirements for trading on First North and wiith the requirements for the continuous provision of information. The sponsors are, in turn, required to enter agreements with the companies for which they are responsible. These agreements specify the requirements for trading on First North, including those regarding free float, capitalisation and information.

At year-end 2008, a total of 100 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 Premier segment must fulfil the same requirements for accounting and information as companies trading on NASDAQ OMX Nordic.

NGM operates Nordic MTF, a trading facility for small to medium-sized growth companies, where trading is conducted using NGM's trading system FREEWAY.[17] NGM is responsible for scrutiny of the listed companies and trading in the companies' equities. At year-end, 2008, a total of 26 companies were listed on Nordic MTF, a certain decrease compared with the previous year.

The third Swedish trading platform is Aktietorget, which is intended for small and growing companies. Trading takes place through the SAXESS trading system, like the trading on NASDAQ OMX Stockholm. Aktietorget complies with the general regulations for an MTF, but has, moreover, its own regulatory framework to protect the investor. At year-end 2008, a total of 107 companies were traded on Aktietorget.

[16] The order depth shows how many shares the purchaser wishes to buy and the seller wishes to sell and at what price.
[17] Nordic MTF is a further development of Nordic OTC NGM's previous list for trading in Nordic growth companies.

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 contracts are options or forwards. An *equity 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 writer of the option has the obligation to exercise the option if the other party wishes. An *equity forward* 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 equity derivatives takes place under the auspices of NASDAQ OMX Derivatives Markets (NASDAQ OMX DM), which is a secondary name of NASDAQ OMX Stockholm.[18] NGM also provides trading in derivatives on the list Nordic Derivatives Exchange (NDX), described above.

NASDAQ OMX DM offers trading in derivatives with Swedish, Danish, Icelandic and certain Finnish equities as underlying assets.[19] In addition to derivative contracts for individual equities, trading on NASDAQ OMX DM also includes options and forwards that are linked to NASDAQ OMX's own equity index, NASDAQ OMXS30 options and NASDAQ OMXS30 forwards. Since December 2006, trading is also offered in derivatives based on the Russian equity index FTSE Russia IOB, as well as the shares included in the index.[20]

NASDAQ OMX DM cooperates with the Oslo stock exchange and EDX London as regards trading in Nordic derivatives. This trading is conducted via a common order book, which is also available to members of the Olso stock exchange and EDX London. However, during the autumn of 2008, NASDAQ OMX DM announced that this cooperation would be discontinued during 2009. NASDAQ OMX DM also offers an OTC clearing service for certain derivative contracts not listed for trading (see chapter The financial infrastructure).

The number of standardised derivative contracts traded on NASDAQ OMX DM during 2008 amounted to just under 120 million. Equity options and index forwards each constituted approximately one-third of this total. The remaining third was divided equally between equity forwards and index options.

[18] A secondary name is not a separate legal entity but relates to a particular part of the company's activity.
[19] Certain Finnish derivatives, including Nokia derivatives, are traded on Eurex, according to an agreement with NASDAQ OMX.
[20] Trading in Russian derivatives was suspended during the autumn of 2008, but was resumed during the first quarter of 2009. Icelandic derivatives have not been offered for trading since the second six-month period of 2008.

Other equity-related products

Other products tied to certain equities or to a basket of equities are also traded on the Swedish market.

Warrants are one such product. The word warrant is now used in the Swedish financial market for a rather profuse flora of securities. In most respects, warrants resemble 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 can be issued on a broad spectrum of underlying assets, such as domestic equities, foreign equities, domestic equity indices, foreign equity indices, equity baskets, currency, raw materials, etc. Characteristic of warrants is that they usually have a considerably longer time horizon than ordinary options, sometimes several years. In addition, they are issued by a party – in most cases a bank or a securities company – other than the one issuing the underlying asset. Furthermore, warrants are transferable. In this way, warrants differ from the non-transferable contracts created for standardised options on NASDAQ OMX DM. Warrants are traded in Sweden on NASDAQ OMX Stockholm and also on the Nordic Derivatives Exchange (NDX). During 2008, the turnover in trading in warrants on NASDAQ OMX Stockholm totalled SEK 43 million per day.

Exchange traded funds (ETFs) are also traded on NASDAQ OMX. By investing in an exchange traded fund, the investor buys a basket of underlying securities. These funds are often 'index funds', i.e. funds structured to reflect a specific equity index. During 2008, daily turnover for equity traded funds amounted to SEK 755 million.

Outside the established marketplaces, trading is conducted in CDF contracts (Contracts for Differences), which may be described as forward contracts without a set date of maturity. CFD contracts are traded through a broker. The buyer of the contract provides continuously-updated collateral to the broker, and also pays a daily interest charge as long as the contract runs. Any profit or loss is determined by the performance of the underlying instrument from the time of purchase or sale until the time the CFD is terminated.

The fixed income market

Unlike the equity market, the fixed income market is a market for trading instruments that yields a specific predetermined return, an *interest rate*. Compared to the volume of trading in equities, considerably fewer settlements take place in the fixed-income market, but these usually involve substantially larger amounts.

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 in the money market comprises Treasury bills and certificates, usually with maturities of up to one year.

The participants are largely the same in these markets (primarily central government, mortgage institutions and banks). In addition, the issuance procedure and the structure of trading are similar, with the exception of the segment with the shortest maturities.

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 assist participants investment of surpluses and to provide short-term financing. In the segment with the shortest maturities of the money market (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 described in more detail later in this section.

Debt instruments are traded on the *spot market for debt instruments*, where payment and delivery take place immediately or within a few days of entry into the transaction. Complementing the instruments in the fixed interest market, *derivative instruments*[21] are also traded with debt securities as the underlying asset. These derivatives help the participants in the fixed income markets, for example, to diversify and manage risk. They also enable the participants to change the maturities of their fixed income portfolios. As a result, investors are, in practice, unconstrained by whether the security was originally issued with a short or long maturity. This pubication, however, makes a simplification for illustrative purposes. Here, the bond and money markets are categorised on the basis of the investors' requirements for maturities and liquidity. In practice, the aims of the operators in the different market segments may differ from this description.

[21] "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." Terms defined in Nationalekonomi, Dickson, Luukainen and Sandelin, 1992.

THE BOND MARKET

The bond market brings together managers of long-term savings with participants that need to borrow capital. Trading takes place in debt securities – bonds – usually with maturities of one year and longer.

A bond is a debt instrument or an agreement to lend money that is subsequently repaid with interest. It may be simply transferred between holders. A bond with regular interest payments[22] (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 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 secondary market where investors can buy and sell bonds that have already been issued. A sale in the primary market provides capital directly to the issuer of the bond. Thus, the issuer is a borrower in the market.

The dominant borrowers in the bond market are central governments and the mortgage institutions, but certain municipalities and companies can issue bonds too. Bonds tend to be issued by entities with long-term capital requirements. Often, the investors in the bond market are also interested in longer-term holdings (savings).

Investors who have bought bonds at issue can choose to resell them in the secondary market. An efficient secondary market means that turnover is high or that it is easy to purchase or sell various securities. High turnover on the secondary market also makes these bonds more attractive to investors on the primary market. High demand for bonds on the primary market, in turn, reduces the borrowing costs of the issuers.

Issuers in the bond market in Sweden

By year-end 2008, the total amount issued on the Swedish bond market was almost SEK 2 200 billion, a rise of around SEK 200 billion from the previous year. The term Swedish bond market refers to the market for bonds issued by Swedish issuers in SEK. Swedish participants can also turn to the international markets to gain access to capital. In these

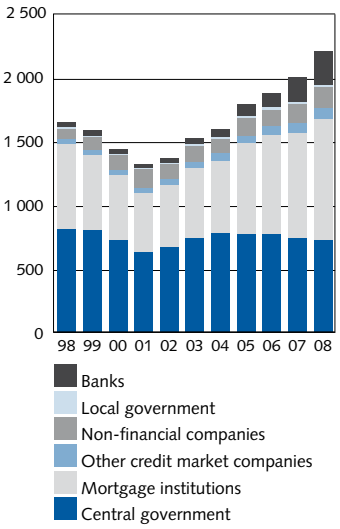
[22] Interest payments and any amortisation payments.

cases, issues are conducted in other currencies and are then translated into SEK.[23]

The largest issuers in the Swedish bond market are the central government and the mortgage institutions. They represent 33 and 41 percent respectively of the total volume issued. Central government borrowing is used to finance the national debt.[24] At year-end 2008, the outstanding stock of government bonds consisting of nominal and real bonds amounted to approximately SEK 717 billion, a decrease of approximately SEK 13 billion compared with 2007 (see chart 2).

The mortgage institutions issue bonds mainly to finance lending to Swedish households in conjunction with the purchase of real property. Total borrowing by the mortgage institutions[25] in 2008 rose by around SEK 127 billion, to SEK 953 billion by year-end. A large part of the outstanding stock of mortgage bonds consistes of 'covered bonds'. Covered bonds give the holder priority right to compensation in the event of the issuer being declared bankrupt (for further information, see the box "Covered bonds in Sweden").

Chart 2. Issuers in the bond market
SEK billion



Note. Outstanding nominal amounts.
Sources: Statistics Sweden and the Riksbank

[23] As a rule, issues executed in other currencies are translated into SEK via derivatives, primarily currency swaps (see the box "Covered interest rate parity"). SCB's balance of payments statistics indicate that issues in foreign currency form just over 40 per cent of the total lending volume. The equivalent figure for the money market is approximately 34 per cent. It is primarily the banking sector that funds itself in foreign currency.
[24] The Swedish National Debt Office manages central government debt borrowing in the bond market.
[25] As SEB Bolån underwent a merger with SEB during 2007, all bonds issued by SEB are included in the banking segment.

Covered bonds in Sweden

Swedish banks' primary source of funding to meet the public's mortgage requirements are bonds. Since July 1, 2004, Swedish banks and credit market companies have been able to issue 'covered bonds'. The first Swedish covered bonds were issued in the autumn of 2006. One of the main reasons for the delay of almost two years before the first issue took place was that there already existed a successfully-functioning and well-established market for mortgage bonds, i.e. bonds issued by the banks' mortgage institutions. Another reason was that the banks and credit market companies receiving the approval of Finansinspektionen (the Swedish Financial Supervisory Authority) to issue covered bonds were also forced to convert outstanding mortgage bonds into covered bonds, which required a degree of administrative work. By spring 2008, all institutions approved as issuers had implemented the necessary conversion and had issued covered bonds.

A covered bond is first of all a claim on the issuing institution. If the issuer is unable to meet its obligations, the holder of the bond has priority to specially-selected collateral, what is known as the collateral volume, which is linked to the covered bonds. The collateral volume primarily consists of various types of mortgage loans. To some extent the collateral volume also consists of loans to central and local governments. The purpose of covered bonds is to provide the general public with access, above all, to mortgage loans at a low cost, by giving Swedish banks and credit market companies access to the same competitive funding that has long existed in other European countries.

Seven Swedish banks or their mortgage institutions have permits from Finansinspektionen to issue covered bonds. The outstanding volume of covered bonds is approximately SEK 940 billion. The allocation per issuer is shown in table 4. The issuing institution continually issues bonds on the Swedish covered bond market, according to the conditions applicable for each bond loan. This issue procedure

is known as "on-tap"[26] and also occurs in other countries, such as Denmark.

Covered bonds are equal to 30 per cent of the four major banks' total amount of outstanding issued securities and easily comprise the greatest source of funding for mortgage loans. There are several advantages with covered bonds. Firstly, they are safeguarded by a modern and well-defined regulatory framework. This regulates, for instance, the maximum leverage on the collateral in the collateral volume, what types of collateral can be included in the collateral volume and how this can be composed (see table 5). In addition, the issuer must keep a register of the covered bonds and the collateral volume. This register must be updated daily. The regulations also require that an independent examiner, appointed by Finansinspektionen, must oversee the operations and ensure that the collateral volume meets the requirements. It is essential that the collateral volume maintains a high quality to meet the purpose of the covered bonds.

Secondly, the holder of a covered bond has a priority claim on a specific asset volume if the issuing institution should suspend payments. This means that covered bonds differ from traditional corporate bonds where the holder only has a claim on the issuer. Thirdly, the collateral volume linked to the secured bond is dynamic. This means that collateral that is not up to standard is removed from the collateral volume and can be replaced with new. 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. Fourthly, covered bonds, unlike RMBS, have the attractive property that

Table 4. Outstanding amounts of covered bonds, SEK
SEK million, per December 31, 2008

Handelsbanken	304 238
Landshypotek	39 846
Länsförsäkringar	49 831
Nordea	162 129
SBAB	28 865
SEB	108 832
Swedbank	272 832
Total	966 573

Source: Bloomberg

[26] On-tap implies an ongoing process.

the credit risk remains in the balance sheet of the institution providing the original loan. This naturally strengthens the incentive to carefully assess the credit risk in the collateral volume.

There is thus good reason to regard covered bonds as having a high credit rating. As the holder of a covered bond has a priority claim on a specific asset volume, it is reasonable that the credit risk is assessed primarily on the basis of the credit quality of the collateral volume and not on the basis of the issuing institution's credit rating. For the same reason, the current price difference between covered bonds issued by different institutions can primarily be motivated with market and liquidity risk.

Table 5. Loans that can be included in the collateral volume

TYPE OF COLLATERAL	HIGHEST PERMITTED LEVERAGE, PER CENT	MAXIMUM SHARE OF THE COLLATERAL VOLUME, PER CENT
Mortgage loans	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 governments	100	100
Complementary collateral, such as liquid claims on central and local governments	100	20

Source: Covered Bonds (Issuance) Act (2003:1223)

Non-financial companies, for example industrial enterprises, may also raise capital by issuing bonds. At year-end 2008, borrowing by non-financial companies in the Swedish bond market totalled just over SEK 164 billion, an increase of around SEK 20 billion compared with the previous year.

Municipalities and county councils may need to avail themselves of bonds to finance their operations and investments. Only a small number of municipalities and county councils (four municipalities and one county council) had outstanding listed bonds in their own name at year-end 2008. Of these, the City of Stockholm had the largest outstanding stock, followed by the Municipality of Södertälje, Stockholm County Council and the Municipality of Sundsvall. Their total borrowing amounted to approximately SEK 18 billion at year-end, which is a decrease of just over SEK 2 billion compared with the same period in the previous year. The other municipalities and county councils, totalling 216 municipalities and seven county councils, had outstanding bonds loans in association with Kommuninvest, a credit market company.[27]

Banks and, to some extent, other credit market companies (such as pension funds and finance companies) increased their borrowing via the bond market in 2008. In the case of the banks, this represented an increase of almost SEK 70 billion to SEK 261 billion at year-end.

Borrowing by other credit market companies totalled approximately SEK 81 billion at year-end 2008.

Investors in the bond market

At year-end 2008, insurance companies represented the category of investors with the largest holding in SEK in the bond market. At that point, holdings of bonds by insurance companies had risen by just over SEK 90 billion to SEK 834 billion (see chart 3). As a result, the insurance companies accounted for 38 per cent of the total amount outstanding in the bond market at year-end 2008.

At the same time, non-residential investors[28] had a holding in the bond market totalling almost SEK 497 billion. This is equivalent to a decrease of almost SEK 40 billion, compared with the previous year.

Bond holdings by banks increased during 2008 from less than SEK 337 billion to approximately SEK 475 billion at year-end 2008.

[27] Credit market companies are finance companies that finance their activities with money from the public. These companies are under the supervision of the Swedish Financial Supervisory Authority and are covered by deposit guarantees. More information is available at www.fi.se.

[28] No detailed information exists as to which types of non-residential 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.

Bond holdings in the category "Companies and others"[29] totalled SEK 249 billion at year-end 2008.

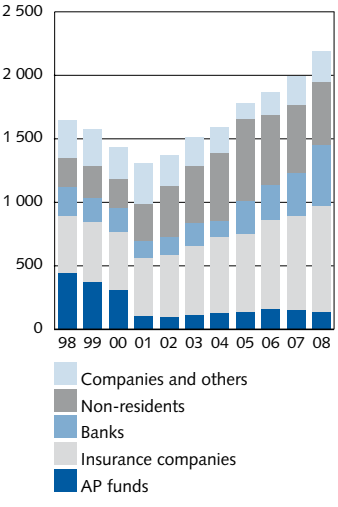
The Swedish bond holdings of the AP funds, the Swedish national pension funds, have decreased considerably over the years. Their holdings in the bond market totalled SEK 138 billion at year-end 2008. Compared with the AP funds' holdings in the bond market at year-end 2000, this is equivalent to a decline of over fifty per cent.

Turnover in the bond market

The Riksbank compiles statistics on the turnover of government bonds and mortgage bonds from its primary monetary policy counterparties[30] (see the box on Riksbank facilities for short-term borrowing and investment requirements). These are substantially the same as the Swedish National Debt Office's primary dealers in government bonds.

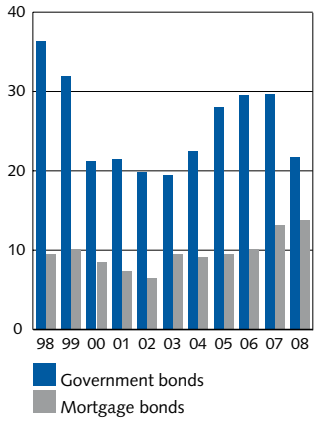
The statistics show that turnover in the bond market decreased from approximately 43 billion per day in 2007 to an average of almost SEK 36 billion per day in 2008 (see chart 4). Government bonds accounted for the decrease. Turnover in government bonds, which had averaged around SEK 30 billion per day during 2005-2007, declined to approximately SEK 22 billion per day during 2008. The primary ex-

Chart 3. Investors in the bond market
SEK billion



Sources: The AP funds, Statistics Sweden and the Riksbank

Chart 4. Average daily turnover in the bond market
SEK billion



Source: The Riksbank

[29] The category "Companies and other" 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 in the bond market and the holdings of major investors.
[30] More information on the Riksbank's counterparties is available at www.riksbank.com.

planation for this decrease in turnover is that many participants chose to retain the government bonds in their portfolios due to the financial crisis. Demand for government bonds usually increases during periods of financial turmoil, as investments in securities issued by the central government are safer than other bonds.[31] On the other hand, turnover in mortgage bonds increased marginally in comparison with the previous year by just over SEK 600 million per day to almost SEK 14 billion per day.

Of the total turnover in government bonds in 2008, almost 99 per cent took place in the secondary market. The primary market – i.e. new issues – accounted for only just over one per cent.

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. These are listed on NASDAQ OMX or NDX (Nordic Derivatives Exchange). This trade is conducted electronically, unlike institutional trading. The most common private bonds are structured products such as equity index 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 are minor compared with other debt securities.

THE MONEY MARKET

The expression money market is a collective term for markets for interest-bearing assets that are issued with maturities of up to one year.

One important task of the money market is to facilitate liquidity management for the economy's participants. For example, banks need to maintain a state of preparedness for future deposits and payments. The banks invest assets according to their assessments of future payments, which, in turn, requires that these investments can easily be converted into liquid funds when the payments fall due.

The money market is smaller than the bond market. Over the last ten years, the outstanding volume in money market securities has, on average, amounted to approximately 30 per cent of the outstanding volume of securities in the bond market.

Issuers in the money market in Sweden

The value of the total outstanding stock of securities in the money market was almost SEK 500 billion at year-end 2008. Thus is equiva-

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

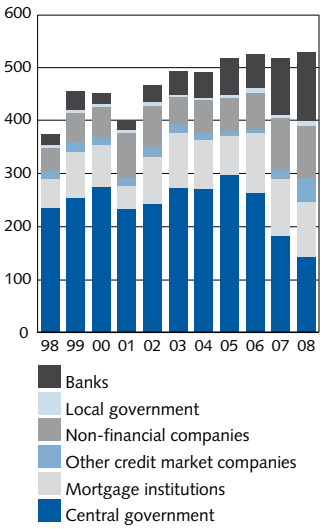
lent to a decrease of approximately SEK 30 billion, compared with the same period in the previous year.

The issuers on the money market are the same as those on the bond market. Central government borrowing in the money market takes place through Treasury bills. Other institutions borrow by issuing certificates such as bank certificates and mortgage certificates.

A Treasury bill[32] is a debt instrument that represents a short-term claim on the state and that can be bought and sold in the money market. Treasury bills are issued by the Swedish National Debt Office. A certificate is the same kind of debt instrument as a Treasury bill but is issued by banks and companies, for example.

Among other uses, Treasury bills are used for managing fluctuations in the short-term government borrowing requirement. They play a dominant role in the money market, even though the outstanding volume has decreased in recent years. In 2008, Treasury bills accounted for almost 27 per cent of the outstanding stock of short-term securities, compared with 34 percent in 2007. The outstanding volume decreased by SEK 45 billion, amounting to approximately SEK 130 billion at year-end 2008 (see chart 5). Of these, extra issues of Treasury bills due to the financial crisis, i.e. issues in excess of central govern-

Chart 5. Issuers in the money market in Sweden
SEK billion



Sources: Statistics Sweden and the Riksbank

[32] The Treasury bill is constructed as a zero-coupon bond, i.e. a security without interest payments during the term of the bill.

ment borrowing requirements, accounted for SEK 52 billion or 40 per cent of the total outstanding amount of Treasury bills.[33]

The banks increased their borrowing in 2008, for the second year in a row to just over SEK 135 billion. The equivalent figure for 2007 was approximately SEK 116 billion. Borrowing by the mortgage institutions increased marginally by SEK 800 million to almost SEK 106 billion in 2008. The main aim of short-term borrowing by the institutions is to match lending to customers in order to manage the institutions' interest rate risks.[34]

The non-financial companies increased their borrowing slightly between 2007 and 2008. Their borrowing amounted to SEK 97 billion in 2008.

The volume of borrowing for "Other credit market companies" decreased heavily, by approximately 73 per cent during 2008. The outstanding volume amounted to SEK 3 billion, compared with SEK 11 billion at year-end 2007. Borrowing by the municipalities amounted to almost SEK 9 billion at year-end 2008, an increase of SEK 3 billion since 2007.

Investors in the money market

"Companies, funds and others"[35] have the largest holdings in the money market. Their holding decreased by approximately SEK 58 billion to approximately 226 billion (see chart 6) during 2008. However, at year-end 2008, this sector represented almost fifty per cent of the outstanding stock of short-term debt securities. The corresponding figure for insurance companies was approximately 9 per cent. Their investments decreased by approximately SEK 50 billion in 2008 to just over SEK 41 billion compared with the previous year-end. The banks increased their holdings in the money market in 2008 by just over SEK 46 billion to SEK 133 billion. The banks' holdings accounted for approximately 28 per cent of the total money market at year-end 2008.

The "non-resident" investors[36] increased their holdings by almost SEK 32 billion. Their holdings of securities on the money market

[33] Further information is available from www.riksgalden.se.

[34] 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' financing and their lending to households, the institutions issue bonds and subsequently enter into swap contracts to obtain short-term interest obligations. 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".

[35] 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.

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

amounted to almost SEK 75 billion at year-end 2008. Non-resident investors' holdings in the Swedish money market constituted just over 16 per cent of the total holdings at year-end 2008.

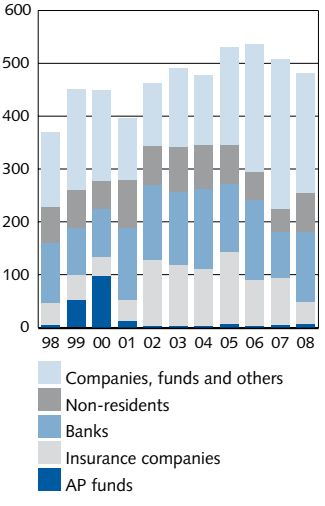
At year-end 2008, money market investments by the AP funds (the Swedish National Pension Funds) were largely unchanged compared with the previous year. The total value of their holdings amounted to just over SEK 6 billion, compared with almost 4 billion at year-end 2007. The share of the outstanding volume represented by the AP funds was only one per cent of the total stock.

