

The Swedish Financial Market

2008

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The Swedish Financial Market 2008

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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 about 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 Sweden's financial system. This means that the publication is directed at a broad readership, ranging from professionals to students and members of the general public with an interest in the subject.

The description of the financial markets, which is the first chapter of the publication, is divided into sections on the 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 special financial infrastructure used for payments and securities transactions in Sweden.

As the title indicates, the descriptions are confined to the Swedish financial sector. This distinction is at times difficult to make since 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 2008

Maria Bergsten 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 TO 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 has a key role by assisting in channelling savings into investments as efficiently as possible.

A financial intermediary is a specialised middleman, which all parties can benefit from. 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) on 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 information¹, 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 on their own or their project's creditworthiness but it is sufficient to convince the *bank*. 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 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 constructing 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 the financial service and set a price for it, for example, the loan. 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 being 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 helps households to manage their savings efficiently. By capitalising on

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 the bank's loan portfolios has taken place in a number of places around the world.

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.

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 financial markets

The equity market

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 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. Because of 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.

To ensure that the intermediation of risk capital between companies and a broad range of investors is as efficient as possible, it is often adventageous 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 detailed description of trading, which mainly takes place on the OMX Nordic Exchange Stockholm (OMX Stockholm), follows.⁵ OMX Stockholm is the leading marketplace for trading in securities in Sweden. This is followed by brief presentations of trading in other marketplaces for equities. The section concludes with a description of the trade in equity-related derivatives.

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 10 votes per share, and class B shares, which only confer one vote per share.

⁵ Stockholmsbörsen AB changed its name on 1 July 2007 to OMX Nordic Exchange Stockholm AB.

Trends of integration in equity trading

In the Nordic and Baltic regions, equity trading has become increasingly integrated over the past few years. Today, within the framework of what is known as the NOREX collaboration, which was established in 1998, a shared regulatory system is applied to stock market trading in Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway and Sweden. The integration also extends to ownership. OMX owns and manages OMX Stockholm, together with the exchanges in Helsinki, Copenhagen, Reykjavik, Riga, Tallinn and Vilnius. In 2007, OMX also acquired the Armenian stock exchange and central securities depository, Furthermore, OMX owns the Estonian, Latvian and Lithuanian central securities depositories. The Finnish central securities depository, APK, is 100 per cent owned by VPC AB. In June 2008, it was notified that the central securities depository Euroclear, with its registered office in Belgium, intends to purchase the shares in VPC. This purchase is expected to be completed in the fourth quarter of 2008. This implies that clearing and settlement are also integrated.

Since October 2006, OMX has been operating the Nordic Exchange, which is a shared gateway to the Nordic and Baltic financial markets, offering access to around 80 per cent of market trading in these countries.⁶ The Nordic Exchange consists of a Nordic list and a Baltic list. The Nordic list comprises the companies listed on the Stockholm, Copenhagen and Helsinki stock exchanges. The Icelandic stock exchange was added to this list in 2007. Banks and securities companies that are members of these exchanges can offer their customers trading in all companies on the Nordic list. The Baltic list consists of companies that are quoted on the Tallinn, Riga and Vilnius stock exchanges.

At year-end 2007, 729 companies were listed on the Nordic Exchange. At that point, the total market capitalisation for these companies was around SEK 8,537 billion. The turnover of trading on the Nordic Exchange was around SEK 12,179 billion in 2007. The Exchange had 161 members.

During 2007, the US technology exchange Nasdaq decided to purchase OMX. This transaction, which was completed in February 2008, led to the establishment of the NASDAQ OMX Group.

A new regulatory framework, based on the EU directive MiFID (see Box New trading places with MiFID) has applied since November 2007 to increase integration in trading on the European securities markets.

⁶ It should be noted that the Nordic Exchange is not a legal entity.

TRADING IN EQUITIES ON OMX STOCKHOLM

The greater part of the trading in Swedish equities takes place on OMX Nordic Exchange Stockholm (OMX Stockholm). The following section describes the members of the exchange, its trading structure, turnover, issuers and investors on OMX Stockholm.