It is worth noting that the AP funds have greatly reduced their holdings in short-term fixed income securities since 2000, while the other sectors have increased their outstanding volumes.

Turnover in the money market

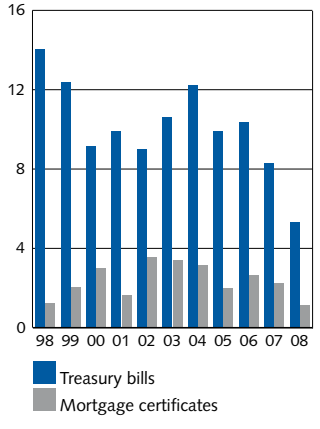
According to the statistics obtained by the Riksbank from its primary monetary policy counterparties, turnover in Treasury bills and mortgage certificates decreased during 2008. The total turnover in Treasury bills and mortgage certificates amounted to an average of 35 per cent of the total turnover of government and mortgage bonds during the last ten year period. The outcome of these turnover statistics is reasonable, considering the relative sizes of the money market and the bond market, measured in terms of outstanding volumes.

Chart 6. Investors in the money market
SEK billion



Sources: The AP funds, Statistics Sweden and the Riksbank

Chart 7. Average daily turnover in the money market
SEK billion



Source: The Riksbank

On average, turnover in Swedish Treasury bills amounted to SEK 5 billion per day, which is the lowest level of turnover in the last ten years. One possible explanation of the low level of turnover in Treasury bills may be that the financial crisis has contributed to the decision by investors to retain these securities in their portfolios. During periods of uncertainty, safe assets issued by central governments are usually preferred to higher risk alternatives. Turnover in mortgage certificates also declined slightly, from almost SEK 2 billion to an average of just over SEK 1 billion per day, between year-end 2007 and year-end 2008 (see chart 7).

Of the total turnover in Treasury bills during the whole of 2008, the secondary market accounted for almost SEK 1 327 billion, while the primary market accounted for around SEK 514 billion (just over one quarter), i.e. via new issues.

Total turnover in the money market decreased by an average of SEK 6 billion per day in 2008 compared with 2007.

ISSUANCE AND 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. Accordingly, the description below applies to both types of security. The special trading rules (market conventions) applied to the fixed income market differ, however, for the bond and money markets. The trading rules applicable for securities issued in SEK in these two markets are shown in Annex 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, six or seven dealers are used, depending on the form of security to be auctioned. In their contracts, the dealers undertake to act as *market-makers*. Acting as a market maker in this market involves a commitment to submit bids for every issue and set prices for consumers for the securities issued by the state. The Debt Office also sells Treasury bills continually, 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 customise the maturity of the Treasury bill according to its borrowing requirement by choosing both the date of issue and maturity.

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 to the dealers continually according to the borrowing needs of the mortgage institutions, 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 also issue securities abroad and then convert these loans to SEK using derivatives (see the box on 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

There is also an active secondary market in the fixed income market. Certain debt securities have a more active secondary market than others. Government bonds are the security that is most traded on the fixed income market. This is because these are issued in large volumes and are exposed to low credit risk.[37] Mortgage bonds also have a relatively good secondary turnover. Corporate bonds, on the other hand, are usually retained by investors until maturity, resulting in less trade in the secondary market. Securities in the money market, Treasury bills and other certificates are also retained in the portfolio for their entire terms. Moreover, turnover in the money market has generally decreased in recent years (see section on "Turnover in the money market" above).

The market for government bonds is still conducted largely by telephone, although electronic trading does take place on a limited scale.[38] At present, electronic trading comprises three benchmark bonds[39] and is conducted via the electronic system known as 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 trade*.

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[37] In this context, credit risk refers to the risk of failure by the issuer of the bond to fulfil their contractual obligations. When the Swedish state is the issuer of the bond, this risk may be considered minimal.
[38] The electronic platform for fixed-income trading was introduced in May 2001, as a result of collaboration between the interbank participants, NASDAQ OMX and the Swedish National Debt Office.
[39] Benchmark bonds consist of the most frequently traded government bonds, with maturities of two, five and ten years.

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 (banks). Brokers do not take their own positions. Trading via brokers has increased in recent years.

A majority of the dealers in government bonds are also dealers in mortgage bonds. As the trade in corporate bonds is relatively limited in Sweden, it is uncommon for both bid and ask prices to be quoted in the trading systems on a regular basis. It is more likely that prices for corporate bonds will be quoted in response to the client's request.

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 in the shortest periods of maturity. The money market's shortest segment is also referred to as the overnight market.

The Riksbank can also provide deposit and lending facilities for the shortest periods of maturity (even though the conditions offered may be less favourable, as is explained below). Institutions that are participants in the Riksbank's payment system, RIX[40] and are involved in the implementation of monetary policy through an agreement with the Riksbank may take advantage of a number of separate facilities for depositing or borrowing money with short intervals. Depending on the level of the counterparty agreement the participant has signed with the Riksbank, short-term lending or deposit facilities may be provided in the form of intra-day facilities, fine-tuning operations, standing facilities, monetary policy repos or certificates (see the box "The Riksbank's facilities for short-term borrowing and investment requirements").

The overnight market is especially important for evening out the banks' daily deficits and surpluses in their transaction accounts in the RIX payment system. These imbalances arise when the banks' inward

[40] See the section on RIX in the chapter *The financial infrastructure*.

and outward payments do not match one another in time and when unforeseen payments arise during the day. While the banks make forecasts in order to determine the need for liquidity to carry out their payments, customers' business transactions and transfers by portfolio managers and other financial participants within their foreign exchange and securities portfolios may create further 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 depositing funds at predetermined interest rates, a potential alternative always exists to the interest rates offered by the market.[41] The market participants therefore have an incentive for agreeing a rate within those offered by the Riksbank for depositing and borrowing.[42] In this way, the terms for the overnight market are decided in practice by the Riksbank.[43]

[41] For example, the Riksbank always offers an interest rate for borrowing and deposits 75 points above/below the Riksbank's repo rate. The bank's key policy rates may be viewed at www.riksbank.com.
[42] See for example the brochure *The Riksbank's Management of Interest Rates – Monetary Policy in Practice*, Sveriges Riksbank 2005.
[43] More information on the overnight market may be found in an article entitled *The Swedish Market for Balancing Liquidity* in Economic Review 2005:4.

Riksbank facilities for short-term borrowing and deposit requirements

The Riksbank offers facilities for depositing or borrowing money for short periods of maturity. These facilities are available to participants in the Riksbank's central payment system RIX and institutions involved in the implementation of monetary policy through another monetary policy counterparty agreement. Depending on the level of the involvement in monetary policy laid down in the agreement with the Riksbank, short-term lending and deposit facilities may take the form of *intra-day facilities*, *fine-tuning operations*, *standing facilities*, *monetary policy repos* or *certificates*.

The Riksbank's counterparties in the fixed income market comprise RIX participants, monetary policy counterparties and primary monetary policy counterparties. At year-end 2008, the Riksbank had 20 RIX participants, 13 of which were also monetary policy counterparties. Five participants were also primary monetary policy counterparties.[44]

RIX participants have access to the Riksbank's intra-day facilities. RIX participants that are also monetary policy counterparties are also entitled to use the Riksbank's standing facilities and its weekly repos. However, to be able to take part in the weekly repos, the monetary policy counterparty must have signed a special repo agreement with the Riksbank.

In mid-October 2008, the weekly repos were replaced by certificates with terms of seven days (see the section *From monetary policy repos to Riksbank certificates*). The circle of counterparties for this facility is the same as the Riksbank's monetary policy counterparties. In normal cases, only the primary monetary policy counterparties may participate in the fine-tuning operations. Since October 2008, all monetary policy counterparties have had access to this facility (see the section about fine-tuning operations).

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

Banks participating in RIX are able to borrow from the Riksbank interest-free during the day

[44] More information about the Riksbank's counterparties is available at www.riksbank.com.

against collateral in securities. A loan of this type is called an intra-day credit (intra-day facility). The value of the securities after any deductions that may have been made during valuation (haircuts) sets the borrowing ceiling. This is the maximum limit for the amount of credit the counterparty may be granted at the Riksbank during the day. The intra-day facility is the fastest way of acquiring liquidity, as long as there is sufficient collateral. The credit is provided more or less instantaneously. The facility is needed mainly from when RIX opens until early afternoon, when the surpluses and deficits in the banks' transaction accounts have been determined.

If there is not enough collateral for the borrowings from the Riksbank, certain banks have an informal agreement whereby they can provide each other with "interest-free" intra-day credits.[45] The counterparty limits set the ceiling for how much the banks are allowed to lend each other. However, the banks rarely need to turn to each other for intra-day credits.

As a consequence of the financial crisis developing during the autumn of 2008, collateral requirements were changed to increase participants' possibilities of obtaining intra-day credits. The permitted level of covered bonds from closely-linked institutions was initially raised from 25 per cent to 75 per cent. This level was then further raised to 100 per cent at the same time as the minimum credit rating requirement was decreased for longer-term securities used as collateral.

Fine-tuning operations

At the end of the day, the banks even out any deficits or surpluses between them in the intraday market, to the greatest possible extent. Despite this, the banking system *as a whole* (all participants in RIX) most often has a small deficit or surplus vis-à-vis the Riksbank, which can be evened out through the Riksbank's fine-tuning operations.[46]

Until autumn 2008, only the primary monetary policy counterparties were allowed to participate in the fine-tuning operations. However, in early October 2008,

[45] More information on the interbank market is presented in the section The fixed income market – Deposit contracts.

the Riksbank resolved to provide all monetary policy counterparties with the opportunity to participate in these operations, until further notice. The reason for this expansion of the circle of participants was that the Riksbank's extraordinary facilities for longer-term SEK loans were contributing to a daily surplus in the banking system.[47] Consequently, the counterparty circle was extended to include all monetary policy counterparties, i.e. the same as for the extraordinary measures. Other counterparties which are not participants in RIX may contact the Riksbank through these monetary policy counterparties.

The counterparty or counterparties that is/are responsible for the final deficit in the banking system at the end of the day and that need(s) to borrow from the Riksbank overnight pay(s) the Riksbank's repo rate plus ten basis points for this loan. If, at the end of the day, the banking system instead generates a surplus, the counterparty holding this surplus may deposit the money with the Riksbank overnight. The counterparty then receives the Riksbank's repo rate less ten basis points. Whether the banking system closes with a deficit or a surplus may vary from day to day. Similarly, the counterparty that ends up with the final deficit or surplus and thus needs to implement the fine-tuning mechanism may vary.

The Riksbank fine tunes the relative positions of the banking system vis-à-vis the Riksbank (virtually) every day. The amounts that are fine-tuned by the Riksbank are normally very small, relative to the volumes of deposits and repos on the overnight market. This is because the Riksbank offers less favourable interest terms than can be arranged between the participants. Deposits via fine-tuning operations amounted to SEK 5 million per day before the crisis broke out, i.e. during the period January–September 2008. During the subsequent period of extraordinary measures, i.e. October–December

[46] Fine-tuning is carried out because, on some days, the actual outcome of borrowing and deposit needs of the banking system from the Riksbank may differ from the forecast made by the Riksbank for the weekly period of maturity of the monetary policy repo. In normal cases, this difference may result from the fact that the Riksbank's forecast of the borrowing and deposit needs of the banking system is made for the entire term of the repo and not for particular days, or may be the outcome of mistaken assumptions made during the forecast.

[47] For more information on these extraordinary measures, refer to www.riksbank.com.

2008, deposits via fine-tuning operations averaged SEK 131 million per day.[48]

Historically, the greatest amount of fine-tuning takes place in connection with the Christmas and New Year holidays, when large deposits and withdrawals of banknotes and coins take place. The period to maturity of the monetary policy repo (see the section "*From monetary policy repos to Riksbank certificates*") is also longer than normal at this time.

Standing facilities – for monetary policy counterparties

It may happen that the transaction accounts of the individual banks at the Riksbank are not balanced when RIX closes, although the banking system as a whole is in balance. If so, any deficits or surpluses are placed in the Riksbank's standing facilities overnight. Even smaller amounts are involved than in the fine-tuning operations. In the standing facilities, the counterparty is, in fact, required to pay the Riksbank's repo rate plus 75 basis points for an overnight loan. Conversely, an overnight deposit pays a return at the Riksbank's repo rate less 75 basis points.

During 2008, the average deposit in the Riksbank via the standing facilities amounted to approximately SEK 50 million per day. The average lending was also approximately SEK 50 million per day. Peaks in deposits and troughs in lending are normally the result of the participating counterparties choosing not to participate in fine-tuning. This situation can arise when administrative costs for participating in fine-tuning are considered to be greater than the interest received for participating.

From monetary policy repos to Riksbank certificates

The Riksbank ensures that the banking system as a whole has access to loans against collateral in securities via its weekly *monetary policy repo*.[49] The interest rate the banks pay to the Riksbank for this loan is the Riksbank's repo rate. The Riksbank first makes a forecast of the banks' total liquidity needs for the week ahead. On average, the size of the repo is around SEK 2-3 billion.[50] The banks (the primary

[48] More information is available in the box "The impact of the Riksbank's extra lending on the balance sheet".
[49] Not to be confused with the repos/repurchase agreements described in the section "Repos".

monetary policy counterparties) can then submit a bid for the required allocation. Whether or not a particular bank submits a monetary policy repo will be determined by the liquidity needs of the bank (or its customers).

The minimum bid allowed by the Riksbank is SEK 200 million and the maximum SEK 5 billion. The Riksbank's method of allocation means that banks with a need for liquidity are rarely allocated the full amount of their bids.[51] Consequently, bids are usually made for the maximum allowed, SEK 5 billion. In this way, the banks ensure that they are allowed to borrow the maximum possible relative to the percentage allocation determined by the Riksbank. This is desirable because interest on this loan is relatively low. During the period January to mid-October 2008, the banks were awarded, on average, 23 per cent of their bids.

However, the Riksbank's extraordinary facilities for SEK loans as of autumn 2008 (see the box "The impact of the Riksbank's extra lending on the balance sheet") contributed to a liquidity surplus in the banking system. One method of reining in this surplus is to issue certificates. Consequently, the Riksbank determined to issue Riksbank certificates as of mid-October. These certificates have a term of seven days and a fixed interest rate equivalent to the repo rate. The issue of certificates takes place each Tuesday and will replace the monetary policy repos for as long as there exists a surplus in the banking system. The counterparty circle for the issue of Riksbank certificates includes the Riksbank's monetary policy counterparties, in contrast to the monetary policy repo, which is limited to the primary monetary policy counterparties. Issues of Riksbank certificates averaged SEK 70 billion during the period from mid-October until year-end 2008.

[50] The amount of the monetary policy repo is, to a large extent, determined by changes in the public's demand for notes and coins.

[51] The allocation of each bank is made by multiplying the Riksbank's allocation percentage by the bank's bid. The allocation percentage is calculated by dividing the size of the monetary policy repo by the total of the bids from the banks.

The impact of the Riksbank's extra lending on the balance sheet

Many of the measures implemented by the central banks during the financial crisis are increasingly being reflected in the central banks' balance sheets. As an example, the Riksbank's assets and liabilities more than doubled between the end of September 2008 and December 31, 2008. What lies behind this development and how are the banks and their balance sheets affected?

The measures adopted by the Riksbank have increased the balance sheet total

After Lehman Brothers' collapse in mid-September 2008, the situation on the markets for short-term USD borrowing became very strained. Consequently, on Sep-

Table 6. The Riksbank's balance sheet before and after the extra measures
SEK billion

ASSETS	2008-09-30	2008-12-31	LIABILITIES	2008-09-30	2008-12-31
Gold	28	30	Banknotes and coins	106	112
Claims on residents outside Sweden denominated in foreign currency	235	200	Deposit facility	0	0
Claims on residents in Sweden denominated in foreign currency	0	196	Fine-tuning transactions	0	207
Lending to monetary policy counterparties denominated in Swedish kronor	4	266	Riksbank certificates	0	49
Other assets	1	7	Liabilities to residents outside Sweden denominated in Swedish kronor	0	189
			Liabilities to residents in Sweden denominated in foreign currency	0	2
			Liabilities to residents outside Sweden denominated in foreign currency	65	9
			Other liabilities	38	74
			Equity	59	58
Total assets	268	700	Total liabilities	268	700

Source: The Riksbank

tember 29, 2008, the Riksbank announced a new loan facility in USD. At the end of December 2008, the Swedish banks' USD borrowings from the Riksbank[52] amounted to approximately SEK 196 billion (see table 6).

At the start of October 2008, the Riksbank also established a loan facility in SEK aimed at increasing the banks' access to credit with a longer duration. In addition, a facility aimed at increasing the banks' possibilities of providing loans to companies was also established. This provided the banks with the possibility of utilising commercial paper as collateral for long-term loans from the Riksbank. At year-end 2008, the Riksbank's monetary policy counterparties had borrowed a total amount of approximately SEK 266 billion via these SEK facilities.[53]

Lending in SEK and USD increased the total amount of the Riksbank's assets by approximately SEK 462 billion, over 40 per cent of which was accounted for by USD lending to the Swedish banks.

How has the Riksbank funded this increased lending?

In questions of funding, it is important to distinguish between lending in SEK and lending in USD. Loans in USD have been funded through swap agreements signed with the US central bank, the Federal Reserve, during the period. The swap agreements imply the purchase by the Riksbank of USD against SEK from the Federal Reserve, which thereby receives a SEK asset for investment in the Riksbank.[54] To avoid foreign exchange risk, a swap contract also includes a foreign exchange forward agreement. However, this is not evident from the balance sheet.

The Riksbank's SEK lending to Swedish banks is funded through a purely book-keeping measure in which the Riksbank places the SEK funds for loaning in the borrowing bank's account in the Riksbank. That is to say that the Riksbank funds the loan itself. The possibility of thus creating money allows a central bank, in principle, to issue unlimited

[52] Included in the item Claims on residents in Sweden denominated in foreign currency.
[53] See lending to monetary policy counterparties denominated in Swedish kronor.
[54] The Federal Reserve's SEK claim is included in the item Liabilities to residents outside Sweden denominated in SEK. The forward contract is not apparent in the balance sheet.

loans in its own currency. However, the loan facilities that the Riksbank has now set up require approved collateral in the form of securities.[55]

Where does the money go?

The extra liquidity provided by the Riksbank will initially be deposited in the bank's deposit account with the Riksbank.

Since October 2008, the banks have been offered the opportunity to invest the liquidity created by the SEK lending in Riksbank certificates with terms of one week. The alternative has been an overnight investment in a deposit account in the Riksbank, via the Riksbank's fine-tuning facility (see the box on the Riksbank's facilities for short-term borrowing and investment requirements). Interest on the certificates is equivalent to the repo rate, while the overnight interest on these particular deposit accounts has been equivalent to the repo rate minus ten percentage points. However, despite the lower yield, most of the time, the banks have opted to invest the greater portion of the liquidity in deposit accounts at the Riksbank[56] so as to remain prepared to manage unexpected liquidity problems.

Individual banks can also select to utilise the funds they have placed in the Riksbank. For example, a bank may choose to lend money to another bank, purchase securities or pay due debts. In such a case, the liquid funds would be transferred to the other bank's account with the Riksbank – the system is closed. The banking system's placements in certificates and borrowing in the Riksbank do not decrease until the banks or the Riksbank choose not to renew due loans.

What effects has this lending had?

The monetary base is a concept that has been in focus recently as a result of the actions of the central banks, as it demonstrates the effects of this lending. It is defined as the total of the following liability items on the Riksbank's balance sheet: banknotes and coins in circulation, borrowings[57] in the Riksbank and certificates with short durations in circulation. Before the Riksbank's crisis measures, the monetary base in

[55] More information on collateral is available at www.riksbank.com.
[56] See "Fine-tuning operations" among liabilities in the balance sheet.
[57] Deposit facility and fine-tuning operations on the liabilities side.

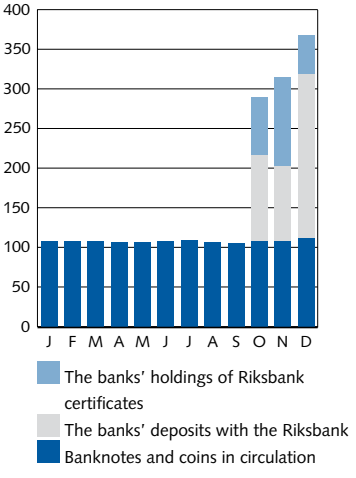
Sweden more or less consisted solely of banknotes and coins in circulation. The monetary base showed very stable development and seldom attracted any interest. Accordingly, the increase of the monetary base illustrated in chart 8 reflects the increase in the banks' liquidity buffer in SEK placed in the Riksbank, arising as a consequence of SEK lending.

It is difficult, with the available statistics, to draw any certain conclusions regarding the impact on the banks and their balance sheets of SEK lending and the subsequent increase of the banks' liquid assets placed in the Riksbank. One likely effect is that exposure between the banks has fallen as the banks have become less dependent upon the interbank market. When the interbank market is functioning well, Swedish banks normally do not need to place money in deposit accounts in the Riksbank in order to parry unexpected fluctuations in payment flows. In this situation, it is more advantageous for the banks to invest surplus liquidity with one another.

The Riksbank's USD borrowings, which were funded by the Federal Reserve, reduce the Swedish banks' need to locate funding on the US market.

The central banks' liquidity-creating measures have thus replaced a large portion of the funding previously mediated on the financial markets. The reduction of risk premiums on the Swedish and overseas interbank markets noted since mid-October 2008 probably reflect the reduced pressure on the markets resulting from the takeover by the central banks of a portion of the mediation of loans between financial institutions.

Chart 8. The monetary base in Sweden 2008
SEK billion



Source: The Riksbank

Deposit contracts

Deposit contracts are standardised deposit and loan agreements without requirements for collateral. Normally, market participants do not use deposit contracts for depositing and lending for longer than a week. This is because the counterparty limits[58] and capital adequacy requirements[59] make this form of contract relatively more expensive than other financial contracts with longer maturities.[60] Deposits are more likely to be used to even out the need for liquidity between the banks overnight. The banks have, quite simply, agreed to trade in liquidity among themselves and in return to pay neither more nor less than the Riksbank's repo rate.[61]

The major banks estimate that around 90 per cent of the turnover on deposit contracts involves maturities of up to two days.[62] In 2008, the institutions designated by Statistics Sweden as Monetary Financial Institutions[63] had average outstanding deposit volumes of SEK 195 billion at the end of each month. The major share of this amount, on average SEK 153 billion, consisted of deposits in Swedish monetary financial institutions. Only a minor part of the deposits thus originated from foreign institutions.[64]

Repos ("repurchase agreements")

A repo is a transaction whereby one party agrees to sell a security to another party in return for liquid funds. At the same time, it is also agreed that the same security will be repurchased at a fixed price at a given time in the future. A repo transaction is composed therefore of two parts, a sale (spot) and an agreement to repurchase on a later date (forward).