Members of OMX Stockholm

All trading on 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 Supervisory Authority (*Finansinspektionen*) to engage in securities trading. Members include also so called "remote members", i.e. foreign companies that engage in securities trading in Sweden from abroad. OMX Stockholm has around eighty (86)⁷ equity trading members, including some fifty remote 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 OMX Stockholm.

The members of the stock exchange have links to around 600 authorised brokers with access to the marketplace.

Trading structure

Since 1990, share trading on OMX Stockholm has been fully automated in the sense that orders are matched in its electronic trading system SAXESS. Trading no longer takes place on the floor of the exchange. SAXESS is also used for trading in all stock exchanges that are members of the NOREX system, an alliance between the Nordic and Baltic stock exchanges. NOREX is a collaboration between the stock exchanges in Denmark, Estonia, Finland, Iceland, Latvia, Lithuania, Norway and Sweden.

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 share. 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.

Today, many of exchanges' members provide internet-based services for placing orders. This can often entail lower transaction costs (for example, brokerage fees) will be lower than in trading via securities companies and banks. An order can be placed in the system as a

⁷ Source: OMX member statistics 4/2-08, although derivatives members are included.

limit order. This means that the customer pre-specifies a maximum acceptable bid price or a minimum ask price. Alternatively, it can be placed 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. Somewhat drastically one could say that a limit order injects liquidity into the market whereas a market order consumes it.

One deviation from the chronological principle applies when the same member has placed both a buy and a sell order for the same security in the system. In this case, these orders are matched first, irrespective of where they have been placed in the system. This applies to both limit orders and market orders. There are also a number of trading rules, for instance concerning the treatment of orders that could have a disruptive effect on trading, which means that orders are not necessarily executed. In addition, there are routines that mean that finalised orders that do not comply with the stock exchange regulations are cancelled.

When a deal is closed, information is sent to VPC, the Swedish central securities depository and clearing house, where the transaction is settled. Settlement entails the shares being deregistered from the seller's VPC 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 VPC). At the same time, payment 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*.

Even though limit orders and market orders are the only types of orders that exist in the stock exchange trading system, there are differences in how they executed. For instance, it is not unusual for a customer to want a major order to be broken down in the system into smaller units in the system. 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 in 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. One not particularly unusual type of order is the VWAP (Volume Weighted Average Price). Here the customer's price is set as a weighted average of the prices of all the transactions during the day in the security concerned.

Issuers on OMX Stockholm

At the end of 2007, there were 279 companies listed on OMX Stockholm.⁸ Companies seeking a stock exchange listing must agree to provide the market with information on decisions and events that may affect the price of the company's shares. The reason for this is that all investors should have access to the same information.

Public companies listed on OMX Stockholm are presented on a single Nordic list, which replaced the A-list and the O-list in October 2006 (see the Box above). The Nordic list also presents the public companies that are listed on the stock exchanges in Helsinki, Copenhagen and Reykjavik.⁹ The aim is to integrate equity trading in the Nordic region. The Nordic list also offers information on which exchange the equities can be traded on and where they are listed.

The Nordic list represents a harmonisation of the listing requirements. To be listed on the Nordic Exchange, the expected market value of the shares 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 (three years) period and must show stable profitability, or have financial resources to cover operations for at least 12 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

⁸ Four companies are also listed on the Xterna list, which has been established by OMX Stockholm for trading in equities in foreign companies not listed on the stock exchange.

⁹ The legal names are OMX Nordic Exchange Helsinki Oy, OMX Nordic Exchange Copenhagen A/S and OMX Nordic Exchange Iceland hf.

capitalisation of less than EUR 150 million are listed in the Small Cap segment.

In each segment, companies are classified into ten sections according to the Global Industry Classification Standard (GICS). GICS is used as a means of classification on the stock exchanges throughout the world and to enable comparisons between sectors from one country to another. The ten sectors are:

- Energy
- Materials
- Industrials
- Consumer Discretionary
- Consumer Staples
- Health Care
- Financials
- Information Technology
- Telecommunication Services
- Utilities

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, IPO's, i.e. when new companies are listed on the exchange. In 2007, new issues amounted to a total value of approximately SEK 14 billion, of which over a third was provided by IPO's.

Table 1. Shareholdings per sector Per cent

SECTOR	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Non-financial companies	6.9	6.8	6.8	8.2	8.5	9.2	8.7	8.4	9.0	9.4
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
Investment companies	6.3	5.9	6.4	6.1	5.6	5.6	5.3	5.3	5.2	5.6
Mutual funds	9.1	8.3	8.5	9.8	10.5	11.6	11.1	11.8	11.2	10.9
Insurance companies, pension institutions	12.2	12.0	9.8	11.6	10.4	9.2	8.7	8.7	8.1	8.3
Financial companies, total	28.9	28.1	27.2	29.5	29.0	28.7	28.5	28.6	27.0	27.0
Public sector										
Central government	2.6	1.8	4.9	5.4	5.7	5.5	5.2	4.4	4.5	4.5
Local government	0.6	0.3	0.3	0.2	0.2	0.2	0.2	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
Public sector, total	7.7	6.4	9.3	9.3	10.0	9.8	9.2	8.0	7.8	7.8
Households	15.0	15.0	13.1	13.7	14.3	14.4	15.0	14.8	14.3	13.4
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
Households	5.1	2.8	2.6	2.9	2.9	2.9	2.8	2.7	2.7	2.4
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
Outside Sweden	34.6	39.0	39.0	34.6	33.5	33.1	33.9	35.3	37.2	38.0
ALL SECTORS, TOTAL	100	100	100	100	100	100	100	100	100	100

Source: Statistics Sweden

Investors in the equity market

Shareholding in Sweden is widespread and extensive. At year-end 2007, the total value of market capitalisation amounted to around SEK 4,000 billion. At year-end 2007, 38 per cent of this amount was owned by foreign investors. The proportion of holdings held by financial companies was then around 27 per cent, of which investment funds represented just over 11 percentage points. Just over 13 per cent consisted of direct holdings by Swedish households, while non-financial companies accounted for 9 per cent of total equity assets. Public-sector holdings accounted for almost 8 per cent, of which the AP funds accounted for just over 3 percentage points. The shareholdings by non-profit-making organisations totalled around 4 per cent of the total market value.

Turnover and market capitalisation on OMX Stockholm

Equity turnover on OMX Stockholm was SEK 6,525 billion in 2007, an increase of just over 20 per cent compared with the previous year. The average turnover per trading day thus amounted to SEK 26 billion.

Table 2. Some key ratios for share trading on OMX Stockholm in 2007

Market capitalisation, 31 Dec. 2007, SEK billion	3,959
Turnover 2007, SEK billion	6,525
Average daily turnover, SEK billion	26.1
Annual turnover, billion shares	87
Total number of deals closed during year, million	24.9
Average amount per deal	261,915
Average number of deals per day	99,639
Rate of stock turnover, per cent	139

Source: OMX



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

Source: OMX

Compared to, for example, the fixed-income market, the turnover in terms of SEK is thus about half as large as in the equity market. On the other hand, the number of transactions is considerably higher than in the fixed-income market (see the section on the fixed-income market).

OTHER MARKETPLACES FOR SHARE TRADING

With the EU directive MiFID which was incorporated in Swedish legislation in November 2007, the rules were changed as to how different marketplaces should be organised. Under the old legislation, trading could take place in three marketplaces: the stock exchange, an authorised marketplace and an unregulated marketplace. According to MiFID, marketplaces are either classified as a regulated market (stock exchange)or as trading facility (MTF, Multilateral Trading Facility). The term authorised marketplace is accordingly no longer in use.