The 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, hence repos entail minimal counterparty risk

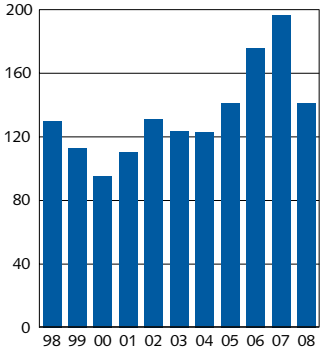
[58] The amount a bank can lend to its counterparties is determined by the bank's own limits, 'counterparty limits'.
[59] More information about capital adequacy requirements can be found in the box "Central laws and forms of incorporation in the financial sector" in the chapter Financial Intermediaries.
[60] See the article entitled *The Swedish Market for Balancing Liquidity* in Economic Review 2005:4.
[61] See the book "Penningmarknaden", Nyberg, Viotti and Wissén, 2006.
[62] See the article entitled *The Swedish Market for Balancing Liquidity* in Economic Review 2005:4.
[63] Monetary Financial Institutions (MFI) comprise banks, mortgage institutions, finance companies and other MFIs (municipalities and corporate-financed institutions, monetary securities companies and brokers, as well as other monetary financial institutions).
[64] 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 the annex on trade conventions).

for the lender. In principle, all securities that can be traded on the fixed income market can be used as collateral for repos. The repo thus functions essentially as a collateralised loan over the term of the repo. Conversely, repos may be viewed as security loans collateralised with cash.

Turnover in repo transactions among the Riksbank's primary monetary policy counterparties and the Debt Office's dealers averaged just over SEK 141 billion per day in 2008. This is equivalent to an average decrease of SEK 55 billion per day, compared with the previous year (see chart 9). An estimated 90 per cent of the turnover in repos involved maturities of up to one week.

According to the statistics obtained by the Riksbank, turnover in repo transactions backed by government and mortgage securities[65] is very high. This may be compared with the spot turnover in similar certificates, which totalled around SEK 36 billion a day in 2008 (see the section "*Turnover in the bond market*"). In other words, spot trades represented no more than just over a quarter of average daily turnover in repos. There are two main reasons for the high daily turnover of repos. The first is the importance of repos for the authorised dealers. By utilising these agreements, an authorised dealer can both finance his or her securities portfolio and rapidly obtain securities to fulfil his or her commitments under the dealer agreement. The second reason is that this provides non-resident participants with the opportunity to own Swedish securities without exposure to any currency risk. Utilising repos allows the currency risk to be sold at the same time as the investor

Chart 9. Average daily turnover in repos
SEK billion



Source: The Riksbank

[65] Includes Treasury bills, nominal government bonds, mortgage certificates and mortgage bonds. Inflation-linked government bonds are not included in these figures.

retains his or her interest investment via the underlying security that forms the collateral for the borrowing.

The statistics obtained by the Riksbank cover approximately 60 per cent of turnover in repos among monetary financial institutions. 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 228 billion in 2008. More than half of this amount, over SEK 139 billion, was attributable to the repo borrowings of Swedish monetary financial institutions.[66]

DERIVATIVES IN THE FIXED INCOME MARKET

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*.

Interest rate forwards

A *forward* is a contract whereby the parties have undertaken to buy/sell an asset at a predetermined price at a specified time in the future. The most common derivative instruments in the Swedish fixed income market are *International Money Market Forward Rate Agreements (IMM-FRAs)*. [67] These are standardised interest rate forwards that have deposit contracts as the underlying asset and specific maturity dates known as IMM days.[68]

Statistics on turnover in IMM-FRAs refer mainly to the trade conducted on the Stockholm Stock Exchange. Turnover in IMM-FRAs among the Riksbank's primary monetary counterparties averaged SEK 161 billion per day during 2008. The equivalent figure for the previous year was SEK 129 billion.

Other forwards in the Swedish fixed income market consist of *forward contracts on bonds* and *Treasury bills*. These contracts are binding 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 in not especially large. The average turnover in

[66] The special conventions used in trading in the money market's short-term contracts are presented in Annex 2.
[67] However, when a contract for an IMM-FRA matures, the underlying instrument (the deposit) 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.
[68] IMM(International money market) days always fall on the third Wednesday in March, June, September and December.

forwards on government bonds in 2008 was more or less unchanged against the previous year, at approximately SEK 27 billion per day. The turnover in forwards on mortgage bonds as underlying asset averaged SEK 9 billion per day during 2008, which is an increase of SEK 3 billion per day against the previous year.

Turnover in Treasury bill forwards decreased sharply over the last year by just over SEK 1 billion per day, averaging approximately SEK 155 billion per day. Viewed in a longer perspective, the turnover in Treasury bill forwards has decreased since 2000. The likely explanation for this decline is to be found in the gradually growing use of IMM-FRAs.

Interest-rate swaps

Swaps are another type of derivative in 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 in exchange for a variable rate from the other party.[69]

Interest-rate swaps (IRS) with long maturities 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, over a period of up to one year, to pay/receive the difference between an agreed fixed rate of interest and a variable overnight rate (for more information, see the box "TED spread and basis spread – different measures of risk"). In 2008, the turnover in STINA swaps among the Riksbank's primary monetary policy counterparties increased by more than 50 per cent as against 2007, averaging approximately SEK 34 billion per day.

[69] 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.

TED spread and basis spread – different measures of risk

TED spread and basis spread are examined to determine the degree of uncertainty on the interbank market. A rise in these spreads indicates that uncertainty or the risk premiums reflecting liquidity and credit risks have increased. In other words, the level of these spreads provides 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. The *interbank rate* refers to the interest rate for loans without collateral between the banks on the interbank market. A *reference rate* for loans on the interbank market, based on the average of the interest rates for borrowing charged by the banks to each other, is published every day for each currency area for terms of up to one year. This reference rate is called the London Interbank Offered Rate (LIBOR) in the United Kingdom and United States, the Euro Interbank Offered Rate (EURIBOR) in the euro area and the Stockholm Interbank Offered Rate (STIBOR) in Sweden. At year-end 2008, STIBOR was calculated as an average of the interest rates reported by a panel consisting of six banks[70] for lending on the Swedish interbank market.

The basis spread is equivalent to the difference between the interbank rate and the expected policy rate. 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/receive the difference between a fixed interest rate and a compound variable interest rate. The variable interest rate consists of the geometrically average value of the overnight 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. As credit risk is limited in these contracts, the market-listed interest rate reflects monetary policy expectations to a great degree. These contracts are designated *STINA* (Stockholm

[70] These banks are Danske Bank, Nordea, RBS (previously ABN Amro), SEB, Handelsbanken and Swedbank.

TomNext Interbank Average) in Sweden, while the equivalent of the variable overnight rate is STIBOR T/N (Tomorrow/Next).

Interest-rate options

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 limited, compared to other fixed-income derivatives. The estimated average turnover per day amounts to approximately SEK 2 million.[71]

One type of derivative instrument that has become more common in recent years is *structured products*. In most cases, these instruments combine securities with various types of options. One of the most hotly debated instruments in the category of structured products is known as credit derivatives (see the box on "Risks in the trade and settlement of credit derivatives").[72]

Up to now, trade in credit derivatives and structured products has been more highly developed internationally than it has been in Sweden. The Riksbank is not currently collecting statistics on turnover in these instruments from its counterparties.

Trading structure in market for interest derivatives

Derivatives can either be traded directly, over the counter (OTC), between a buyer and seller or via an organised exchange. 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 is generally better in exchange-traded derivatives. In Sweden, derivatives in the fixed income market are mostly traded OTC and are very often of the standardised type. Some of these OTC derivatives are cleared by NASDAQ OMX, which then takes the role of clearing counterparty vis-à-vis buyer and seller.[73] The active trade in derivative instruments is conducted in a market where a number of dealers set prices by telephone or electronically.

[71] Due to the low turnover in this instrument, the Riksbank ceased to collect statistics from its primary monetary policy counterparties as at September 30, 2007. During the years 2004-2006, the average turnover in interest-rate options was SEK 130 million, with the equivalent figure in 2007 being SEK 11 million.
[72] 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.
[73] See also the description in the chapter *The financial infrastructure*.

The foreign exchange market

The foreign exchange market is a significant financial market. What we normally call the foreign exchange market is a worldwide market. This is characterised by the large amounts involved, 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.

In this section, the term "the *Swedish* foreign exchange market" primarily refers to 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 defined as the trade in (all) currency pairs that is performed by institutions in Sweden, and so an account is provided according to that definition, 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, when 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 on "*Frequently used instruments in the Swedish foreign exchange market*", below).

The major share of turnover, calculated as *amounts*, takes place in the foreign exchange market. However, a large share of the *number* of foreign exchange transactions is *not* conducted on the foreign exchange market. This is because banks and 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 currency hedging it needs. However, *netting*, as this is called, does not 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. However, when a bank or a company

needs to reduce or raise the amount of foreign exchange in its account with a foreign bank, it normally turns to the institutionalised foreign exchange market.

Covered interest rate parity

There is a close connection between the fixed-income and the foreign exchange markets through the foreign exchange derivative market. One effect of this connection is to provide two options to major Swedish participants when borrowing money. They may choose – at the same interest cost – either to issue securities in Sweden or to issue securities abroad. Loans raised abroad can be translated to SEK through the use of currency derivatives. The reason for this is that exchange rates in the spot and forward markets are affected 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. Consequently, interest costs are the same, regardless of the alternative chosen. 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 equivalent alternatives: it can either purchase USD for SEK today and invest these USD 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 risk-free opportunities for arbitrage[74] 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 interest rates expenses are 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.

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

The following section describes the instruments most commonly used in the trade in SEK and the structure of trading in the foreign exchange market. An account is then provided of the turnover in the Swedish foreign exchange market from two separate perspectives.

FREQUENTLY USED INSTRUMENTS IN THE SWEDISH FOREIGN EXCHANGE MARKET

In foreign exchange transactions in which SEK is one of the currencies involved, the following instruments are frequently used:

Spot

The definition of spot is "a system of trading in which commodities are delivered and paid for immediately after a sale" [75]. In the foreign exchange market, a spot transaction means that payment and delivery in a foreign exchange transaction, in practice, take place two banking days after trade date. However, a bank can choose to close a transaction by paying the same day as its clients.

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. Derivative instruments traded in the foreign exchange market include *foreign exchange forwards*, *foreign exchange swaps*, *interest rate and currency 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/sell the currency in the future on a set date at a set price.

One of the most common types of contracts used in the foreign exchange market is *foreign exchange swaps* (FX swaps). A foreign exchange swap works as an agreement between two parties to buy currency and sell it back on a specific date in the future on the forward market. The currency is usually bought on the spot date (i.e. in two days' time) and sold as a forward sale (i.e. at some point in the future). These swaps could be regarded as the counterparts 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

[75] Concise Oxford Dictionary, 11th edition.

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 up to one week and longer swaps with maturities of more than one week and up to (normally) one year or longer. Short swaps are normally used to manage liquidity, while longer swaps are pivotal instruments for the banks in their pricing of interest rate spreads for different currency pairs[76].

Cross-currency and interest rate swap is another type of contract that is also a combination of transactions. A cross-currency and interest rate swap is an exchange of interest payments in two currencies, for example, Swedish interest against euro interest, and, where appropriate, exchanges of capital amounts (at the beginning and at the end of the period). A swap of this kind normally has a maturity of more than one year.

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.[77] 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

Trading in SEK does not differ significantly from other currencies in the foreign exchange market. As a result, this account may be considered to apply to the foreign exchange market in general.

Transactions in the foreign exchange market are conducted by market makers, who, on request, quote bid and ask prices via an electronic system or telephone. A standard spot transaction by telephone involving the EUR/SEK currency pair is EUR 5 million. Traditional trading by telephone has decreased considerably in recent years, however, in favour of electronic trade. Trade in the electronic systems is more order-driven[78] and there is no standard spot transaction to the same

[76] Currency rates are stated in pairs, such as USD/SEK, EUR/USD, GBP/SEK, EUR/SEK.
[77] See the description in the section "The fixed income market – Derivatives in the fixed income market".
[78] Orders submitted are automatically matched without the brokers having to contact one another.

extent. Like fixed-income derivatives, Foreign exchange derivatives in SEK are only traded OTC (see the description in the section "The fixed income market – *Trading structure in market for interest derivatives*").

Interbank trade and customer trade

Every third year, the Bank for International Settlements (BIS) publishes the study *Foreign exchange and derivatives market activity,* which is based on surveys of individual central banks.[79] According to the latest study, 43 percent of turnover on the foreign exchange market during April 2007 consisted of what is called *interbank trade*. This refers to trade between participants (market makers), who are dealers in different instruments. These dealers may be banks or securities companies. According to the results of the study carried out in 2004, the interbank trade's share of total turnover was approximately 53 per cent. The primary reason for the decreased proportion of interbank trade 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 2007, this trade accounted for approximately 40 per cent of the global turnover, according to the BIS survey.

Interbank trade is often, in turn, the result of *customer trade*, i.e. 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 an 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 trade. The pricing of currency is largely determined in the interbank market, where bid and ask prices are regularly listed for different currencies against SEK. The prices that are quoted to Swedish customers are therefore very often a result of pricing in this market.

Electronic trade

Foreign currency trading is increasingly shifting from telephone trading to order-driven trading using different electronic platforms and systems. When a participant finds an attractive rate, it can immediately accept the rate by pressing a buy or sell key. As a result, an order may be immediately entered into the system.

[79] This survey is known as "The Triennal Central Bank Survey". More information is available from www.bis.org.

Roughly 85 per cent of the spot trade in SEK between the Riksbank's counterparties is performed via electronic systems. Most SEK 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). As for interbank trading in foreign exchange derivatives, the situation is somewhat different. There, about one third of derivative transactions are electronic. However, the proportion varies according to the type of derivative instruments traded.

In the trading conducted by the Riksbank's counterparties on behalf of their customers, including major companies, many of the major banks use their own in-house developed electronic platforms. These are called *single-bank platforms* and quote the customer rates only from the bank itself. However, there are also *multi-bank platforms* (such as FX-all) in which several banks participate. These quote the customer rates from several banks, enabling the customer to compare rates.

Just over 40 per cent of customer trade takes place using electronic systems and the development is moving in the direction of anonymous order-driven trade just as in trading on the stock exchange. Systems already exist that are anonymous and have central clearing (for example, FXMarketSpace) for the largest currencies.

The electronic trade has also enabled *black box* just as in trading in equities and fixed-income instruments. Here, decisions on currency positions are taken by computers, which are programmed to monitor market movements and take positions accordingly, instead of people.

Cross trading

Trading in currency usually takes place via one of the largest currencies. In the case of SEK, this means that the price relative to other currencies is set via the euro, which is what is known as a *hub currency*. By starting from the price for NOK against EUR and 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. In smoothly-operating markets, which currency is used for pricing is unimportant, as long as the transaction costs are low. The reverse 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 forwards was the pound sterling (GBP).

A number of market conventions applying to foreign exchange trading in SEK are also described in Annex 2.

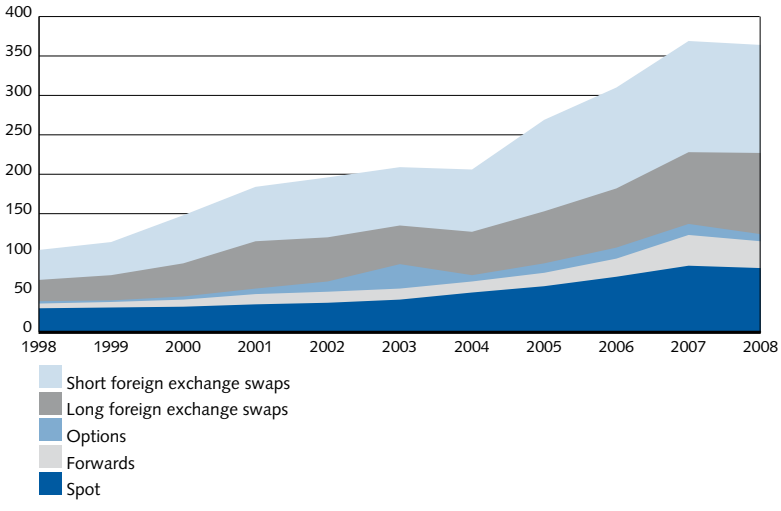
Turnover in SEK

There are no comprehensive statistics on turnover in SEK in 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 2008, these counterparties consisted of the four major banks plus five large international participants.[80] The Riksbank's counterparties account for around a half of the global turnover in SEK.[81]

According to the statistics collected by the Riksbank, average turnover amounted to approximately SEK 366 billion per day during 2008 (see chart 10 below), representing a decrease of SEK 5 million per day since the previous year.[82]

Of this, the daily turnover in spot transactions averaged around SEK 81 billion in 2008, a decrease of SEK 3 billion per day compared to

Chart 10. Average daily turnover in the Swedish foreign exchange market
SEK billion



Source: The Riksbank

[80] More information about the Riksbank's counterparties is available at www.riksbank.com.
[81] According to the BIS survey "Foreign exchange and derivatives market activity" from April 2007.
[82] Only one leg of the swap transaction is included in these figures.

the previous year. The turnover in foreign exchange forwards in SEK at the Riksbank's counterparties totalled approximately SEK 34 billion per day in 2008. This represented a decrease of around SEK 5 billion, compared to the figure for 2007.

The turnover in foreign exchange swaps in 2008 totalled approximately SEK 240 billion per day, an increase of around SEK 8 billion per day on the 2007 figure. This increase can primarily be attributed to trading in long swaps with terms of from two days up to 18 months.[83] Turnover in these contracts amounted to approximately SEK 103 billion per day, compared with approximately SEK 91 billion per day during 2007. Short swaps, with durations of up to two days,[84] were bought and sold for an amount of approximately SEK 137 billion per day during 2008. The equivalent figure for 2007 was approximately SEK 141 billion per day.

The turnover in foreign exchange options among the Riksbank's counterparties decreased during 2008, by an average of around SEK 5 billion per day to a total of approximately SEK 9 billion per day

The Riksbank does not collect statistics on the turnover in interest rate and currency swaps among its counterparties, but according to the BIS study mentioned above, average turnover totalled around SEK 150 million per day in April 2007.

According to the BIS study, over three-quarters of the trade in SEK took place outside Sweden in April 2007 and 22 per cent was traded by banks based in Sweden. Banks based in the United Kingdom accounted for 39 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, SEK and securities issued in SEK form important elements in well-diversified foreign portfolios focused on Europe. Other countries where there is extensive trading in SEK are Denmark (15 per cent) and the United States (9 per cent).

Foreign exchange in Sweden

In the above, we have been describing the Swedish foreign exchange market defined as all the foreign exchange trading where SEK forms one element of the transaction, wherever in the world the transaction takes place. An alternative definition of the Swedish foreign exchange

[83] This is the definition of short and long foreign currency swaps used by the Riksbank in collecting turnover statistics. The distinctions made by participants in the market with regards to maturity periods for foreign exchange swaps are described in the section on derivatives.
[84] Known as overnight and tomorrow-next swaps.

market is all the foreign exchange 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 2007 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. Since 1989, foreign exchange trading in Sweden has increased by around 12 per cent per year, from an average of USD 13 billion per day in 1989 to USD 42 billion per day in 2007. However, foreign exchange trading in Stockholm has expanded somewhat more slowly than the global foreign exchange market overall (which grew by 25 per cent annually between 1989 and 2007).

The currency pair with the highest turnover in Stockholm is USD/SEK. Its share of the total turnover has risen somewhat, from 28 per cent in 1998 to 39 per cent in 2007 (see table 5). One reason for this is that a relatively large amount of FX swaps are traded in Stockholm and that US dollars are the hub currency in transactions with these instruments. The next largest currency pair is EUR/USD, representing 26 per cent of trading in Stockholm during 2007. The third largest currency pair is EUR/SEK. In 2007, this currency pair accounted for 23 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 2007 was not the SEK but the USD, which was one of the currencies in 33 per cent of all currency pairs traded. It was followed by the SEK (nearly 29 per cent) and the EUR (around 23 per cent).

Table 7. The six currencies most frequently involved in foreign exchange in Stockholm
Per cent

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

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

Financial intermediaries

The financial system includes various kinds of middlemen known as intermediaries. These can be classified in different ways. In this report, they are divided into credit institutions, in the form of banks and credit market companies, investors, in the form of insurance companies, pension funds and fund management companies, and securities companies, whose roles include acting as brokers and market-makers in the financial markets. Recently, a new type of intermediary has started to play a more significant role in providing venture capital, namely private equity investment companies*. A special section will therefore be devoted to these operators.*

The intermediaries have been classified on the basis of an institutional perspective. Large parts of the legislation regulating the financial companies are also based on this perspective (see the box *Central laws and forms of incorporation in the financial sector*). Several different kinds of intermediary are often included in one and the same financial group. For example, it is quite common for a financial group to include a bank, a mortgage institution, an insurance company and a fund management company. This is because the major Swedish banks have long sought to fulfil the role of universal banks. The basic idea of a universal bank is to be able to provide products and services in the entire financial field. Four major bank groups dominate the Swedish market: Handelsbanken, Nordea, SEB and Swedbank. Due to this dominance, the four major banks are of decisive significance to the stability of the Swedish financial system. In addition, Danske Bank is also a major participant in the Swedish financial market. Together, these five bank groups account for approximately 80 per cent of both borrowing and lending to the Swedish public.

Because the financial intermediaries are organised in groups it is therefore not sufficient simply to look at the lending activities of the group's banking arm to gain an idea of ,for example, the group's lending. It is also necessary to include the lending carried out by its mortgage institution and finance company. Moreover, financial groups do not organise their businesses in the same way. For example, two of the four major Swedish banking groups have their securities trading

businesses in separate companies, while 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. Table 8 provides an overview of the way in which the business activities have been divided within the six largest financial groups in Sweden.

In addition to their business activities on the Swedish financial market, the four major Swedish banks also conduct significant operations outside Sweden. With half of the lending to borrowers outside Sweden, the banks foreign operations are as important as the domestic operations. A major portion of the banks' risks are to be found abroad. As the business operations of the various companies in the groups, both in Sweden and abroad, all have an impact on the groups' results, it is important also to examine the foreign operations to obtain a complete view of the groups. This publication is, however, primarily intended to describe the Swedish financial market. Consequently, statistics presented do neither include the activities of the banks that are conducted through subsidiaries or affiliates outside Sweden. As regards the foreign participants who are active on the Swedish financial market, branches in Sweden and Swedish subsidiaries are included in

Table 8. Division of business activities in the Swedish banking groups

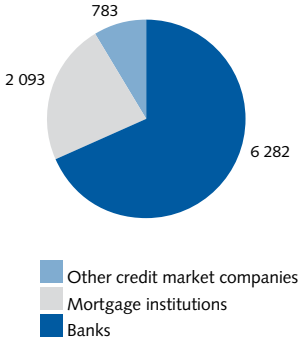
PARENT COMPANY	BANK	MORTGAGE INSTITUTION	FUND MANAGEMENT COMPANIES	INVESTMENT BANK	LIFE ASSURANCE	FINANCE COMPANY
Nordea AB	Nordea Bank AB	Nordea Hypotek AB	Nordea Fonder AB	Nordea Investment Management AB	Nordea Liv and Pension AB	Nordea Finans AB
Svenska Handelsbanken AB	Svenska Handelsbanken AB	Stadshypotek AB	Handelsbanken Fonder AB	Handelsbanken Markets, not a separate company, but a business division in the group	Handelsbanken Liv AB	Handelsbanken Finans AB
Skandinaviska Enskilda Banken AB	Skandinaviska Enskilda Banken AB	Provided by bank	SEB Fonder AB	Enskilda Securities AB	SEB Trygg Liv AB	Provided by bank
Swedbank AB	Swedbank AB	Swedbank Hypotek	Swedbank Robur Fonder AB/Swedbank Robur Kapitalförvaltning	Swedbank Markets, not a separate company, but a business division in the group	Swedbank Försäkring AB	Swedbank Finans AB
Danske Bank A/S	Danske Bank Sverige*	Realkredit Danmark**	Danske Capital**	Provided by bank	Danica**	Provided by bank
Skandia AB	Skandiabanken AB	Provided by bank	Skandia Fonder AB	Skandia Link Multifond AB	Livförsäkringsaktiebolaget Skandia	–

* Through Östgöta Enskilda Bank/province banks
** Common specialised entities
Source: The banks' annual reports

the statistics.[85] In order to provide a complete view of the four major Swedish banking groups, a short overview of these groups and, especially, their foreign operations is provided in the box "Foreign operations – a part of the banking groups".[86]

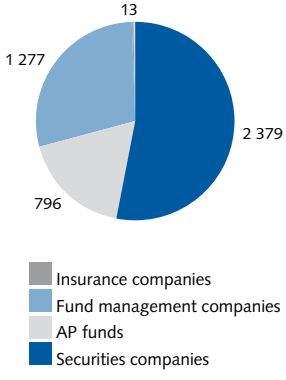
In this chapter the banks, mortgage institutions, insurance companies, securities companies etc. will be dealt with separately. Charts 11 and 12 provide an overview of the extent of the operations conducted in the most important categories of financial intermediaries. The first chart (11) shows the total assets of the credit institutions i.e. the total book value of their assets shown on their balance sheets. The second chart (12) shows the total value of the assets managed by insurance companies, fund management companies, the AP funds and securities companies.

Chart 11. Total assets of Swedish banks, mortgage institutions and other credit market companies at year-end 2008
SEK billion



Source: The Riksbank

Chart 12. Total assets and investment assets of investment companies, insurance companies, fund management companies and AP funds at year-end 2008
SEK billion



Sources: AP pension funds' annual reports and the Riksbank

[85] 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.

[86] See the Financial Stability report, published by the Riksbank twice a year, for a more detailed review of the major banks.

Foreign operations – a part of the banking groups

The Swedish banking groups conduct operations in a number of different areas of the Swedish financial market, as well as outside Sweden. The operations of a group's various companies, both within Sweden and abroad, are all, to some extent, dependent upon one another and affect the result of the group as a whole. For example, companies within a group can share certain administrative functions or have joint funding, which can provide them with advantages over companies that are not organised within a financial group. Similarly, the entire group is negatively impacted if a part of the group, a unit or company, encounters problems. In order to obtain a fair image of the major banks, it is therefore important to examine both the operations conducted in Sweden and the overseas operations, i.e. to examine the groups in their entirety. Table 9 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.

In recent years, the dependence of the major banks upon other markets than the Swedish has increased. For example, in 2008 operations outside of Sweden accounted for 48 per cent of the major banks' pre-tax profit. At the same time, this implies that a major portion of the banks' risks is located abroad. Consequently, in order to obtain a complete view of the major banks' operations, the scope and geographic extent of the foreign operations

Table 9. Operations of the four dominant banking groups on the Swedish financial market at year-end 2008
SEK billion

	HANDELS-BANKEN	NORDEA	SEB	SWEDBANK	TOTAL, FOUR MAJOR BANKS
Balance sheet total	2 159	5 185	2 511	1 812	11 666
Loans to public	1 481	2 899	1 297	1 287	6 965
Of which loans to public in Sweden	972	629	623	953	3 178
Of which loans to public abroad	509	2 270	673	335	3 787

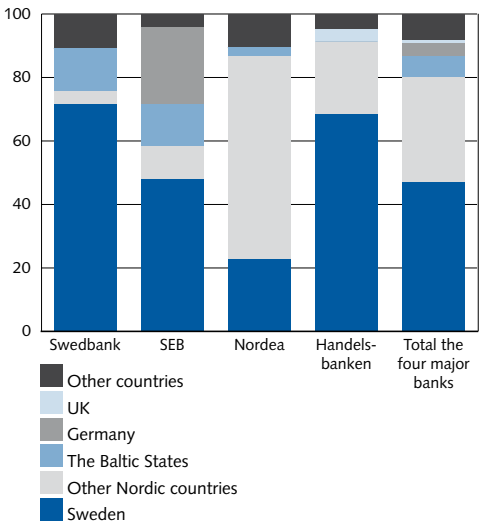
Sources: The banks' annual reports and the Riksbank

should also be examined. As this publication is generally focused on operations in Sweden, the emphasis of this overview is placed upon describing the scope of the major banks' foreign operations. 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.

Lending to the public accounts for around 60 per cent of the major banks' assets. Nordea is the bank undertaking the largest proportion of its total lending to borrowers outside Sweden. Over 75 per cent of Nordea's lending refers to members of the public abroad; only a minor portion refers to the Swedish public. For the other three major banking groups, the largest market is in Sweden. However, these groups also have a major portion of their operations abroad (see table 9).

There are, however, clear differences between the foreign operations of the various major banks. Nordea's lending outside Sweden is almost exclusively in the other Nordic countries. The largest portion of this lending refers to the other Nordic countries. Handelsbanken and SEB con-

Chart 13. Lending by the four major banking groups at consolidated level, by geographical region, 2008
Per cent



Sources: The banks' own reports and the Riksbank

duct approximately one third 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 significant portion of their lending in the Baltic states. SEB also has a large part of its lending in Germany. Chart 13 shows the geographical distribution of lending in each major banking group at year-end 2008.

Just like domestic operations, approximately 50 per cent of foreign operations are funded by deposits from the public. To fund the remaining part of their foreign operations, the banks borrow, in some cases, in the local markets of the countries in which they are active and, in other cases, on other markets. For example, Nordea, which has significant operations in Denmark, obtain large parts of their market funding on the Danish securities market. On the other hand, Swedbank and SEB largely fund their Baltic operations on the euro market. In order to protect themselves against foreign exchange risks, the banks can utilise the derivatives market.

On the one hand, the fact that the banks are active in countries outside Sweden can be considered positive, as this reduces their dependence upon one, single market. On the other hand, establishment in markets outside Sweden can also entail risks for the banks, particularly if this establishment takes place very rapidly or on markets that are still in a stage of development. For example, it can take some time for a bank to get to know a new market and build up the same experience and knowledge that it has of its main market. If establishment takes place on growth markets, this can also entail a risk, as these are frequently not as stable and predictable as mature markets. However, entry onto a market in a later stage can also entail reaching other customers with lower creditworthiness than would have been the case if the market had been entered sooner.

As the assets of major banks predominantly consist of loans, credit risk constitutes the greatest risk in the banks' operations. The fact that the banks are exposed to differing borrowers in different countries and sectors implies that also the credit risk differs between the banks. In periods of declining economic activity, borrowers' ability to repay their borrowings deteriorates and

credit risk rises. The steep decline in economic activity that started towards the end of 2008 has brought up the issue of the risks faced by the major Swedish banks in conjunction with their foreign operations. Most attention has been directed towards SEB and Swedbank, due to their operations in the Baltic states, where the decline in business activity has taken place more rapidly and has been steeper than most observers were expecting. More information concerning this is available in the Riksbank's Financial Stability Report.

Credit institutions

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. Credit institutions include banks and non-bank credit institutions, in Sweden called *credit market companies*.

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, banks' monopoly on accepting deposits was abolished on July 1, 2004, enabling credit market companies also to accept deposits from the public. As with banks, these deposits are covered by the Swedish deposit guarantee scheme.[87]

The most important function of banks in society is perhaps their role in the payment system (read more about the payment system in the chapter on the financial infrastructure). The banks, for example, provide the accounts through which many payment transactions are made as well as 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 14 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 the credit institutions. They account for over half of the credit institutions' total lending to the public, which corresponds to approximately SEK 2 500 billion (see chart 14). In the Swedish market, the four largest banking corporations together account for almost 80 per cent of the banks' total assets (see table 10).

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

[87] According to the Act that came into force on July 1, 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 purpose of the deposit guarantee scheme is to protect customers' deposits, in short notice accounts, of up to SEK 500 000 per customer per institution.

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

Table 10. The ten largest banks, total assets at year-end 2008
SEK billion

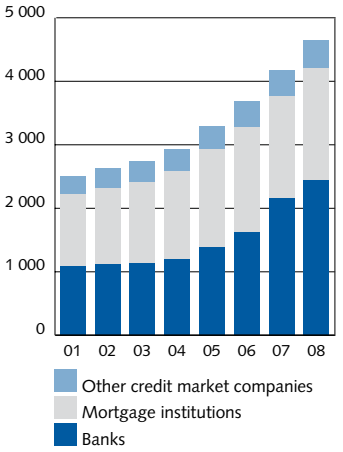
SEB	1 395
Swedbank	1 341
Nordea Bank	1 263
Handelsbanken	942
Danske Bank*	691
DnB NOR Bank*	75
Länsförsäkringar Bank	69
SkandiaBanken	31
Dexia filial*	27
GE Money Bank	18
Total 10 largest	5 851
All banks	6 282

Note. The figures in the table refer to operations conducted in Sweden. Foreign operations conducted by subsidiaries outside Sweden or in the companies' affiliates abroad are not included. For foreign banks, only subsidiaries and companies' affiliates which operate in Sweden are included.

* Foreign branches

Source: The Riksbank

Chart 14. Lending by credit institutions to the public
SEK billion



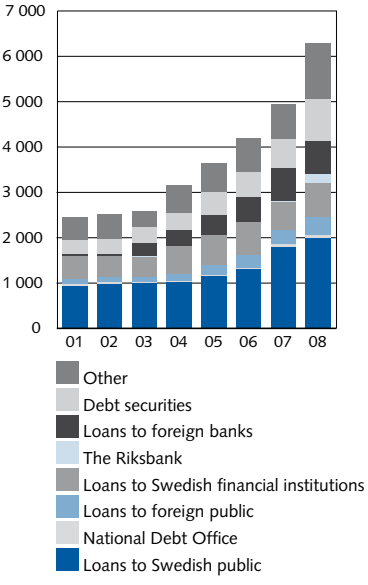
Note 1. The chart shows lending from an institutional perspective. As the mortgage operations of certain banks are conducted within the bank, the banks' credit granting statistics include a certain portion of loans traditionally regarded as mortgages, i.e. loans to households provided against liens on real property. On the other hand, the mortgage institution lending statistics do not include all mortgages in Sweden. However, total lending from credit institutes is not affected by this.
Note 2. Since 2007, SEB has conducted its mortgage lending 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 and included, at that point, in the category lending from mortgage institutions. The relative change in mortgage and bank lending taking place between 2006 and 2007 is partially attributable to this.
Source: The Riksbank

At the end of 2008, there were a total of 118 banks established in Sweden. These comprised 34 limited liability banks (of which four were subsidiaries of foreign banks), 29 foreign-owned branches, 53 savings banks and two co-operative banks. Compared with 2007, the presence of foreign banks in Sweden has increased: 2 new foreign bank subsidiaries and 4 foreign-owned branches have been established on the Swedish banking market.

The banks' assets and liabilities

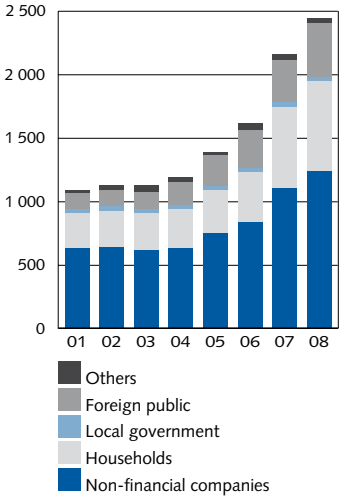
The banks' assets consist for the most part of loans to the public. At the end of 2008, the banks' loans to the public totalled SEK 2 444 billion, corresponding to approximately 40 per cent of the banks' total assets (see chart 15). Approximately 50 per cent of the banks' lending to the public was to Swedish non-financial companies and 30 per cent to Swedish households (see chart 16). Less than a fifth of the lending was to the foreign public.[88]

Chart 15. The banks' assets
SEK billion



Note. The chart includes assets from the Swedish entities only. Assets in the Swedish banks' affiliates or subsidiaries abroad are not included. For foreign banks, only the assets of branch operations in Sweden are included.
Source: The Riksbank

Chart 16. The banks' lending to the public by borrower category
SEK billion



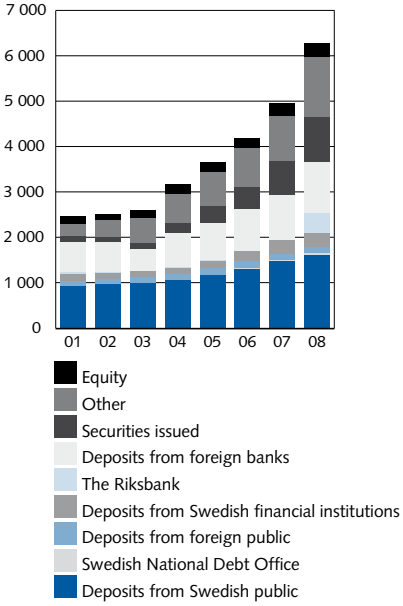
Note. The chart includes lending from the Swedish entities only. Lending conducted through the Swedish banks' affiliates or subsidiaries abroad are not included. For foreign banks, only branch operations in Sweden are included.
Source: The Riksbank

[88] This represents only a minor portion of the Swedish *banking groups'* total lending to the foreign public. The remaining portion of the banks' foreign lending is thus granted by the Swedish unit from Sweden. See the box "Foreign operations – a part of the banking groups" for a short review of total foreign lending.

As well as lending to the public, the banks also have large claims on Swedish financial institutions.[89] These claims represented 12 per cent of the banks' assets. In addition, around 15 per cent of the assets consisted of bonds and other interest-bearing securities.

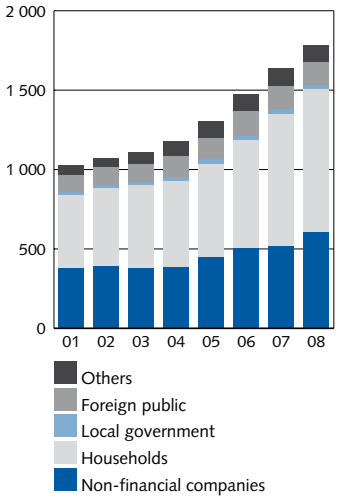
On the liability side of the banks' balance sheet the largest item is deposits from the public. During 2008 bank deposits from the public accounted for just under 30 per cent of the banks' total liabilities and, at year-end, totalled SEK 1 738 billion (see chart 17). Swedish households accounted for 50 per cent of deposits from the public and Swedish non-financial undertakings for 30 per cent (see chart 18). The banks' liabilities to depositors from abroad were approximately 8 per cent of the deposits from the public. In addition, the banks' liabilities consist of their market funding. These liabilities include both deposits from Swedish and foreign financial institutions and liabilities in the form of securities issued. The banks' equity only constitutes a minor part of total assets.

Chart 17. The banks' liabilities and equity
SEK billion



Note. The chart includes lending from the Swedish entities only. Lending conducted through the Swedish banks' affiliates or subsidiaries abroad are not included. For foreign banks, only branch operations in Sweden are included.
Source: The Riksbank

Chart 18. The banks' deposits from the public, by lender category
SEK billion



Note. The chart includes lending from the Swedish entities only. Lending conducted through the Swedish banks' affiliates or subsidiaries abroad are not included. For foreign banks, only branch operations in Sweden are included.
Source: The Riksbank

[89] The financial institutions is among others other banks, finance companies and securities companies.

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. Special corporate forms such as Conduits and Structured Investment Vehicles (SIV) are also placed off-balance sheet. The common factor for these items is that the bank, as yet, does not have a real and quantifiable liability. That is to say that there is uncertainty regarding whether the banks' commitments will actually result in a liability and, if so, the date when this will occur and the total amount to be involved.

During 2008, banks encountered difficulties in financing themselves on the market, due to the financial crisis. The extensive global uncertainty regarding counterparty creditworthiness and liquidity made investors unwilling to lend money for the funding of banks and other financial institutions. As a consequence, funding at longer maturities in particular became unusually expensive and, at times, impossible.

The Swedish authorities have undertaken certain measures to ease the financing of the banks and improve the functioning of the financial markets. For example, the Riksbank has increased the availability to the banks of credits with terms of up to twelve months.[90] These credits are given in exchange for the provision by the banks of collateral to the Riksbank. This increased borrowing from the Riksbank can be seen in chart 14, which indicates the banks' liabilities and equity. It can also be seen in chart 12, which indicates the banks' assets which is due to the fact that the banks place large parts of the contributed liquidity in the Riksbank overnight, via the Riksbank's fine-tuning operations.

In addition, the Swedish National Debt Office has issued Treasury bills beyond ordinary issues. Money received from these issues by the Swedish National Debt Office has, in turn, been lent to the banks and their mortgage institutions in exchange for mortgage bonds, via 'reverse repos'. This has also served to ease the financing of the mortgage institutions. As the repos have matured, they have, however, not been extended.[91]

At year-end 2008, funding from the Riksbank and Swedish National Debt Office amounted to approximately 8 per cent of the banks' total funding, as compared with a figure of only 0.5 per cent during the previous years. More information on the implications of the Riks-

[90] A complete list of the measures adopted by the Riksbank is available at the Riksbank's website, www.riksbank.com.

[91] As the Swedish National Debt Office's reverse repos and extraordinary issues were primarily implemented during October and November, the relatively small amounts involved (in relation to the banks' total balance sheets) in this change are not particularly noticeable in the chart.

bank's measures can be found in the box *The impact of the Riksbank's extra lending on the balance sheet* in Chapter 1.

MORTGAGE INSTITUTIONS

The primary purpose of mortgage institutions is to finance purchases of real estate, in particular residential property. Loans are secured mainly by real estate mortgages or municipal sureties. State credit guarantees are also used. Lending by mortgage institutions constitutes around 38 per cent of the total lending by credit institutions.

There are, in all, six mortgage institutions in the Swedish market. Four of these are part of a financial group. Frispar Bolån is partly owned by SBAB, Sparbanken Finn and Sparbanken Gripen. SBAB is wholly owned by the State. Stadshypotek and Swedbank Hypotek are the largest institutions. These are owned by the Handelsbanken and Swedbank groups, respectively and together, they account for 65 per cent of the total assets held by mortgage institutions (see table 11).

At year-end 2008, lending by the mortgage institutions to the public amounted to SEK 1 764 billion. Lending to single-family dwellings and multi-family dwellings together comprised the largest part – just under 80 per cent (see chart 19). Lending to tenant-owner apartments has increased very sharply and is now more than eight times as large as at year-end 1998. 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 19, the mortgage institutions' lending to the public appears to decline between 2006 and 2007. This is not due to a decrease in lending in the form of home loans, but is a consequence of the merger of SEB Bolån into SEB's banking arm in 2007, after which SEB Bolån is no longer a freestanding mortgage institution.

Table 11. Mortgage institutions in Sweden, total assets and loans at year-end 2008
SEK billion

	BALANCE SHEET TOTAL	LENDING
Swedbank Hypotek	757	615
Stadshypotek AB	614	570
Nordea Hypotek	362	340
SBAB[1]	290	183
Länsförsäkringar Hypotek	66	54
Frispar Bolån	3	2
Total	2 093	1 763

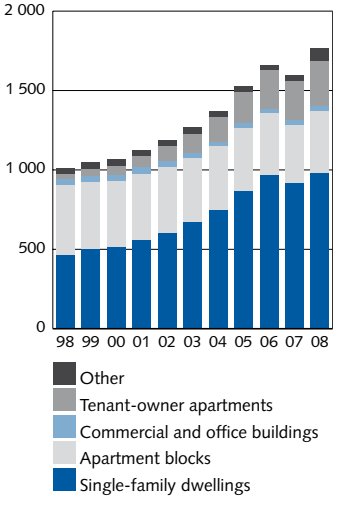
[1] Including SBAB's wholly-owned subsidiary, the Swedish Covered Bond Corporation.
Source: The Riksbank

Interest rates on loans from mortgage institutions can be fixed, for different terms, or variable. The choice of fixed-interest period is affected by customers' expectations regarding the development of short-term and long-term interest rates. In 2008, the percentage of new loans granted at variable rates was more than 60 per cent. Fixed-rate loans with terms of five years or more and fixed-rate loans with shorter terms accounted for approximately 10 per cent and 30 per cent respectively of total new loans (see chart 20).

The distribution of fixed-rate short and long-term loans and variable-rate loans in the mortgage institutions' total loan stock has varied over the most recent years. Since 2001, 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. At year-end 2008, 42 per cent of the total mortgage lending consisted of variable-rate loans, 37 per cent of loans at fixed rates for terms of up to five years and 21 per cent had fixed rates for five years or more (see chart 21).

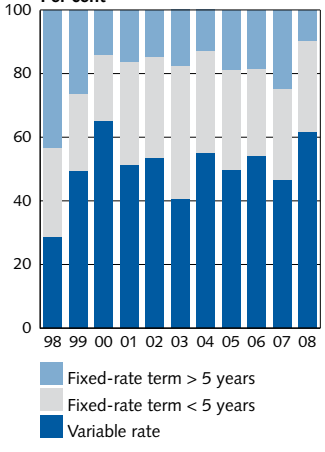
The mortgage institutions mainly obtain funding for the credit granted by issuing bonds and certificates (see chart 22). These are pur-

Chart 19. Lending by mortgage institutions to the public
SEK billion



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

Chart 20. New lending per year by mortgage institutions according to the original fixed-rate term
Per cent



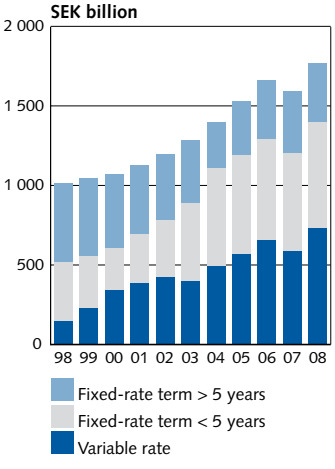
Source: The Riksbank

chased primarily by large asset managers, such as the AP funds, the insurance companies and the banks. Funding by the bank-owned mortgage institutions also largely consists of loans from their parent company. Mortgage institutions also borrow from domestic companies and households, for instance, by issuing private bonds. A considerable share of funding takes place in foreign markets.

Mortgage institutions attempt to match the maturities of their assets and liabilities in order to limit interest rate risk. As the proportion of lending at variable rates increases, so does the proportion of short-term borrowing via certificates and borrowing from group companies. In the same way, more bonds with longer maturities are issued when lending at fixed rates increases. In recent years, the mortgage lending institutions have, to a certain extent, used derivatives to match the terms of their assets and liabilities.

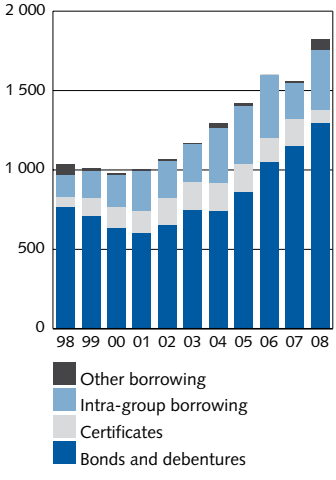
In the same manner as for the banks, the mortgage lending institutions' opportunity to fund themselves on the market via the issue of securities declined in 2008 due to the financial crisis. It has become both more difficult and more expensive to obtain funding through the issue of certificates or bonds. However, to a certain degree, mortgage institutions have been able to issue covered bonds[92] to their parent companies, which are subsequently pledged to the Riksbank for utilising the funding facilities provided by the Riksbank. Covered bonds

Chart 21. Loan stock of mortgage institutions according to the original fixed-rate term
SEK billion



Source: The Riksbank

Chart 22. Borrowing by mortgage institutions
SEK billion



Source: The Riksbank

[92] For a description of covered bonds, see the box *Covered bonds in Sweden*.

have also been utilised in reverse repos[93] with the Swedish National Debt Office. This has improved access to short-term financing for the banking groups as a whole.