Regulated marketplaces

There are two regulated marketplaces in Sweden. Besides OMX Stockholm, Nordic Growth Market (NGM) has also been licensed by the Financial Supervisory Authority to operate a stock exchange in Sweden. NGM has specialised in smaller growth companies and offers listing and share trading on the NGM Equity list. There are some fifty shares listed on NGM Equity. In addition, NGM offers derivatives trading on the Nordic Derivatives Exchange (NDX) list, which is now Sweden's largest marketplace for certificates and warrants.

Trading facilities, MTFs

The regulations for MTFs are not as strict as for regulated markets. This is because an MTF should be able to provide a simpler form of trading. However, the management of an MTF may opt to apply the stricter rules. At year-end 2007, there were three trading facilities in Sweden: *First North, Nordic MTF* and *Aktietorget*.

First North is intended for smaller companies and growth companies and comprises an alternative marketplace in the Nordic Exchange in OMX.¹⁰ First North includes companies in Denmark, Finland, Iceland and Sweden. The companies that are traded on First North are not registered on OMX Stockholm, although trading takes place using SAXESS, as on OMX Stockholm. Information about prices, volumes and order depth¹¹ is published in real time through the same channels

¹⁰ First North replaced Nya marknaden in June 2006 and has been developed on the basis of the new legislation ensuing from MiFID. OMX's intention is for First North to be operated as an MTF when this is possible.
¹¹ The order depth shows how many shares the purchaser wishes to buy and the seller wishes to sell and at what price.

as for listed shares. However, OMX Stockholm does not take responsibility for monitoring the companies listed on First North. Instead, every company has a "sponsor" which, by agreement with OMX Stockholm, is responsible for company's compliance with the requirements to be traded on First North and with the requirements on the continuous provision of information. The sponsors are in turn required to enter agreements with the companies they are responsible for. These agreements specify the requirements for trading on First North, including with regard to free float, capitalisation and information.

Via NGM, Nordic MTF is a trading platform for small and medium-sized growth companies where trading is conducted using NGM's trading system TELLUS.¹² NGM is responsible for scrutiny of the listed companies and trading in the companies' shares. At year-end 2007, some thirty companies were listed on Nordic MTF, which is an increase of around 60 per cent 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 OMX Stockholm. Aktietorget complies with the general regulations for an MTF but has moreover its own regulatory framework to protect the investor.

A further two examples of list trading in unlisted shares are the trading that takes place on Göteborgs OTC-lista (the Gothenburg OTC list), operated by Thenberg & Kinde Fondkommission, and the *Be-Quoted unofficial share list*. The Gothenburg list is a sub-list of Nordic MTF.

OMX Stockholm also has a list to enable trading in shares in foreign companies that are not formally listed on OMX Stockholm; this is known as the *Xterna list*. Trading on the Xterna list takes place in the stock exchange's trading system and the regulatory framework for OMX Stockholm's members applies. However, companies on the Xterna list do not sign a listing agreement with OMX in the same way as applies for companies on the Nordic Exchange. One requirement for a company to be included on the Xterna list is that one or more market makers must have undertaken to be responsible for a market in the company's shares. The market makers must also enter into an agreement with OMX Stockholm on the content of the undertaking. Deals in the company's shares must be settled and registered with VPC in accordance with the VPC's regulations. At year-end 2007, the Xterna list comprised four companies, LogicaCMG Plc., Nokia, Old Mutual and Pfizer Inc.

¹² Nordic MTF is a further development of Nordic OTC and entails an adaptation to the new legislation ensuring from MiFID.

New trading places with MiFID

new law came into effect on 1 November 2007 – the Securities Market Act (2007:528).This new legislation is based on an EU directive of 2004, MiFID, which creates an integrated regulatory framework for trading with financial instruments within the EU.¹³ The goal is to increase competition and improve consumer protection in the European securities market. The new legislation replaces the Securities Business Act (1991:981) and the Securities and Clearing Operations Act (1992:543).