At year-end 2008, borrowing through bonds and debentures totalled SEK 1 294 billion, while short-term borrowing through certificates amounted to SEK 81 billion (see chart 22).

OTHER CREDIT MARKET COMPANIES

Credit market companies also include finance companies other than mortgage institutions. At year-end 2008, lending by these institutions comprised nine per cent of total lending by credit institutions. Approximately one fifth of the total assets of the SEK 784 billion is attributable to the finance companies linked to the four major banking groups (see table 12).

Before 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, for example leasing and factoring services for corporate customers and promissory note loans and credit card accounts to households.[94] For administrative reasons, they still operate as independent companies within the banking groups.

Table 12. The ten largest institutions in the category Other credit market companies, total assets at year-end 2008 SEK billion

Svensk Exportkredit AB	358
Kommuninvest i Sverige	128
Handelsbanken Finans AB	53
Landshypotek AB	51
Nordea Finans Sverige AB	44
Swedbank Finans AB	34
DnB NOR Finans	12
Volkswagen Finans AB	10
Wasa Kredit AB	9
Svenska Skeppshypotekskassan	9
Total 10 largest	707
Total	784

Source: The Riksbank

[93] See the definition in Chapter 1.
[94] 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.

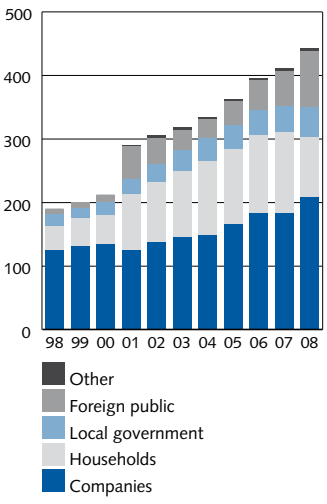
Finance companies are also owned by non-financial companies. In such cases, they provide complementary services to normal operations through the financing facilities they can offer to the company's customers. For example, large car manufacturers often provide financing opportunities to their customers.

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 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 with a view to arranging 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 financing on favourable terms.

The finance companies fund their operations mainly through loans from other financial institutions, in particular the banks. Some of the larger finance companies also obtain funding by issuing certificates in the securities market. The specialised institutions fund their activities by issuing bonds, certificates and promissory notes.

Outstanding loans to the public by other credit market companies amounted to SEK 443 billion at the end of 2008 (see chart 23). Of these loans, 50 per cent were made to Swedish companies, while 20 per cent went to Swedish households and 20 per cent went to the for-

Chart 23. Lending by other credit market companies to the public
SEK billion



Source: The Riksbank

eign public. There are 54 companies categorised as other credit market companies on the Swedish market, of which 47 are finance companies.

Private equity investment companies

Both established companies and those that are not yet ready for listing on the stock exchange or other forms of public trading in their shares can sometimes acquire funding in the form of private equity. This kind of funding has increasingly been channelled through a special type of intermediary, the private equity companies.[95]

Private equity investment companies 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 return the private equity investment company receives on its investments. Private equity 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-outs. Early phase investments usually entail high risk, as the investment is often made in newly-started companies with weak cash flows and few tangible assets.

Banks do not normally contribute venture capital, as this does not lie within their business concept. Entrepreneurs wishing to develop an undertaking therefore have to seek another form of funding. They may borrow on their private assets, for example their house, or acquire capital for their business by allowing a private equity investment company to enter as a partner. Private equity investment companies differ from other financiers also 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. The sector has grown rapidly, especially in recent years. According to the European Private Equity and Venture Capital Association (EVCA), 129 private equity investment companies were operating in Sweden in December 2008. The majority of these focus on the buy-out segment. Together, Swedish private equity investment companies managed total assets of around SEK 377 billion at year-end 2008.[96] Approximately half of the assets managed are invested in portfolio companies.[97]

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[95] 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.
[96] Swedish Venture Capital Association. www.svca.se
[97] European Private Equity and Venture Capital Association www.evca.se.

In Sweden, an amount equivalent to just over 1 per cent of GDP is invested in private equity through private equity companies. With the UK, Sweden ranks among the leading countries in Europe in private equity. A large part of the capital in Swedish equity funds is from foreign investors. Institutional investors, such as fund-in-fund managers, pension funds and insurance companies are among the predominant categories of investors.[98]

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 each serves separate functions in the financial system and the economy, they all have an important role as investors in the financial markets. As investors, they concentrate more on managing others' money than their own.

The insurance companies supply the general public with life and non-life assurance. Non-life assurance enables the public to manage risks associated with property. Life assurance, on the other hand, is linked to one individual and can provide compensation in the event of the injury or death of the insured individual, but can also include pension assurance. Life assurance provides the possibility of allocating income over an individual's remaining lifespan and such products are therefore frequently regarded as long-term forms of saving. The poli-

Table 13. The ten largest life assurance companies, investment assets at year-end 2008
SEK billion

INSURANCE COMPANIES	INVESTMENT ASSETS
Alecta	390
Skandiakoncernen	346
SEB Trygg Liv	304
AMF Pension	268
Folksam	206
Länsförsäkringsgruppen	205
SPP	125
If Skadeförsäkring	62
Swedbank Försäkring	54
Handelsbanken Liv	52
Other	152
Total	2 165

Source: The Swedish Insurance Federation

[98] European Private Equity and Venture Capital Association www.evca.se.

cyholder pays a premium to obtain this insurance cover. The insurance companies invest the premiums they receive in the securities market.

Other forms of long-term savings are provided by the national pension funds and by private fund management companies. The national pension funds administer the assets the state has set aside to cover its pension undertakings, while fund management companies manage the public's savings in securities funds.

THE INSURANCE COMPANIES

At year-end 2008, there were 354 Swedish insurance companies active in the domestic market. In addition, 39 foreign companies were operating through branches in Sweden. Most of the Swedish insurance companies are small local non-life companies but the market is concentrated to a few major companies. Taken together, the investment companies had investment assets in an amount of SEK 2 379 billion at year-end 2008. Approximately 90 per cent of this amount was held by the ten largest insurance companies (see table 13).[99]

Insurance companies are divided into life assurance and non-life assurance companies. 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 and non-life assurance companies both offer insurance against risk, albeit totally different types of risk.

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. These products need not be seen only as insurance, but can also be seen as a form of long-term saving in 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 assurance pays a guaranteed return, while the return 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 mutual funds).

Non-life insurance companies compensate damage to property and pay third-party damages. Policyholders pay a premium to the

[99] The total investment assets indicated in table 13 and in chart 12 at the start of the chapter differ. This is because the figures in table 13 do not include the AFA group, unlike the figures in chart 12. The investment assets of the AFA group amounted to approximately SEK 215 billion at the end of 2008 (source: the Swedish Insurance Federation).

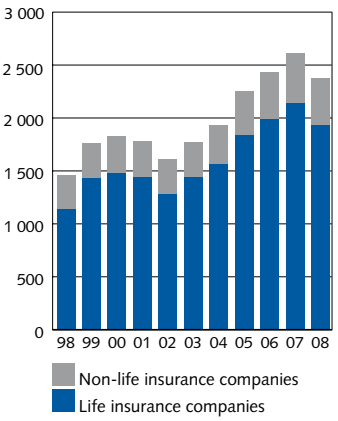
companies in order to receive compensation for property damaged in an insurance event. Unlike life assurance, non-life assurance policies are not a form of saving. The activities of these companies in the securities market only take place in order to manage the companies' own funds.

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. Both limited liability companies operated on mutual principles and entirely mutual companies are 'non-dividend-paying companies'. The corporate form in which an insurance company conducts its business operations is of significance for the allocation of yield, among other matters.

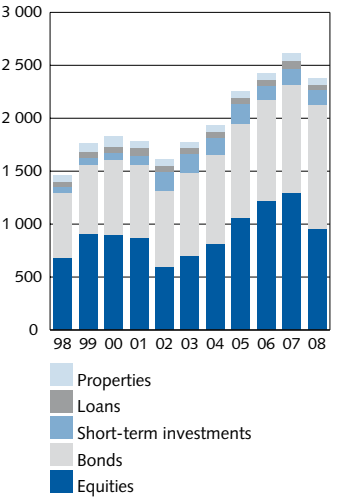
The assets of a dividend-paying limited liability assurance company consist of 'investment assets', i.e. premiums invested in various securities. The liabilities consist primarily of technical provisions. The technical provisions must correspond to the amount needed by the company to meet all the commitments arising from the insurance

Chart 24. Investment assets of the insurance companies
SEK billion



Source: Statistics Sweden

Chart 25. Insurance companies' investment assets, allocated by type of financial asset.
SEK billion



Source: The Riksbank

contracts into which it has entered.[100] 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 other hand, financial risk is assumed by the policyholders in a limited liability company operated on mutual principles and in entirely mutual companies, where the policyholders themselves "own" the equity. All surplus arising in mutual companies belongs 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 total investment assets of the nationwide life assurance and non-life assurance companies amounted at year-end 2008 to SEK 2 379 billion. Of these assets, the life assurance companies accounted for roughly 80 per cent (see chart 24).

The investment assets of insurance companies comprise mainly equities and bonds. The percentage invested in equities fell during 2001, 2002 and 2008 due to the negative development of the equity markets. In December 2008, equity accounted for around 40 per cent of the investment assets and likewise the capital managed. Holdings of bonds and short-term investments made up 50 per cent and 6 per cent respectively of the investment assets. Investments in property only accounted for a minor part (see chart 25). 31 per cent of investment assets were investments in markets outside Sweden.

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 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.

[100] 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 maximum rate of interest", which is the discount rate used to calculate the present value of the company's future commitments.

At year-end 2008, a total of 77 insurance associations were operating, with total assets amounting to just approximately SEK 96 billion.[101]

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 2008, there were around 2 340 pension foundations in Sweden, which, together had just over SEK 177 billion in assets.[102]

FUND MANAGEMENT COMPANIES

Fund investment in Sweden totalled SEK 1 185 billion in managed capital at year-end 2008.

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 companies, owned by the largest banking groups, together account for almost 70 per cent of the fund market (see table 14). In the case of these fund management companies, the banks' local offices or Internet services act as distribution points.

Table 14. The ten largest fund managers, assets managed, December 2008
SEK billion

Robur	320
SEB	233
Handelsbanken	146
Nordea	142
Länsförsäkringar	51
Skandia	50
Folksam	37
AMF Pension	21
Danske Fonder	18
Catella	13
Total 10 largest	1032
Total	1185

Source: Svensk fondstatistik(part of MoneyMate)

[101] The majority of insurance associations conduct their own asset management, while some outsource asset management. The fact that some insurance associations outsource their asset management means that some overlapping exists in the reporting of data, as these foundations assets are also included in investment assets of fund management companies.
[102] Information on the assets held by pension foundations is based on data reported at year-end 2008. For pension foundations with a split financial year, the reported figures thus refer to the financial year 2007.

The assets managed in equity funds amounted to SEK 543 billion at year-end 2008. 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 373 billion and SEK 204 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 around SEK 66 billon at year-end 2008 (see table 15).

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 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 development of the equity markets, which resulted in a decline in the value of the funds. During 2008, a certain degree of net withdrawals from the equity funds has also contributed

Table 15. Mutual fund worth, by type of fund
SEK billion

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Equity funds	365	592	595	522	343	445	514	733	868	895	543
Fixed-income funds	104	116	123	162	205	244	275	310	340	354	373
Mixed funds	121	169	205	154	119	141	158	202	238	247	204
Hedge funds	–	–	–	28	36	43	50	71	82	76	66
Total	591	877	924	867	702	873	997	1316	1528	1572	1185

Note. The figures in the table indicate the capital value of Swedish investments in mutual funds, allocated by type of fund.
Source: Svensk fondstatistik (part of MoneyMate)

to this decline.[103] Of the total investment fund assets, equity funds accounted for 46 per cent at year-end 2008, fixed income funds for 31 per cent and other funds for 23 per cent (see table 15).

STATE-OWNED PENSION FUNDS

The Swedish public pension system is made up of two components: one collective and one individual. The collective element 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 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.[104] 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 instruments, 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 2008, the investment assets of the AP funds totalled SEK 796 billion. This can be compared with life assurance companies and the fund management companies, whose investment assets amounted to SEK 1 931 billion and SEK 1 277 billion respectively in December 2008.

[103] Source: The Swedish Investment Fund Association.
[104] 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.

Securities institutions

Securities institutions is the term used to refer collectively to the securities companies and Swedish credit institutions that are licensed by the Swedish Financial Supervisory Authority to engage in securities trading.[105] 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 on *Central laws and forms of incorporation in the finance sector*).

Securities institutions have two primary functions. One is to trade with securities in their own name on behalf of customers, i.e. commission trading, and the other is to buy and sell securities on their own behalf in their capacity of market maker. 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.[106] By bringing together purchasers and sellers of securities and acting as market makers, they contribute to liquidity and thus a more efficient market in securities

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 2008, just over 200 Swedish companies had one or more of the above-mentioned licences to engage in securities trading. Just over half of these companies were securities companies, while the others were mainly banking companies and savings banks.

SECURITIES COMPANIES

Of the securities companies registered at year-end 2008, five companies held seven of the eight different licenses for securities trading activities. Most of these companies were also members of NASDAQ OMX Stockholm. At year-end 2008, only one company held the eighth license for "operation of a trading facility".[107]

Frequently, many securities companies are specialised in one or a small number of activities and therefore only need licenses for those.

[105] Based on the 33 largest securities companies, which account for the majority of the securities companies' total assets.
[106] The role of market maker is explained in more depth in Chapter 1.
[107] See review of trading facilities in Chapter 1.

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 2008, the total assets of the securities companies amounted to about SEK 13 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 35 banking companies registered in Sweden at year-end 2008, 28 were licensed for securities trading. Ten of these banking companies held seven of the eight licenses for securities trading.[108] The four major banks, Swedbank, Handelsbanken, Nordea and SEB are represented among the companies holding the most licenses.

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, 50 savings banks had one or more securities trading licences at year-end 2008. 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.

[108] See review of investment business licenses in the box Central laws and forms of incorporation in the financial sector.

Central laws and forms of incorporation in the financial sector

Provisions regulating *banking and financing activities* for all forms of banks, limited liability banks, savings banks and co-operative banks are contained in the **Banking and Financing Business Act**. This Act describes both what the banks are and are not allowed to do, as well as the way they are supervised. It also includes particular provisions on association for limited liability banks, while the establishment and organisation of savings banks and co-operative banks are regulated in separate acts.

A license is required from the Financial Supervisory Authority to operate a banking and finance business. A "banking business" is a business in two parts: it must be able both to mediate payments via general payment systems and to accept deposits that are available to the depositor within 30 days' notice at most.

A credit market company is a limited liability company or an economic association that is licensed to conduct financing operations. "Financing operations" is defined as business operations intended to accept funds from the public and also to provide credit or credit guarantees. Conducting financing operations can also refer to the purchase by a company of other companies' claims and the provision of leasing services.

Certain financial companies, for example, those which do not accept funds from the public, do not need a licence, and are therefore not subject to supervision by the Financial Supervisory Authority. However, these companies must be registered as financial institutions[109] and are subject to the rules on money laundering and other crimes.

Under the **Deposits Business Act**, other limited companies and economic associations besides the credit institutions and securities companies can accept deposits from the public after registering with the Financial Supervisory Authority. These companies, known as *deposit companies*, may accept at most SEK 50 000 per consumer. Deposit companies are not subject to full supervision

[109] In accordance with the *Obligation to Notify Certain Financial Operations Act.*

but are to be inspected by the Financial Supervisory Authority once a year.

One of the most important laws for control of the banks and credit market companies is the legislation on capital and risk management. On January 1, 2007, the new capital adequacy rules, **Basel II**, came into force. Basel II aims at ensuring in a better way that companies which are subject to supervision have an adequate capital base in relation to their risk taking, in addition to satisfactory risk management systems and internal control.

Examples of other laws that have a bearing on banks and credit market companies are the **Consumer Credit Act**, the main purpose of which is to regulate how credit services may be marketed, and the **Deposit Guarantee Act,** which is intended to guarantee the funds in depositors accounts up to SEK 500 000 per customer and institution. Since October 6, 2008, all types of accounts with banks and credit market companies are covered, regardless of whether the money in the accounts may be freely withdrawn. However, this does not apply to individual pension savings. The deposit companies referred to above are not covered by the deposit guarantee.

During 2008, a new law dealing with credit institutions was passed, the **Government Support to Credit Institutions Act**. This Act was designed to create a more predictable process for the management of problems in financial institutions in crisis situations. The Act provides the state with the possibility of intervening in the event that a credit institution encounters financial difficulties threatening the stability of the financial system. For example, in such a situation, the state can provide 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 new Act, a programme for borrowing with a government guarantee has been introduced, as has a capital injection programme.[110]

Two fundamental pieces of legislation regulate private *insurance operations*: The **Insurance Business Act**, which lays down the regulatory framework that governs insurance operations, and the **Insurance Contracts Act**,

[110] The capital injection programme was introduced during the spring of 2009.

which regulates the relationship between insurance companies and policyholders.

The Insurance Business Act contains rules on the establishment of insurance companies in Sweden, their operations and supervision. The commercial rules distinguish between life assurance and non-life assurance operations, activities that, in principle, must be conducted in separate companies. Policyholders are protected through a requirement to provide information and a clear demarcation between equity and policyholders' capital, as well as a contractual right to profits.

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 Broking 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.

On November 1, 2007, new legislation came into effect for the securities market in Sweden and other EU Member States. The new **Securities Market Act** is based on the Directive on Markets in Financial Instruments, MiFID, and creates new uniform rules of operation for securities companies and regulated markets. The intention is, inter alia, to increase competition in the European securities market and to strengthen the protection for those investing in securities. The Securities Market Act replaces the Securities Trading Act and the Securities Exchange and Clearing Operations Act.

Securities trading is mainly regulated by the Securities Market Act. Securities institutions is a collective term that refers to securities companies and Swedish credit institutions. The term covers banks and credit market companies licensed by the Financial Supervisory Authority to conduct securities trading, as well as foreign companies conducting securities trading from branches in Sweden. According to the Securities Market Act, the Authority may grant licences for the following securities activities:

1. Reception and passing on orders relating to one or more financial instruments

2. Carrying out orders relating to financial instruments on behalf of customers
3. Trading with financial instruments on its own behalf
4. Discretionary portfolio management relating to financial instruments
5. Provision of investment advice to customers relating to financial instruments
6. Provision of guarantees relating to financial instruments and investment of financial instruments with a fixed commitment
7. Investment of financial instruments without a fixed commitment
8. Operating of trading platform

Marketplaces for securities trading and clearing and settlement of securities transactions are also regulated in the Securities Market Act.

The securities companies, like the credit institutions, are also subject to the **Capital Adequacy and Large Exposures Act**.

Securities trading is also regulated in, for example, the **Financial Instruments Trading Act** and the **Market Abuse (Financial Instruments Trading) Penal Act** 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 cover currently amounts to SEK 250 000 per customer and institution. Questions relating to marketplaces for securities trading and clearing and settlement of securities transactions are mainly regulated in the **Securities Market Act**.

The operations of fund management companies are regulated in the **Mutual Funds Act**. This Act contains provisions on mutual funds and what are known as special funds. The latter differ from mutual funds, for instance, through their focus and the target group at which they are aimed. The assets of a mutual fund or a special fund, as well as incoming and outgoing payments relating to the fund, are administered by a *depository, which* must be a bank or other credit institution. The fund management company and the depository operate independently of each other.

The financial infrastructure

A key function of the financial system is to provide a framework in which payments and securities transactions can be performed efficiently and securely. This requires certain procedures, instruments and systems. Collectively, these are known as the "financial infrastructure". This chapter begins by describing various types of payments. We will then discuss the use of retail payments. The chapter concludes with a brief description of the key systems in Sweden's financial infrastructure and an illustration of payment flows in Sweden.

Different types of payments

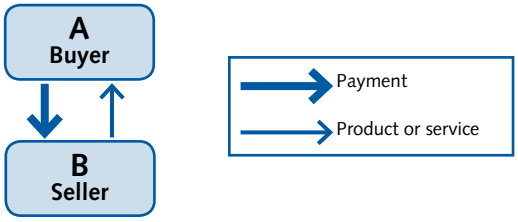
Different types of payments require different types of financial infrastructure. A simple payment requires the least sophisticated infrastructure, a payment involving a single intermediary requires a slightly more developed infrastructure while a payment involving multiple intermediaries requires a fully developed financial infrastructure. The following is a description of these three types of payments.

A SIMPLE PAYMENT

In a simple payment, such as a cash payment, the claim is extinguished when banknotes or coins are exchanged or funds on a prepaid card are transferred. No intermediaries are required for such payments and there is no time lag between the initiation and completion of payment. An example of a simple payment is shown in figure 1.

A and B may be individuals, businesses or government agencies. 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.

Figure 1. Example of a simple payment



PAYMENT USING AN INTERMEDIARY

The big difference between a simple payment and a payment with one intermediary is that the execution of the latter requires a more advanced financial infrastructure. Other parties are required in addition to those immediately involved in the transaction. Consequently, a time lag often arises between the initiation and completion of the payment.

An example of a payment involving a single intermediary is an account transfer between two individuals in the same bank where the remitter initiates the payment by instructing his bank to transfer the funds. The bank then transfers the funds from the remitter's account to the beneficiary's account and informs the beneficiary that his account has been credited. When the transfer has been made the payment has been executed and settled, i.e. completed.

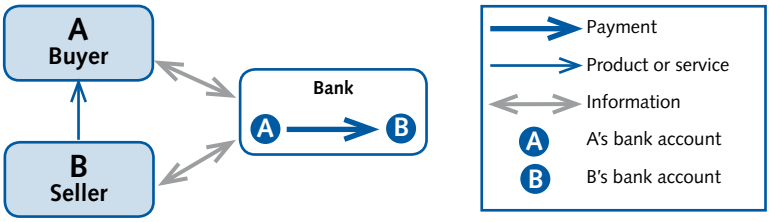
Figure 2 illustrates the transaction between A and B. A and B have accounts with the same bank. The bank receives information about the transaction, and debits A's account and credits B's account with the same amount.

PAYMENTS WITH MULTIPLE INTERMEDIARIES

The picture becomes more complicated if A and B have accounts with different banks. This requires an even more highly developed financial infrastructure where information on the transaction can be transferred between the parties concerned. Such an infrastructure covers not only the systems, but also the procedures and rules required to manage an account-based payment from beginning to end.

If A and B have accounts with different banks and want to make a payment, this will require a financial infrastructure that can process payments between different parties, see figure 3.

Figure 2. Example of a payment using an intermediary

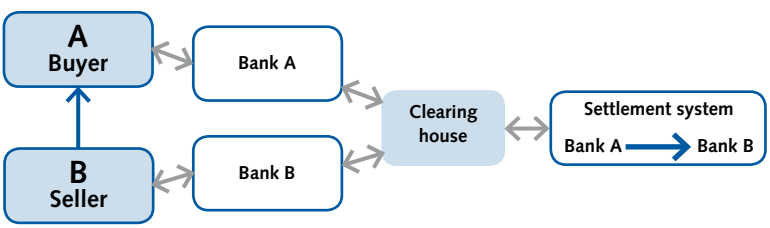


The processes managed in this financial infrastructure can generally be summarised in three steps.[111] In the first step the payment is *verified and authorised*. This often takes place in connection with the actual payment and involves verifying the identities of the parties and ascertaining that the payment is valid. It also involves checking that there are sufficient funds to cover the payment. If the verification shows that sufficient funds are available the payment can be approved, i.e. authorised.

In the second step the transaction is *cleared*. This involves compiling instructions about the transfer. Clearing is performed by a *clearing house*. In the example shown in figure 3 the clearing operation refers to the compilation of transactions between two parties, A's and B's banks. It is therefore sometimes known as bilateral clearing. If several accounts and payment intermediaries are involved the compilation of transactions can be made for all counterparties at the same time. This is called multilateral clearing.

Furthermore, a clearing order can be calculated either as a gross or net amount. A's bank may, for example, be paying B's bank SEK 100 while B's bank is paying A's bank SEK 50. The clearing orders can then be grossed up, i.e. a total amount is calculated. In our example it means that A's bank will pay SEK 100 and B's bank SEK 50. Alternatively, the clearing house can use bilateral netting. Bilateral netting occurs when two parties offset their claims and liabilities against those of the other party. The effect is to reduce the parties' risk exposures to each other and thus their liquidity requirements. In the present example the clearing positions are netted out, which means that A's bank will pay SEK 50 to B's bank. In multilateral netting all parties' liabilities and claims are netted off against each other. Each party will then have

Figure 3. Example of a payment with multiple intermediaries



[111] The three sub-processes – verification/authorisation, clearing and settlement – are performed even if the remitter and beneficiary have accounts with the same bank, but in this case they are handled using the bank's internal systems.

a single amount due from or payable to the other parties.[112] In certain cases clearing can be performed through a central counterparty (read more about central counterparty clearing in the section on transfers in trading with financial instruments and the box on netting procedures).

In the third and final step the payment is *settled*. This means that the actual transfer is made from the remitter's account to the beneficiary's account. If the remitter and beneficiary have accounts with different banks settlement is made through the accounts maintained by the banks for this purpose in a settlement system. A settlement system could thus be likened to a bank for the banks. The payment is settled by debiting the account of the remitting bank and crediting the account of the receiving bank with the amount transferred. The remitting bank then debits, and the receiving bank credits, their customers' accounts. This settlement process is normally performed using the accounts that banks and certain other financial institutions, such as the clearing houses, have with the central bank of a country. The central bank's settlement system is used for settling payments requiring transfers of funds between different banks and clearing houses. Read more about this in the section on RIX below. When the three steps – verification/authorisation, clearing and settlement – have been executed the payment has been completed.

[112] If we assume instead that there are three participants, where A is paying SEK 100 to B and SEK 120 to C, B is paying SEK 50 to A and SEK 20 to C, and C is paying SEK 150 to B, we get the following the net positions: for A SEK -170, for B SEK +180 and for C SEK-10. The payment flows can then be simplified so that A pays SEK 170 to B and C pays SEK 10 to B.

Netting

Netting is a procedure where a payer and a payee offset their claims and liabilities against those of the other party, thus minimising the payment into a single claim or liability. The gross payments are thus brought together and offset against each other, or netted out.

The demand for netting is due to several reasons. The parties to a transaction may want to reduce the number of payments to each other. Another reason may be that the counterparty risk is reduced when a smaller amount is transferred to the other party. The need for liquidity is also reduced, limiting the liquidity risk. Access to new technology has now made it possible to create a more efficient process for various netting arrangements.

There are several types of netting. In the following we will describe bilateral netting, multilateral netting and central counterparty netting.

Bilateral netting

Bilateral netting is where two parties net out their gross debts and gross claims to a single, net amount. Like all payments, bilaterally netted payments are processed in a payment system.

A bank can have bilateral agreements on netting with several banks, as illustrated numerically in table 16. If a bank has bilateral undertakings to each of the other banks and Bank A, for instance, is paying SEK 40 to Bank B and Bank is paying SEK 50 to Bank A, then this is netted out so that Bank B only pays the net amount, i.e. SEK 10, to Bank A via the payment system. Bank A also has a bilateral netting agreement with Bank C in which Bank A is paying SEK 5 to Bank C and Bank C is paying SEK 10 to Bank A. In this case Bank C pays SEK 5 to Bank A.

Banks B and C also have a netting agreement with each other, which means that as Bank B is paying SEK 20 to Bank C and Bank C is paying SEK 10 to Bank But, this is netted out so that Bank B pays SEK 10 to Bank C. All these transactions are shown in table 16. This example illustrates the rationale behind bilateral netting. Instead of the banks paying the gross amounts, which add up to SEK 135, via the payment system, only the net amounts, which

total SEK 25, are exchanged through the system.

Multilateral netting

In multilateral netting all three banks' debts and claims are offset against each other. Each participant will thus have a single debt to or claim on the other participants. In a multilateral netting arrangement the three banks' net positions are calculated simultaneously. This involves calculating the size of each bank's net payment to or from the payment system.

Using the same amounts as in the example for bilateral netting, we see that multilateral netting involves fewer actual transactions in the payment system. Here this is illustrated by the fact that Bank A pays SEK 15, Bank B receives SEK 20 and Bank C pays SEK 5 after netting. This is shown in table 17.

Central counterparty netting

Central counterparty netting is largely similar to multilateral netting with the difference that a central counterparty[113] handles the actual netting stage and also assumes the risk in the transactions. The central counterparty acts as buyer to all sellers and

Table 16. Bilateral netting

	BANK A	BANK B	TO PAY	NETTING EFFECT
Bank A		40	40	B pays 10 to A through payment system
Bank B	50		50	
To receive	50	40	90	

	BANK A	BANK C	TO PAY	NETTING EFFECT
Bank A		5	5	C pays 5 to A through payment system
Bank C	10		10	
To receive	10	5	15	

	BANK B	BANK C	TO PAY	NETTING EFFECT
Bank B		20	20	B pays 10 to C through payment system
Bank C	10		10	
To receive	10	20	30	
Total amount: 135				

[113] For a more in-depth discussion of central counterparty netting (CCP), see *Financial Stability Report 2002:2* and *Financial Stability Report 2009:1*.

as seller to all buyers. The parties' gross debts and claims are eliminated and replaced by a new undertaking for the net amount. The banks thus receive a single debt or claim of the net amount payable to or by the central counterparty.

Central counterparty netting can also be illustrated using the same numerical reasoning as in the case of multilateral netting with the difference that all gross amounts are replaced by net amounts payable to or by the central counterparty.

Table 17. Multilateral netting

	BANK A	BANK B	BANK C	TO PAY	NETTING EFFECT
Bank A		40	5	45	A receives 15, B pays 20 and C receives 5 through payment system
Bank B	50		20	70	
Bank C	10	10		20	
To receive	60	50	25	135	

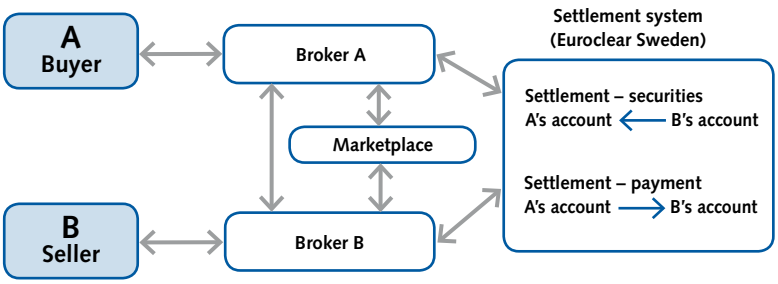
TRANSFERS WHEN TRADING FINANCIAL INSTRUMENTS

The term financial instruments refers to equities, bonds, derivatives and other types of securities. The steps involved in an equity or bond transaction are similar to those in the example of a payment with more than one intermediary. A similar infrastructure is therefore needed. The difference between a payment with multiple intermediaries and a financial instrument transaction is that the securities trade creates two flows. In addition to the transfer of the payment for the securities from buyer to seller (the payment process), there is also a transfer of the actual securities from seller to buyer (the securities process). A schematic representation of a securities trade is shown in figure 4.

A securities transaction consists of three steps. In the first step the transaction is initiated. This takes place when A and B have placed their buy and sell orders in the marketplace and the orders have been matched. Matching involves checking that the brokers on the buy and sell sides agree on the amounts, products and times. Given that trading in securities involves large amounts of money, the security aspect is especially important; any misunderstanding in such a trade could have serious financial consequences. In the second step the transaction is sent to the settlement system, where the identities of the parties are verified and it is determined whether it is possible to make the two transfers. The settlement system is also used to compile instructions about the transfers. In the third and final step the transaction is completed with the settlement of the trade, which involves the simultaneous execution of the transfers in the payment and securities processes.[114]

There are a number of important differences between derivatives transactions and an equity or bond transaction. In a derivatives trans-

Figure 4. Example of a financial instrument transaction

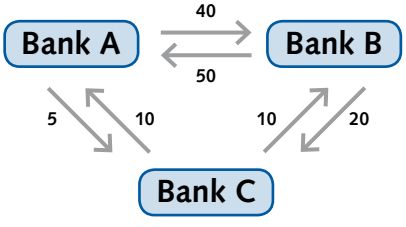


[114] This is known as delivery versus payment (DvP).

action the parties enter into a contract whose value is dependent on changes in the value of an underlying instrument.[115] Such a transaction thus does not involve a transfer of title to the underlying instrument, as in an equity or bond trade. Secondly, in a derivatives transaction the investor has an open exposure to the counterparty for a longer period of time than in an equity or bond trade. The position can remain open for several months and during this time the value of the claim on the counterparty may change. This increases the risk that the counterparty will not be able to pay as planned. This risk normally remains until the derivative contract matures. Only then is the position settled.

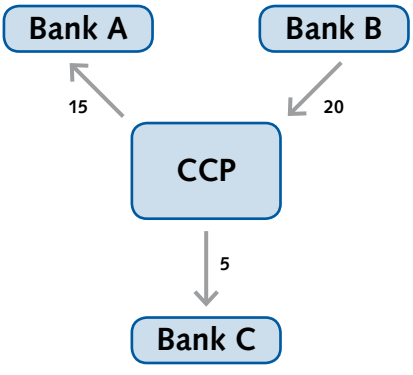
Clearing and settlement of financial instruments sometimes involves a central counterparty (CCP). A central counterparty improves the security and efficiency of the settlement procedure by acting as buyer to all sellers and seller to all buyers in securities transactions. Thus, both buyer and seller have the central counterparty as counterparty. This eliminates the risk created by an open exposure to multiple counterparties.

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



	A	B	C	To pay
A		40	5	45
B	50		20	70
C	10	10		20
To receive	60	50	25	135

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



	CCP
A	15
B	–20
C	5

[115] The underlying instrument can be a security, currency or commodity.

Figures 5 and 6 illustrate the difference between not using a central counterparty and doing so in terms of turnover and the volume of settlements.

If the transactions are cleared and settled without a central counterparty, as in figure 5, the participants need to process six transactions in total and the volume is 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 thus also reduces the exchange of funds among the participants. The participants' net positions with the central counterparty is the difference between what each participant would have paid out in total and what they would have received from the other participants if the transactions had been cleared and settled without a central counterparty. This is shown as the difference per participant between the last column and the last row of the table. This reduces the volume of transactions to SEK 40.

While eliminating counterparty risks for buyers and sellers, this arrangement also concentrates the risks to the central counterparty, which must therefore be financially strong and have procedures in place for managing risks. The central counterparty must always be able to deliver securities or cash in the event that a counterparty should experience delivery problems.

Risks in the trade and settlement of credit derivatives

In their most basic form, credit derivatives are aimed at transferring the credit risk of an asset from one party to another party without requiring a change in the ownership of the underlying asset. The trade and development of credit derivatives has increased strongly in recent years in the world, their significance is, nevertheless, limited in Sweden.

The simplest and most common form of credit derivative is the credit default swap (CDS). A CDS is a form of credit insurance in which the seller commits to compensate the purchaser for any credit losses in an asset. This asset is frequently a corporate bond, but a CDS may also be applied to government bonds or other types of asset. In exchange for this guarantee, the seller receives a premium linked to the credit risk in the underlying asset.

Although a CDS is a private agreement between two parties, these instruments tend to be highly standardised. The trade organisation ISDA has even ensured that standard agreements have been drawn up for most OTC-traded derivatives, including CDSs. Together with other market participants, ISDA has also developed procedures for the manner in which the settlement of CDSs is to take place. Together, these efforts have resulted in the current position of CDSs as a relatively standardised type of instrument. This standardisation has contributed towards the creation of a liquid secondary market for these instruments. Despite this, the market is suffering from a number of problems, including the concentration of large amounts of risks in the hands of a small number of participants, so-called brokers.

Brokers dominate the CDS market by connecting buyers and sellers. A broker can open a transaction with a buyer and then open an equivalent transaction with a seller, thus allowing buyer and seller to locate each other without incurring major expenses. As the broker has opened transactions with both buyer and seller, a great deal of risk is, accordingly, concentrated in its hands. However, in order to reduce the outstanding risks, buyer and seller usually exchange collateral. Despite this, large concentrations of risk can still arise, which has led

to various initiatives from the authorities intended to transfer the settlement of CDSs to a central settlement counterparty.

TRANSFERS IN FOREIGN EXCHANGE TRANSACTIONS

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

Significant risks can arise during settlement of foreign exchange transactions. If the banks trading with each other operate in different time zones there is a risk that either party to a foreign exchange transaction will pay in the sold currency but not receive the bought currency. This entails full credit risk.[116] There are systems in the infrastructure that eliminate credit risk through simultaneous settlement of foreign exchange transactions (see the section on CLS, Continuous Linked Settlement). However, current solutions do not allow for the complete elimination of credit risk in all foreign exchange transactions. This is because not all currencies and instruments can be settled through such a system.

Currency payments that cannot be settled using special infrastructure require intermediation by banks in other countries. This is often the case when the foreign exchange transactions derive from ordinary payments rather than trading in financial instruments, for instance. If a foreign bank, for example, wants to be able to make payments in Swedish kronor for its own account or on behalf of a customer it will open an account with a Swedish bank. The Swedish bank becomes what is known as a correspondent bank. The foreign bank sends a payment instruction to the Swedish correspondent bank with information about the amount and beneficiary. The Swedish bank then debits the specified amount in kronor from the account of the foreign bank. If the beneficiary has an account with the same bank as the foreign bank the amount is paid directly to this account. The payment will then have been settled. If the beneficiary 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 beneficiary.

LARGE-VALUE PAYMENTS AND RETAIL PAYMENTS

When we engage in trade we exchange money for goods or services. Fundamentally, each payment is a transfer of an amount between two parties, the remitter and the beneficiary. However, payments between banks and clearing houses differ from those made by businesses and

[116] Credit risk is the risk that a borrower will be unable to fulfil his obligations. In the context of foreign exchange transactions this risk is often called Herstatt risk.

households. The first type of payments are usually referred to as large-value payments while the latter are termed retail payments.

Large-value payments are usually for very large amounts, often between SEK 10 million and SEK 100 million. However, they are much fewer in number than retail payments. Because of their size, they also need to be executed faster.

Retail payments are for relatively small amounts but the number of payments is large. These can be made in two ways: either directly using a means of payment, such as cash, or with a payment instrument such as a charge card. In the next section we will explain how different means of payment and payment instruments are used.

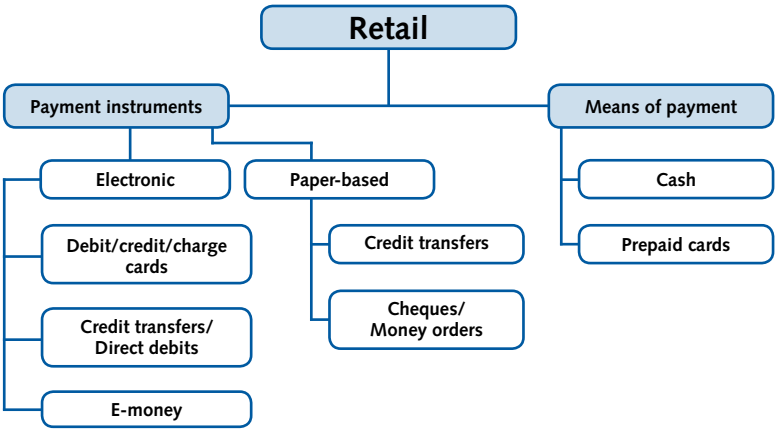
Use of retail payments

In the preceding section we provided a schematic outline of the steps involved in different types of payments between several parties. This section describes the ways in which retail payments can be made in Sweden.

Retail payments can be made using cash or another means of payment or with a payment instrument, such as a payment card. Means of payment include cash and prepaid cards. Payment instruments include a wide range of retail payments, including credit transfers, direct debits, various cards and cheques. In recent years new payment instruments and means of payment have been introduced, such as electronic money (e-money).

A schematic description of the various ways in which retail payments can be made is shown in figure 7.

Figure 7. Schematic description of retail payments



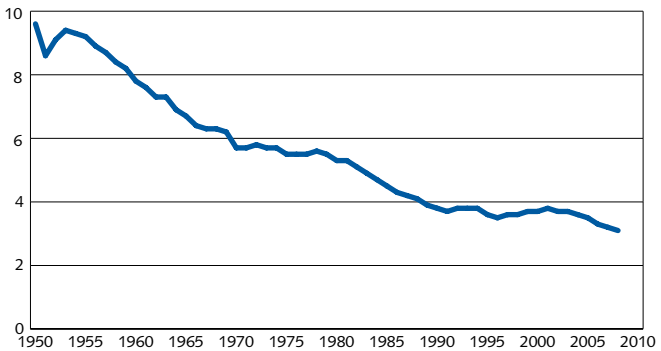
MEANS OF PAYMENT: CASH AND PREPAID CARDS

Cash is primarily used for payments of small amounts and accounts for a large share of the total number of payment transactions. However, this share has fallen in recent years as the share of card payments has increased. As there are is no overall data on cash usage, this can only be estimated. Measuring the amount of currency (notes and coins) in circulation (known as "M0" by economists) relative to gross domestic product (GDP) gives an indication of the use of cash. Over time, the share of currency in circulation has fallen in Sweden, from 10 per cent of GDP in 1950 to 3.2 per cent today (see chart 26).

In recent years the fall in demand for cash relative to GDP has tailed off.[117] Statistics on cash withdrawals from automated teller machines (ATMs) show that the total transaction value has remained fairly constant around SEK 275 billion per year throughout the first decade of the twenty-first century while the number of transactions has remained at about 320 million (see chart 28, Card transactions in payment terminals and ATM withdrawals). This, too, suggests that the use of cash has not changed significantly in recent years.

Demand for secure payments that do not involve the use of cash or any type of payment instrument has led to the creation of prepaid cards.[118] Prepaid cards can be internal or external. An internal card can only be used at one or a few places and can serve either as an elec-

Chart 26. Currency in circulation (M0) relative to GDP
Per cent



Source: Statistics Sweden

[117] In recent years withdrawals from ATMs has fallen while cash withdrawals through credit card terminals at points of sale have increased.
[118] A Swedish example of a prepaid card was cashkortet (cashcard). More recent examples include the SF-biokort (SF cinema card) and gift cards issued by certain stores. The Proton prepaid card is used in Belgium while Italy has Minipay.

tronic wallet or as a traditional charge card for an individual issuer.[119] An external card can also be used as a means of payment at other companies than that which issued the card. As the use of prepaid cards is very limited, there are no statistics on their use in Sweden.

PAYMENT INSTRUMENTS: ELECTRONIC AND PAPER-BASED

Payment instruments is a generic term for a whole group of retail payments that are executed using credit transfers, direct debit, various cards, cheques and e-money (see figure 7).

Regardless of which payment instrument is used to initiate the payment, they are all based on the same principle, which is that money is transferred from the buyer's account to the seller's account. There are three important differences between a payment instrument and a means of payment:

- A payment instrument, e.g. a charge card, has no intrinsic physical value.
- There is a need for a more advanced financial infrastructure to access accounts.
- There is often a time lag between the time of payment and final settlement of the payment.

Electronic payment instruments

Card payments

Card payments are used mainly for payments made at the time of transaction, where the buyer and seller meet directly. Cards are also used for remote payments, such as online payments, and for withdrawing cash at ATMs.

All cards issued by banks in Sweden are tied to an international card system, normally Visa or MasterCard. Cards are also issued by some non-financial companies, such as retailers and petroleum companies.

Depending on which payment terms are tied to the card, cards are normally divided into the following categories: debit cards, credit cards and charge cards.

- A *debit card*, unlike a credit card and charge card, does not give the holder free credit during a specified period; instead, the transaction amount is debited directly to the card holder's bank account.

[119] As a charge card, it serves as a guarantee that the card holder is authorised to use the account/credit debiting in lieu of cash payment in transactions with the seller. The buyer's anonymity varies depending on the functions the issuer has selected for the card.

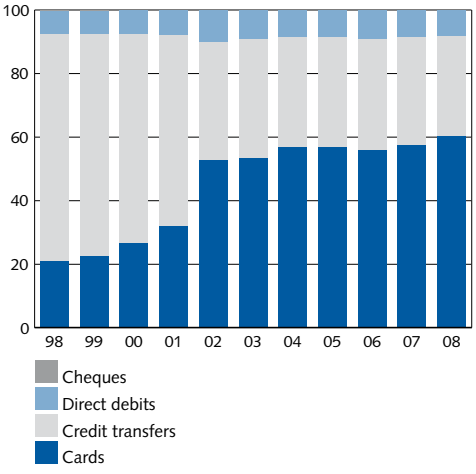
- A *credit card* gives the card holder the option of obtaining credit up to a certain limit. After a specified period the whole outstanding debit balance or a portion of it is paid. In the latter case the remaining balance is rolled over to a new period and interest is charged on this balance
- A *charge card* works in an equivalent manner to a credit card, with the difference that the outstanding balance must be paid in full after a specified period and thus cannot be rolled over.

In the last few years the use of cards has expanded rapidly in Sweden. From 1997 to 2008 the number of card payments increased by a factor of nine, from 169 million transactions in 1997 to 1 691 million in 2008 (see Appendix, table X). The value of these payments has almost increased fivefold, from SEK 124 billion to SEK 715 billion in 2008 (see Appendix, table X).

In terms of the number of payments, cards are now the most widely used payment instrument (see chart 27).

Previously, cards were used more often for making withdrawals from ATMs than for making payments. In recent years the ratio has changed markedly. According to statistics, the number of card transactions in payment terminals exceeded the number of ATM withdrawals by a factor of three in 2008 (see chart 28). Since a couple of years the transaction value in card payment terminals has also exceeded the value of cash withdrawals at ATMs.

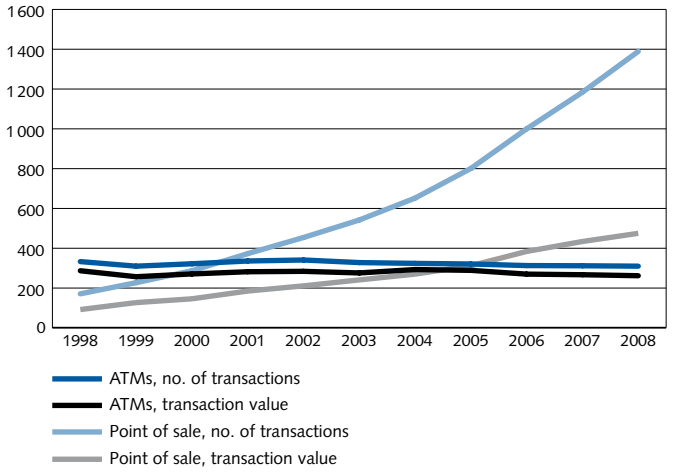
Chart 27. Use of account-based payment instruments, number of transactions
Per cent



Source: The Riksbank

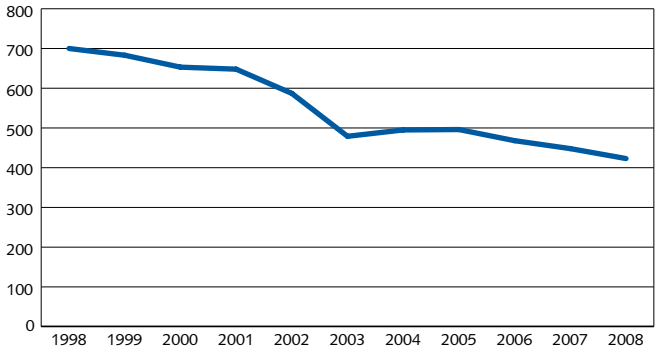
Over the last ten years the value of an average card payment has dropped a lot, from about SEK 700 to SEK 420 (see chart 29). Swedes are thus using cards to pay for smaller amounts, which suggests that cards are increasingly being used as a substitute for cash. This is particularly true of young people, as shown in a study published by the Riksbank in late 2007.[120]

Chart 28. Card transactions in payment terminals and ATM withdrawals
Millions and billions, respectively



Source: The Riksbank

Chart 29. Average value of a card payment
SEK



Source: The Riksbank

[120] "The costs of paying – private and social costs of cash and card", Working Paper Series (no. 212), Bergman, Guibourg and Segendorf, Sveriges Riksbank, September 2007.

Credit transfers

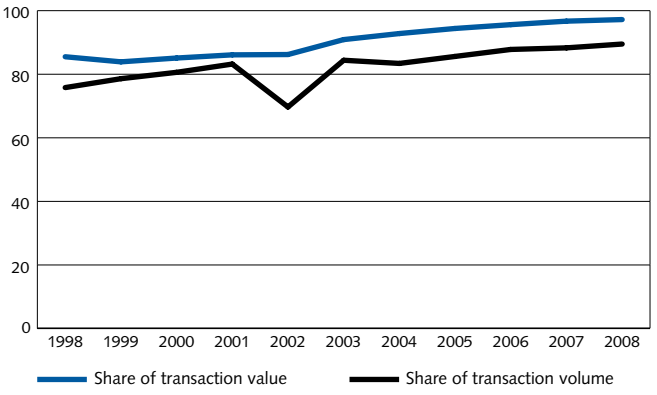
Credit transfers are used for remote access payments – that is to say, for payments in which the payer and the recepient do not directly meet. In a credit transfer the payer instructs his bank to transfer a certain amount from his bank account to the bank account of a specified payee.

Credit transfers are used for recurring and generally relatively large payments, often in a contractual relationship, such as payments to an electricity company or telecom operator. In terms of value, credit transfers and direct debits account for 95 per cent of the total transaction value for account-based payment instruments.[121]

In 2008 the transaction value of credit transfers and direct debits was SEK 13 805 billion. The same the year the total number of credit transfer and direct debit transactions was 1 218 million.

A majority of credit transfers are now initiated electronically (see chart 30).[122] This is normally done using an online banking service or via data files, which are used by businesses. Other transfers are paper-based. These are mostly initiated by households, which fill in a credit transfer form that is sent by mail or handed in at a service counter at a bank.

Chart 30. Share of electronically initiated credit transfers
Per cent



Source: The Riksbank

[121] These figures do not include transfers between accounts in the same bank and transfers between PlusGiro accounts in Nordea.
[122] 85 per cent of the transaction volume and 96 per cent of the transaction value.

Direct debit

A direct debit is based on an agreement between the payer and payee on the automatic debiting of the payer's account. Like credit transfers, direct debits are used for remote payments, normally for recurring payments to a party with whom the payer is in a contractual relationship, 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 units that exist independently on a card or a computer.[123] In practice, however, cash and e-money do not have the same characteristics, as e-money also displays clear similarities with account-based payments. Like a card payment, e-money also requires a more advanced financial infrastructure, and the actual difference is that the money is deposited with an e-payment company, which acts as an intermediary between buyer and seller, rather than in a bank account.

The need for e-money has arisen partly in response to the need for a secure method of executing payments in e-commerce transactions. The most common way to make a purchase is to register details tied to a charge card on the website of an e-commerce company. Disclosing these details may be risky, however, due to the potential for abuse by either the buyer or the seller. The seller can collect an incorrect amount, but also risks incurring a credit risk if the customer is illiquid or if he or she has entered the card details of another person. For the buyer there is a risk that the seller will fail to deliver the goods that have been paid for or that the card details will be abused. Because of this, electronic payments require special solutions which ensure that payments can be executed rapidly and securely. One solution is e-money that is paid through an e-payment provider.[124] To ensure that payments can be executed using e-money, both buyer and seller need to install specific software.

So far, the use of e-money has remained stable, accounting for a very small share of online payments. One reason for this is that there is no standardised software for payments. Different e-payment providers use different software, which means that a person making a payment may need to have several different programs, along with the associated digital value units, stored on his or her computer.

[123] Electronic registration of funds that can be used for payments without being linked to an individual account.
[124] PayPal and Payson are examples of e-payment providers.

Mobile payments

Mobile payment (m-payment) is a payment instrument that involves the use of a mobile phone[125] at some stage of the payment process. A mobile device can be used simply to communicate a payment instruction (issue, approve and transfer) or as an active part of the transaction (identification, clearing and settlement). M-payments do not introduce any new payment instrument but use either e-money or a traditional payment instrument in transfers.

Like e-money, m-payments represent a tiny portion of all payments.

Paper-based payment instruments

Credit transfers

As mentioned, credit transfers can be initiated either electronically or using a paper form. Paper-based credit transfers are normally initiated by the payer filling in a credit transfer form that is sent by mail or handed in at a service counter at a bank and represent only a small share of all credit transfers.

Cheques and money orders

A cheque is a written instruction from the writer of the cheque to the redeeming bank to pay a specified amount, either to the writer or to a third party specified by the writer. The Swedish Cheques Act (1932:131) states that a cheque must be redeemed within 20 days. Like cards, cheques can be used both for payments that are made at the time of transaction and for remote payments.

While cheques are now used to a very limited extent, the use of money orders is still common for major purchases.

A money order is a secure means of payment that is used for major purchases that need to be paid in cash, such as the purchase of a house or car. A money order can be purchased from one of the Swedish banks, is for a specified amount and is made out to the recipient or buyer of the money order. If it is made out to the buyer it can later be assigned to the recipient, in which case it constitutes a secure form of payment, as it has already been paid for.

[125] Here the term mobile phone includes the software on the device and the servers of the mobile operator. The definition also includes other mobile communications using GSM/GPRS/UTMS or a local area network (LAN) for communication. Payments via infrared ports and Bluetooth communication also belong to this category.

Single Euro Payments Area (SEPA)

In 2002 the European banking industry formulated a vision for a common market for payment services – the Single Euro Payments Area (SEPA). The aim behind SEPA was to make it possible to transfer and receive electronic payments in euro, nationally and internationally, in the same way, based on the same conditions and at the same price.

The first SEPA payment service was introduced about five years later. As of January 28, 2008 it has been possible to make and receive SEPA account transfers. Under current plans, direct debit payments via SEPA will become available in November 2009.[126] In due course the aim is to make it possible to use all SEPA-compliant cards without limitation in all EU countries.

To start with, the new SEPA payment services will be offered in tandem with existing national payment services. This will require dual systems, which is costly. The aim is for SEPA payment services to become so widely used by the end of 2010 that the national payment services can then be phased out.

The biggest impact of the SEPA project will be felt in the euro area, but banks from all EU/EEA countries and Switzerland are participating in the project. In Sweden the major banks can now offer SEPA account transfers in euro. For card payments, customers of Swedish banks normally have cards linked to Visa or MasterCard, which can already be used abroad. As Sweden does not use the euro, it will not be possible to phase out the banks' national payment service systems and replace them with the systems used for SEPA. However, the Swedish banks have stated that all future changes to their payment systems will be SEPA-compliant.

[126] What distinguishes these payment services is that that they are based on international standards such as the IBAN (International Bank Account Number), BIC (Bank Identifier Code) and UNIFI (ISO 20022) XML messaging standards.

Systems in the Swedish infrastructure

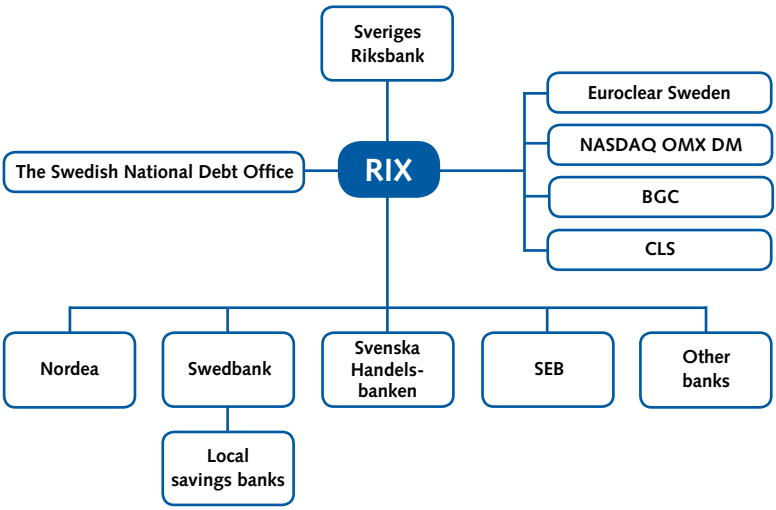
The following is a description of the major systems used to process payments and trads in financial instruments in Sweden today. These systems constitute the cornerstones of Sweden's financial infrastructure.

RIX – LARGE VALUE PAYMENT SYSTEM

As mentioned in the first section in this chapter, customers' deposit accounts form the basis of the banks' payment systems. Customers can use these accounts to make the payments they need to make.

The banks, in turn, can make payments through their accounts in the Riksbank's system for large-value payments, RIX, which thus constitutes a central hub in the infrastructure. The banks' accounts with the Riksbank are used both for direct payments between banks and for 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 are settled through the banks' accounts in the RIX system. This also applies to account-based large-value payments such as salary payments. Payments arising from transactions in financial instruments are also settled in RIX.

Figure 8. The Swedish payment system



In addition to the Riksbank, which owns and operates the system, all of the major banks and clearing houses participate in RIX (see figure 8).[127] RIX members can also make payments on behalf of other, mainly smaller banks and financial institutions, which are not members of RIX.

Settlement in the RIX system is made on a real-time gross settlement basis, which means that payments are settled immediately, one by one, provided that the payer has sufficient funds available to cover the payment, i.e. money in its account. This method of settlement entails low settlement risks but is liquidity-intensive.[128] To ensure smooth settlement of payments, banks can meet their liquidity requirements by borrowing intra-day funds from the Riksbank. All such lending is secured against high-quality collateral.

Some payments are first netted at one of the clearing houses, BGC, Euroclear Sweden, NASDAQ OMX DM or CLS (see below for more information about these systems). As result, only the resulting net amount is settled in RIX. The vast majority of payments, however, are sent directly from the members for settlement in the RIX system.

In 2008 the number of transactions in RIX averaged about 8 000 per banking day while the average daily turnover was SEK 543 billion.

BGC – CLEARING HOUSE FOR RETAIL PAYMENTS

In Sweden Bankgirocentralen BGC AB is the central institution processing large-value payments between banks. BGC is owned jointly by a majority of banks in Sweden, and operates and develops the bank giro system. The bank giro system is a clearing system for payments in Swedish kronor between bank accounts in Sweden. BGC also performs certain clearing and settlement services outside the bank giro system.

The bank giro system is an open system, which means that all banks in Sweden that meet the entry criteria can choose to sign up to the system. In addition to banks, the Swedish National Debt Office is also a direct member of the bank giro system. At the end of 2008 the bank giro system had 20 direct members and 77 indirect members.

Transfers between the banks are made using a bank giro number. This number is an address that refers to a specific bank account. BGC compiles and provides information to the banks on the size of transfers and the accounts to be credited.

[127] 14 Swedish credit institutions, BGC, Euroclear Sweden, NASDAQ OMX, CLS, the Swedish National Debt Office and the Riksbank are members of RIX.

[128] In multilateral net settlement the debts of all participants are netted out. This method is less liquidity-intensive but at the price of increased risks, as the whole settlement process would stop if even a single participant – whatever its size – fails to fulfil its obligations.

For most of these payments clearing and settlement are performed on a gross bilateral basis, i.e. between two counterparties. The remaining payments are cleared and settled on a net multilateral basis, i.e. among multiple counterparties. Payments are settled in Swedish kronor or euro. Settlement of SEK payments is made in RIX on a real-time gross settlement basis. For EUR payment orders each paying bank receives settlement data from BGC and forwards this information to the ECB's settlement system, TARGET2, either directly or through its account-holding bank. BGC then matches the data and confirms that settlement has been completed. This procedure is performed for a number of different payment products designed to meet different needs, such as credit transfers, direct debits, payments to suppliers by businesses, salary payments into accounts and tax payments. Each payment service has one or more specified settlement times during the day. In 2008 770 million payment transactions representing a total value of SEK 9 356 billion were processed in the bank giro payment system.

For payments sent and received using bank giro products BGC is responsible for authorisation, clearing and settlement as well as for providing payment information to the sending and receiving banks. For most bank giro products BGC also provides payment information to the remitter and beneficiary. Online payments, however, are authorised by the banks, while paper-based bank giro products are authorised by Privatgirot on behalf of the banks.

BGC also provides clearing and settlement services for certain payment products that are not bank giro products. A common characteristic of these payment products is that authorisation and in some cases also parts of the clearing processes are performed in other systems than the bank giro systems, i.e. systems for which BGC is not the principal. These payment products are Dataclearingen, Privatgirot, CEKAB and settlement of cash handling transactions between banks. Dataclearingen is used mainly for standard bank transfers from one account to another that do not use a bank giro number as well as for cheque payments. These payment orders are authorised by the members of Dataclearingen. The orders are then sent to BGC, which clears the payments and retrieves settlement data in the same way as for bank giro products. Dataclearingen is operated by BGC on behalf of the Swedish Bankers' Association.

The Privatgirot service allows Swedish bank customers to make payments using paper forms. Privatgirot registers incoming documents by opening envelopes and scanning and archiving the forms. The

content is then interpreted and the data and images are verified and stored. The payment orders are forwarded to BGC in the form of data files. BGC clears the payments and retrieves settlement data in the same way as for electronic payments.

CEKAB manages authorisation and clearing of cash withdrawals from certain ATMs. It also authorises card payments but for these the clearing process is handled in Visa's and MasterCard Europe's international networks. The total cleared amounts from cash withdrawals and MasterCard Europe's card payments in Sweden are calculated and forwarded via BGC for settlement in RIX.

On behalf of the banks BGC also sends settlement and credit information to RIX for the distribution of cash to and from banks and post offices.

EUROCLEAR SWEDEN – CENTRAL SECURITIES DEPOSITORY[129]

As mentioned earlier, settlement of financial transactions requires a twin process, unlike for other types of payments, one for the security and one for the payment. It also requires systems for registering and depositing the securities in accounts. In Sweden clearing and settlement of equity and fixed income market transactions are handled by Euroclear Sweden while derivatives trades are cleared by NASDAQ OMX Derivatives Markets (NASDAQ OMX DM. These two institutions are members of RIX, where the actual payment for the securities trade is settled.

Securities exist almost exclusively as electronic records. The institution that keeps the central register of members' holdings, the central securities depository, is therefore a key part of the financial infrastructure. Euroclear Sweden registers all transactions arising from the issue of, trading in and pledging of securities in Sweden.

A transaction involving equities or debt securities begins when an investor places an order with a broker to buy or sell. Brokers normally trade by acting as counterparties themselves or by looking for a counterparty on a stock exchange or other marketplace. When the broker has found a counterparty to trade with and the transaction is completed, he or she notifies Euroclear Sweden. As part of the settlement process, Euroclear Sweden verifies the identity of the broker, and that the broker and counterparty agree on the securities, volume, amount, value date, etc. Euroclear Sweden also verifies that the seller is able to deliver the security and that the buyer can pay. It then compiles the

[129] Following the acquisition of VPC AB by the Euroclear Group, the legal name of VPC AB was changed to Euroclear Sweden at the beginning of 2009.

information that is needed to make the actual transfers. Only then can the transfers take place, i.e. the transaction is settled.

As transactions of financial instruments often involve considerable amounts, it is important to ensure that both processes involved in the transaction are completed at the same time, i.e. that money and securities are transferred simultaneously. This is known as delivery versus payment (DvP). To further reduce the risks, it must also be ensured that settlement of the payment can be made through accounts held with the central bank rather than with a commercial bank, which can become insolvent, at least at the time when the transfer between the big market operators is made.[130] Settlement therefore takes place in settlement accounts that are provided by the central bank, which means that settlement is made in "central bank money".

At Euroclear Sweden each trade is cleared and settled separately. This means that no netting takes place in Euroclear Sweden's system. Transactions are verified one by one. At the settlement stage the seller's securities and the buyer's money are reserved in the accounts and the status of the transaction is changed to ready. At this stage the transfers are irrevocable.

To ensure that settlement of the securities and payment occur simultaneously and that settlement can be made in central bank money, the Riksbank has authorised Euroclear Sweden to administer accounts in the RIX system. The transacting parties can therefore be sure that no unnecessary risks will arise during settlement. To cover the liquidity requirements that may arise for a clearing member during settlement of a securities transaction, the member can move funds between the Riksbank accounts administered by Euroclear Sweden and its regular RIX accounts on several occasions during the day. The Riksbank can also provide intra-day credit on these accounts.

The whole process, from matching of orders in the marketplace to final settlement, normally takes three days. This applies to both the equity and fixed income markets. For debt securities with maturities of less than one year the process takes only two days.

In October 2008 the Belgium-based Euroclear Group acquired all shares of NCSD Holding AB, which in turn owned 100 per cent of the shares of VPC. VPC has now become Euroclear Sweden, which has thus received a new, foreign owner. The change of ownership has not changed Euroclear Sweden's legal status in Sweden, however. Euroclear Sweden has more than 1 100 affiliated issuers and registers securi-

[130] Like many other countries, Sweden has a deposit insurance scheme, but it only applies up to a certain amount and does not cover the risks of professional market operators.

ties holdings in about 3.5 million book entry accounts.[131] In February 2008 the daily gross value of equity trades settled by Euroclear Sweden was SEK 33.6 billion. The corresponding figure for money market settlements was SEK 433.5 billion. Turnover in the money market is thus considerably higher than in the equity market but the number of transactions in the equity market is much higher, with an average of 122 000 transactions settled per day, against 1 700 in the fixed income market.

NASDAQ OMX DM – CENTRAL COUNTERPARTY FOR DERIVATIVES

NASDAQ OMX DM's area of operation is trading in standardised derivative contracts. The exchange acts as central counterparty to manage the risk created by an open exposure to a transaction counterparty. This means that each transaction between a buyer and a seller is replaced by two new transactions, with NASDAQ OMX DM acting as seller to all buyers and buyer to all sellers. As a result, the original parties to the trade will have a claim on, or debt to, NASDAQ OMX DM instead of to each other. It also means that the settlement risks to which the parties would have been exposed are transferred to NASDAQ OMX DM.

The conclusion of a derivative contract will in most cases create payment flows, such as option premiums.[132] Payments can also arise during the term of a derivative contract, such as premium payments. These payments are cleared on NASDAQ OMX DM and settled in RIX.

When the derivative contract matures the contract is settled, either by a cash payment or by delivery of the agreed volume of the underlying instrument. In case of cash settlement the amount is cleared by NASDAQ OMX DM, as described above, and settled directly in RIX. Upon delivery of the underlying security, the securities side of the transaction is settled by the transfer of the financial security in Euroclear Sweden's system, while settlement of the payment side takes place in the RIX accounts administered by Euroclear Sweden.

NASDAQ OMX DM is a secondary legal name of NASDAQ OMX Stockholm AB.[133] NASDAQ OMX Stockholm AB offers trading in equities, lottery bonds, convertibles, warrants, bonds and exchange-traded

[131] There are very few countries where the accounts of individual investors are held with the central securities depository. In almost all other countries investors wishing to trade in securities need to open a securities account with a broker. In these countries only the brokers hold accounts with the central securities depository.
[132] The price of an option is called the option premium. It reflects the compensation for the risk assumed by the issuer of the option.
[133] A secondary legal name is not a legal entity, but refers to a certain part of a company's operations. It is registered with the Swedish Companies Registration Office (Bolagsverket).

funds. The exchange also offers trading in and clearing of Swedish, Finnish, Norwegian, Danish, Baltic and Russian derivatives, including equity options, index options, fixed income derivatives, equity and index futures as well as certain OTC derivatives.[134] In 2008 an average of about 569 000 derivative contracts were traded daily on NASDAQ OMX DM.

CLS[135] – FOREIGN EXCHANGE SETTLEMENT

As mentioned, settlement of foreign exchange transactions can give rise to substantial risks if the two processes involved in the transaction are settled separately in either country. The time lag that arises creates large exposures between the banks. To reduce the risks incurred in foreign exchange transactions, Continuous Linked Settlement (CLS) was established in September 2002. In CLS foreign exchange transactions are settled on a payment versus payment (PvP) basis. In this system the member banks have accounts with CLS – one for each currency – through which the two currencies used in the transaction are transferred simultaneously. CLS, in turn, has accounts with the central banks for the respective currencies. The net balance of each member's transactions is paid to or by CLS using each country's central payment system, the RIX system in Sweden's case. This eliminates the settlement risks.

The system is operated by CLS Bank and is supervised by the Federal Reserve Bank of New York. In February 2009 CLS had an average daily turnover of USD 1 573 billion. The daily turnover in the system is thus significantly higher than the gross domestic product of Sweden.[136]

Three Swedish banks are direct members of CLS. The currencies included in the system at present are the US dollar, Australian dollar, British pound, Danish krone, euro, Hong Kong dollar, Israeli shekel, Japanese yen, Canadian dollar, Korean won, Mexican peso, Norwegian krone, New Zealand dollar, Swiss franc, Singapore dollar, Swedish krona and South African rand.

Payment flows in the Swedish financial infrastructure

As mentioned at the beginning of the previous section, RIX is the central system of Sweden's financial infrastructure. In February 2009 some SEK 370 billion flowed through the system each day on aver-

[134] OTC stands for "over the counter", which means that products are bought and sold directly between buyers and sellers, normally by telephone.
[135] More information about CLS and the elimination of settlement risks in connection with foreign exchange transactions is available in "Progress in reducing foreign exchange settlement risk", Committee on Payment and Settlement Systems, BIS, May 2008.
[136] In 2008 Swedish GDP was about USD 406 billion (based on an average exchange rate of 6.58), or about SEK 2 669 billion.

age.[137] This means that assets worth the equivalent of Sweden's GDP are traded through RIX in a single week. Banks account for the largest flows in the RIX system. It is through the banks that households, businesses and government agencies manage most of their payments.

Figure 9 illustrates how payment flows for different types of payment reach RIX, either directly or after clearing by Euroclear Sweden, NASDAQ OMX DM, BGC or CLS. The figure shows average daily payment flows in February 2009.[138]

As seen in the figure, trading in the fixed income market gives rise to the largest payment flows in the infrastructure. During the period concerned Euroclear Sweden cleared fixed income trades worth SEK 267 billion per day and equity trades worth SEK 27 billion per day. These amounts were settled in the accounts administered by Euroclear Sweden in the RIX system. During the course of the trading day RIX members have the option of transferring some of their liquidity in the system between their regular accounts and the accounts administered by Euroclear Sweden. In February 2009 SEK 49 billion was transferred through this liquidity bridge on an average day.

Derivatives trading on NASDAQ OMX DM generates relatively small payment flows. The underlying values can in many cases be significant but the value that is actually settled, and thus paid, is very limited. The amounts are netted in NASDAQ OMX DM's system and only a small portion is actually settled in RIX.[139]

Account-based retail payments are managed through BGC. This category accounts for the majority of all payments to and from individuals and most businesses, in the form of salary payments, card purchases and payments to suppliers. During the period SEK 34 billion was cleared in BGC's system each day. After netting in BGC, SEK 31 billion remained to be paid among the major banks.

Clearing and settlement of foreign exchange trades can be managed in two ways: through CLS or via a correspondent bank. The majority of these payments, SEK 448 billion per day, are cleared in CLS. After netting only SEK 21 billion remains, which is settled in RIX. The daily value of foreign exchange transactions that are cleared via a correspondent bank and settled in RIX was SEK 26 billion during the period.

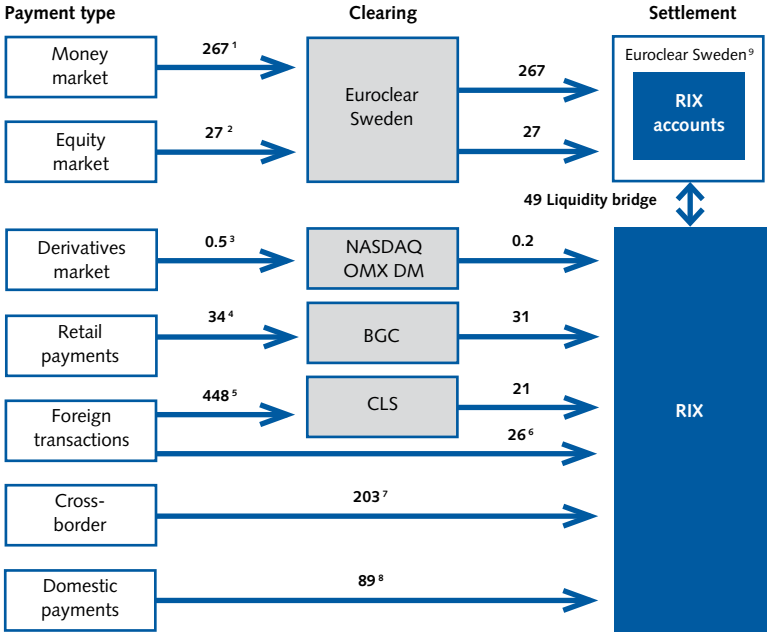
One of the largest items in RIX is cross-border payments, which are payments in Swedish kronor remitted to a Swedish bank which in

[137] The SEK 294 billion held in Euroclear Sweden's accounts in RIX on an average day in February 2009 is not included in this figure.
[138] Figure 9 is not intended to show the turnover in each market, but simply the value of payment transactions.
[139] Note that the securities side of a derivatives transaction is settled through Euroclear Sweden.

turn is a correspondent bank for a foreign bank. These accounted for SEK 203 billion per day. The correspondent bank model can be used also for these payments. If the receiving Swedish bank has an account with the foreign bank no transaction will occur in RIX. The reported value of SEK 203 billion per day thus only refers to payments between Swedish banks, where one bank has acted as correspondent bank for the other. The total value of cross-border payments is likely to be considerably higher.

Domestic payments, which accounted for an average of SEK 89 billion per day in February 2009, refer partly to payments originating from the shortest segment of the money market and partly to pure interbank payments. An interbank payment arises, for instance, when a company needs to make a quick payment to another company and the remitter and beneficiary have accounts with different banks. In this case the payment will go through RIX. Small, non-urgent payments will normally be settled via BGC.

Figure 9. Payment flows in the Swedish financial infrastructure
SEK billion, daily average in February 2009



[1] Refers to spot and derivatives trading to the extent that trades result in delivery of an underlying security. The studied population consists of Euroclear Sweden's 20 or so clearing members for trading in fixed income instruments.
[2] Refers to delivery of underlying securities, excluding internal transactions (i.e. when a clearing member has itself as counterparty on the exchange). The figure includes both on- and off-exchange trading. The studied population consists of Euroclear Sweden's 40 or so clearing members for trading in equity instruments.
[3] Refers to payment amounts for derivatives transactions settled on the exchange, such as equity options, equity futures, index options and index futures. The statistics thus only cover derivatives transactions that generate a payment, which represent only a small portion of the total turnover, as derivative positions are to a large extent netted between traders. The studied population comprises NASDAQ OMX DM's 50 or so members in the derivatives market.
[4] Refers to account-based payments to and from private individuals and businesses.
[5] Refers to payments in SEK for foreign exchange transactions, normally based on foreign exchange contracts (spot, forward, FX swaps and options). These are largely made through CLS. Cross-border payments arising directly from foreign exchange transactions are also largely made through CLS. The studied population consists of CLS' member banks, which operate in 17 different currency areas.
[6] Refers to interbank payments in foreign exchange transactions, such as a transfer from a Swedish bank to the account of a foreign bank held with another Swedish bank.
[7] Refers to payments in SEK made to a Swedish bank which in turn is a correspondent bank for a foreign bank, also known as cross-border clearing.
[8] Refers to payments in SEK between Swedish banks in Sweden.
[9] For settlement of trades originating in the fixed income and equity markets the accounts in RIX are administered by Euroclear Sweden.

Note: The statistics in the figure show the flow in RIX. The figure is not intended to show the turnover in each market, only payment flows. The corresponding flows over a number of years are described in table AC in the tables annex. Transactions to and from the clearing houses where netting is performed, i.e. CLS, BGC and NASDAQ OMX DM, are treated slightly differently in the statistics compared with other payments. A normal gross payment is made as a direct transfer between the two parties. The amount then enters the statistics only once. A payment made through a clearing house where netting is employed will enter the statistics as two payments: one from the sending bank to the clearing house and one from the clearing house to the receiving bank. To study the netting effect, i.e. the difference between gross and net flows, the stated amounts from CLS, BGC and NASDAQ OMX DM would theoretically need to be halved.

Sources: BGC, CLS, Euroclear Sweden, NASDAQ OMX and the Riksbank

Annex 1. Tables

Table A. Equity trading, turnover value and year-end market value on NASDAQ OMX Stockholm
SEK billion

	TURNOVER VALUE	MARKET VALUE
1998	1 830	2 413
1999	2 609	3 717
2000	4 456	3 583
2001	3 994	2 856
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

Source: NASDAQ OMX

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

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Issuers in the bond market											
Central government	808	796	719	623	660	732	772	769	766	730	717
Mortgage institutions	657	591	505	462	488	549	565	706	770	826	953
Other credit market companies	40	38	40	42	45	52	59	61	73	79	81
Non-financial companies	85	99	123	146	119	122	113	137	130	143	164
Local governments	8	8	6	8	13	14	13	16	20	21	18
Banks	46	44	39	32	36	46	66	89	112	192	261
Total	1 644	1 577	1 432	1 314	1 374	1 516	1 587	1 777	1 870	1 991	2 193
Issuers in the money market											
Central government	231	250	271	230	240	269	267	294	259	180	139
Mortgage institutions	55	88	79	43	88	104	93	72	113	106	105
Other credit market companies	16	18	16	16	18	16	12	10	9	19	45
Non-financial companies	43	53	55	83	78	51	62	62	66	96	97
Local governments	5	6	7	7	6	5	5	6	11	5	9
Banks	20	36	19	18	32	45	47	69	62	108	130
Total	369	451	448	396	463	490	486	515	520	515	525
Investors in the bond market											
AP funds	446	370	307	105	93	113	126	134	157	148	138
Insurance companies	441	472	462	455	493	542	599	613	701	744	834
Banks	231	193	186	134	137	177	129	262	281	337	475
Non-residents	231	250	224	290	402	455	529	647	545	535	497
Companies and others	295	292	253	323	246	228	205	121	185	227	249
Total	1 644	1 577	1 432	1 307	1 371	1 516	1 587	1 777	1 870	1 991	2 193
Investors in the money market											
AP funds	5	51	98	12	2	2	2	7	3	4	6
Insurance companies	40	48	35	40	126	116	108	135	87	90	41
Banks	115	88	91	135	141	138	152	129	151	87	133
Non-residents	68	72	53	91	75	85	82	75	52	43	75
Companies and others	141	192	171	118	119	149	133	168	226	291	270
Total	369	451	448	396	463	490	477	515	520	515	525

Sources: Annual reports (AP funds) and the Riksbank

Table C. Average daily turnover in the bond market
SEK billion

	GOVERNMENT BONDS	MORTGAGE BONDS
1998	36	10
1999	32	10
2000	21	8
2001	21	7
2002	20	7
2003	20	10
2004	22	9
2005	28	9
2006	30	10
2007	30	13
2008	22	14

Source: The Riksbank

Table D. Average daily turnover in the money market
SEK billion

	TREASURY BILLS	MORTGAGE CERTIFICATEs
1998	14	1
1999	12	2
2000	9	3
2001	10	2
2002	9	4
2003	11	3
2004	12	3
2005	10	2
2006	10	3
2007	8	2
2008	5	1

Source: The Riksbank

Table E. Average daily turnover in repos
SEK billion

1998	130
1999	113
2000	95
2001	110
2002	131
2003	124
2004	123
2005	141
2006	176
2007	196
2008	141

Source: The Riksbank

Table F. The monetary base in Sweden
Billions

	BANKNOTES AND COINS IN CIRCULATION	THE BANKS' DEPOSITS WITH THE RIKSBANK	THE BANKS' HOLDINGS OF RIKSBANK CERTIFICATES
Jan	108		
Feb	107		
Mar	108		
Apr	106		
May	106		
Jun	108		
Jul	109		
Aug	107		
Sep	106		
Oct	108	107	74
Nov	108	94	113
Dec	112	207	49

Source: The Riksbank

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

	SPOT	FORWARDS	OPTIONS	FX SWAPS	SHORT SWAPS
1998	30	6	3	27	38
1999	31	7	2	32	42
2000	32	9	4	42	61
2001	35	13	7	60	69
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

Source: The Riksbank

Table H. Total assets and asset composition of financial intermediaries at year-end 2008
SEK billion

	TOTAL ASSETS/ INVESTMENT ASSETS	LENDING TO THE PUBLIC	OTHER LENDING	DEBT SECURITIES	EQUITIES	OTHER
Credit institutions						
Banks	6 282	2 444	1 732	927	373	805
Mortgage institutions	2 093	1 763	182	33	10	105
Other credit market companies	812	443	109	226	7	26
Total Credit institutions	9 186	4 652	2 022	1 187	390	936
Investors						
Insurance companies	2 379	37	10	1 210	947	175
AP funds	796	-	-	311	464	21
Fund management companies	1 277	-	-	291	604	383
Total Investors	4 452	37	10	1 812	2 014	578
Securities companies	13	0.4	3	0.1	0.4	9

Note. The figures in column 1 refer to total assets for banks, mortgage institutions, other credit market companies and securities companies, but the invested assets for insurance companies and AP funds, and assets under management for fund management companies.
Sources: Statistics Sweden, annual reports and the Riksbank

Table I. Lending by the four major banking groups at consolidated level, by geographical region, 2008
Per cent

	SWEDEN	OTHER NORDIC COUNTRIES	THE BALTIC STATES	GERMANY	UK	OTHER COUNTRIES
Swedbank	71.5	4.2	13.4	0.0	0.0	10.9
SEB	48.0	10.3	13.3	24.2	0.0	4.3
Nordea	22.7	64.1	2.7	0.0	0.0	10.4
Handelsbanken	68.6	22.7	0.0	0.0	3.9	4.9
Total the four major banks	47.1	33.0	6.5	4.2	0.7	8.4

Source: The Riksbank

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

	TOTAL	BANKS	MORTGAGE INSTITUTIONS	OTHER CREDIT MARKET COMPANIES
2001	2 508	1 088	1 130	290
2002	2 629	1 127	1 196	306
2003	2 740	1 130	1 283	327
2004	2 928	1 197	1 393	339
2005	3 286	1 391	1 528	367
2006	3 680	1 619	1 663	398
2007	4 171	2 163	1 595	413
2008	4 652	2 444	1 763	443

Source: The Riksbank

Table K. Banks' assets
SEK billion

	2001	2002	2003	2004	2005	2006	2007	2008
Lending to Swedish public	939	986	1 003	1 024	1 157	1 304	1 797	1 998
National Debt Office	34	23	5	6	13	32	56	55
Lending to foreign public	115	118	122	167	220	283	311	392
Lending to Swedish financial institutions	491	458	444	610	669	721	624	757
The Riksbank	4	0,2	7	5	0,3	0,0	0,2	207
Lending to foreign banks	60	54	298	352	442	547	748	713
Debt securities	303	318	361	369	503	569	634	927
Other	514	557	350	630	637	730	783	1 233
Total	2 458	2 514	2 590	3 163	3 642	4 185	4 952	6 282

Source: The Riksbank

Table L. Banks' lending to the public
SEK billion

	NON-FINANCIAL COMPANIES	HOUSEHOLDS	LOCAL GOVERNMENT	FOREIGN PUBLIC	OTHER
2001	635	275	33	126	19
2002	640	289	33	133	32
2003	617	292	30	138	52
2004	636	307	31	181	41
2005	750	345	31	237	28
2006	838	394	30	304	53
2007	1 105	640	35	335	48
2008	1 236	714	29	428	38

Source: The Riksbank

Table M. Banks' liabilities and equity capital
SEK billion

	2001	2002	2003	2004	2005	2006	2007	2008
Deposits from Swedish public	914	955	988	1 043	1 158	1 291	1 475	1 599
National Debt Office	2	1	7	0	14	21	17	47
Deposits from foreign public	108	116	115	134	134	162	145	139
Deposits from Swedish financial institutions	158	133	135	154	168	216	298	307
The Riksbank	60	23	21	14	13	6	7	438
Deposits from foreign banks	660	668	473	735	825	925	983	1 113
Issued securities	130	110	133	240	377	470	762	996
Other	259	353	552	636	732	868	982	1 329
Equity capital	166	154	165	208	221	227	283	313
Total	2 458	2 514	2 590	3 163	3 642	4 185	4 952	6 282

Source: The Riksbank

Table N. Banks' deposits from the public, by lender category
SEK billion

	NON-FINANCIAL COMPANIES	HOUSEHOLDS	LOCAL GOVERNMENT	FOREIGN PUBLIC	OTHER
2001	379	460	18	108	60
2002	391	493	16	116	56
2003	378	521	20	115	77
2004	388	537	26	134	93
2005	451	584	28	134	109
2006	505	676	27	162	103
2007	520	831	27	145	115
2008	603	902	29	139	111

Source: The Riksbank

Table O. Banks' average deposit and lending rates and Treasury bill yields
Per cent

	LENDING RATE	DEPOSIT RATE	YIELD, 6-MONTH
1998	5.94	1.91	3.49
1999	5.53	1.65	3.78
2000	5.82	2.15	4.23
2001	5.55	2.10	3.74
2002	5.64	2.26	3.58
2003	4.79	1.51	2.65
2004	4.00	1.00	2.03
2005	3.31	0.79	1.95
2006	4.35	1.87	3.13
2007	5.17	2.83	4.19
2008	4.29	1.72	1.15

Note. From September 2005 several major amendments to the statistics have been made.
Source: The Riksbank

Table P. Mortgage institutions' lending to the public
SEK billion

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Single-family dwellings	463	499	511	555	603	673	749	869	966	915	979
Apartment blocks	443	428	418	419	415	400	400	395	391	369	389
Commercial and office premises	34	35	37	40	34	33	28	28	28	31	35
Tenant-owned apartments	33	44	58	75	96	119	152	196	240	241	279
Other	40	42	44	37	40	42	40	40	37	39	83
Total	1 014	1 048	1 068	1 126	1 187	1 267	1 369	1 528	1 662	1 595	1 763

Source: The Riksbank

Table Q. New lending by mortgage institutions by original fixed-rate term
Per cent

NEW LOANS PER MONTH	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Variable rate	28.5	49.4	64.9	51.1	53.5	40.4	54.8	49.5	54.1	46.4	61.5
Fixed rate term < 5 years	28.2	24.0	21.0	32.5	31.7	42.0	32.3	31.5	27.3	28.8	28.6
Fixed rate term > 5 years	43.3	26.6	14.1	16.4	14.7	17.6	13.0	19.0	18.6	24.8	9.9

Source: The Riksbank

Table R. Loan stock of mortgage institutions by original fixed-rate term
SEK billion

AT MONTH END	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Variable rate	147	232	344	386	426	402	496	571	654	586	732
Fixed rate term < 5 years	372	323	261	306	356	487	615	617	639	616	660
Fixes rate term > 5 years	496	493	463	438	415	395	283	340	370	393	371
Total	1 015	1 048	1 068	1 130	1 196	1 283	1 393	1 528	1 663	1 595	1 763

Source: The Riksbank

Table S. Mortgage institutions' borrowing
SEK billion

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Certificates	66	115	130	136	171	182	171	175	146	167	81
Bonds and debenture loans	762	708	634	604	649	744	743	861	1 051	1 152	1 294
Inter-group borrowing	141	169	203	252	237	236	352	363	403	226	383
Other borrowing	69	20	14	10	9	9	31	24	0	12	65
Total	1 037	1 011	980	1 003	1 066	1 172	1 297	1 423	1 600	1 557	1 824

Source: The Riksbank

Table T. Lending to the public by other credit market companies
SEK billion

	COMPANIES	HOUSE-HOLDS	LOCAL GOVERNMENT	FOREIGN PUBLIC	OTHER
1998	125	38	18	9	0
1999	131	44	16	9	0
2000	134	47	19	12	0
2001	125	88	24	51	3
2002	138	94	29	40	5
2003	145	104	34	31	5
2004	149	115	37	30	4
2005	166	118	38	37	4
2006	183	123	40	46	4
2007	184	126	41	56	4
2008	209	93	48	88	5

Source: The Riksbank

Table U. Insurance companies' investment assets
SEK billion

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Non-life insurance companies	316	334	350	346	331	329	363	420	439	468	448
Life insurance companies	1 141	1 430	1 478	1 436	1 281	1 443	1 567	1 833	1 990	2 141	1931
Total	1 458	1 764	1 828	1 782	1 612	1 771	1 930	2 253	2 429	2 609	2379

Source: Statistics Sweden

Table V. Insurance companies' allocation of investment assets
SEK billion

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Equities	672	902	892	861	589	697	807	1 051	1 215	1 290	947
Bonds	620	653	713	695	725	783	844	894	953	1 026	1 179
Short-term investments	59	72	60	86	175	176	160	188	140	148	133
Loans	38	50	66	71	55	57	59	51	49	69	54
Property	69	87	96	68	68	59	61	70	72	76	66
Total	1458	1764	1828	1782	1612	1771	1930	2253	2429	2609	2379

Source: Statistics Sweden

Table X. Use of different payment instruments

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Number of transactions, millions											
Cards	213	255	323	403	621	759	959	1 077	1 194	1 392	1 691
Debit cards	160	198	256	327	541	670	782	892	999	1 148	1 389
Credit cards	53	57	67	76	80	89	177	184	195	244	301
Credit transfers	724	797	793	764	436	530	588	654	743	820	890
Electronic	549	626	639	636	304	447	491	560	653	724	797
Paper-based	175	171	154	128	132	83	98	94	91	96	93
Direct debit	74	85	91	98	119	130	143	160	197	208	229
Cheques	4	4	2	2	2	1	1	1	1	1	1
Total	1 015	1 140	1 209	1 267	1 178	1 420	1 691	1 891	2 135	2 421	2 810
Transaction value, SEK billion											
Cards	149	174	211	261	365	364	474	534	559	624	715
Debit cards	97	119	143	186	297	287	384	431	451	497	569
Credit cards	52	55	68	75	68	77	90	103	108	127	146
Credit transfers	9 689	8 619	8 910	8 531	6 202	6 633	7 209	8 090	8 998	10 377	11 100
Electronic	8 282	7 231	7 580	7 341	5 348	6 032	6 689	7 635	8 600	10 031	10 793
Paper-based	1 407	1 388	1 330	1 190	854	601	520	456	397	346	307
Direct debit	210	227	257	261	250	268	302	344	384	424	452
Cheques	43	30	22	16	21	46	59	55	54	60	69
Total	10 091	9 050	9 400	9 069	6 838	7 311	8 044	9 023	9 995	11 485	12 336

Source: The Riksbank

Table Y. Card transactions in ATMs and withdrawal from payment terminals
Number of transactions in millions and SEK billion

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
ATMs											
Number of transactions	333	310	322	336	341	328	324	321	313	312	310
Transaction value	287	257	271	282	284	276	293	289	270	267	262
Points of sale											
Number of transactions	171	227	287	373	454	542	652	801	1 000	1 184	1 389
Transaction value	92	127	146	185	211	241	270	312	384	434	475

Source: The Riksbank

Table Z. Average value of a card payment
SEK

1998	700
1999	683
2000	653
2001	648
2002	587
2003	479
2004	495
2005	496
2006	468
2007	448
2008	423

Source: The Riksbank

Table AA. Share of electronicly initiated credit transfers
Per cent

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Share of transaction value	85.5	83.9	85.1	86.1	86.2	90.9	92.8	94.4	95.6	96.7	97.2
Share of transaction volume	75.8	78.6	80.6	83.2	69.7	84.4	83.4	85.6	87.8	88.3	89.5

Source: The Riksbank

Table AB. Payment flows in the Swedish financial infrastructure
Daily amounts in SEK billion

DATA FROM FEBRUARY	2006 GROSS	2006 SETTLEMENT[2]	2007 GROSS	2007 SETTLEMENT[2]	2008 GROSS	2008 SETTLEMENT[2]
Fixed income market[1]	463	463	452	452	267	267
Equity market[1]	35	35	42	42	27	27
Liquidity bridge between RIX and RIX accounts administered by Euroclear Sweden[1]	N/A	62.5	N/A	44.4	N/A	49
Derivatives market	0.5	0.1	0.4	0.2	0.5	0.2
Retail payments	29	13	28	15	34	31
Foreign exchange transactions through CLS	366	26	387	24	448	21
Other foreign exchange transactions	[3]	24	[3]	17	[3]	26
Cross-border payments	[3]	238	[3]	223	[3]	203
Domestic payments + other	[3]	122	[3]	154	[3]	89

[1] Until November 2003 amounts from the fixed income and equity markets were netted in Euroclear Sweden's clearing system so that only the net amount was settled in RIX. From 2004 gross amounts are settled in the RIX accounts administered by Euroclear Sweden. The change has also created a liquidity bridge through which RIX members can transfer liquidity between RIX and the special RIX accounts administered by Euroclear Sweden.
[2] Settlement refers to the settlement that takes place in the Riksbank's RIX system.
[3] The Riksbank has no information on these gross flows.
Sources: BGC, CLS, Euroclear Sweden, NASDAQ OMX and the Riksbank

Annex 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.

Coupon frequency: Annual coupon.

Quotations basis: Prices/interest rates are expressed in decimals.

Trade date: Designated as T.

Maturities: The designation of the bond indicates the maturity. Common maturities are 2, 5 and 10 years. Longer maturities also exist.

Value 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 T.

Maturities: Up to 12 months. Common maturities are 1, 3, 6, 9 and 12 months.

Value 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.

Value date: 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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