Three important components of the new legislation are new definitions of marketplaces, increased investor protection and improved transparency. Through the new regulatory framework, there are two types of marketplaces for trading with securities: regulated marketplace (which replaces the term stock exchange) and trading platform (MTF, Multilateral trading facility). Both types aim at bringing together buyers and sellers of securities. The difference lies in the extent of regulation, where MTFs do not have to comply with the same strict regulatory framework. The idea is that an MTF should offer a simpler opportunity for trade than a regulated marketplace. MTFs also make it easier for companies with smaller resources to be traded. However, every MTF is at liberty

to introduce its own rules for its member companies.

Protection for investors is another important factor which differentiates between the regulated marketplaces and the MTFs. Certain MTFs have reinforced investor protection by introducing their own regulatory frameworks. To ensure good protection for investors, there exists the best order principle. This principle is intended to provide the investor with the best possible terms in every single transaction, both in terms of price and the time of implementation. An order is accordingly moved to the regulated marketplace or MTF within the EU which offers the best terms at the particular time. In this way, MiFID leads to increased competition through it now being possible to trade in shares that were previously only traded on, for instance, OMX Stockholm, on other marketplaces within the EU.

The improved transparency aims at increasing opportunities for the investor to compare prices between different marketplaces. Information about prices and deals is published regardless of whether the share is traded on a regulated marketplace or an MTF. All securities companies shall report all transactions carried out to a designated supervisory authority

¹³ MiFID (Markets in Financial Investments Directive) is a Swedish abbreviation for the Markets in Financial Investments Directive.

in the respective country – in Sweden to the Financial Supervisory Authority.

There are at present two regulated marketplaces in the Swedish market (*OMX Stockholm and NGM*) and three MTFs (*First North, Aktietorget and NGM Nordic MTF*). During September 2008, Nasdaq OMX is planning to start a new MTF Nasdaq OMX Pan European *Market.* This new MTF is intended to offer trading in the 300 most traded shares in Europe. Examples of foreign MTFs are Chi-x which opened for trading in March 2007 and Turquoise which is planned to start trading in September 2008. Chix started trading in Swedish shares in March 2008. Both established companies and those that are not yet ready for a stock exchange listing or other forms of public trading in their shares can sometimes acquire funding in form of private equity. Financing of this kind is sometimes channelled through a particular type of intermediary known as a private equity company. Private equity companies are described in more detail in the chapter *Financial intermediaries*.

TRADE IN EQUITY-RELATED DERIVATIVES

The vast majority of the derivative contracts, based on Swedish equities as the underlying asset, that are traded via OMX Derivatives Markets (OMX DM), involve options and forwards.

An equity option is a contract whereby the holder has the right, but not the obligation, to buy or sell the share at a specified price on a specified date in the future. In turn, the writer of the option has the obligation, but not the right, to exercise the option. 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.

OMX DM is a secondary name of OMX Stockholm which is used for activities relating to trading and clearing of derivatives.¹⁴ In addition to derivative contracts for individual equities, trading on OMX DM also includes options and forwards that are linked to OMX's own equity index, OMXS30 options and OMXS30 forwards. OMX DM also offers options and forwards in Danish, Finnish, Norwegian and Icelandic equity-based derivatives. 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. Trading in equity derivatives is conducted via a common order book, which is also available to members of the Oslo stock exchange, and EDX London.¹⁵ OMX DM also offers an OTC clearing service for derivative contracts not listed for trading.

The number of standardised derivative contracts linked to Swedish equities and the OMX index traded on OMX DM in 2007 totalled around SEK 122 million. The bulk of these (just over half) were equity options, 26 per cent were OMXS30 forwards, 16 per cent OMXS30 options and 7 per cent equity forwards. The remaining 2 per cent were equity loans.¹⁶ Trade is normally carried out in contracts for lots of 100 shares.

¹⁴ A secondary name is not a separate legal entity but relates to a particular part of the company's activity.
¹⁵ Linked Exchange and Clearing (LEC) makes it possible to trade in all Nordic derivatives in the three marketplaces Stockholm, Oslo and London.

¹⁶ An equity loan enables a shareholder to lend shares to an investor. The borrower undertakes to return shares of the same class and number. The borrower pays a premium for this to the lender.

In addition to the trading in standardised equity and equity index derivatives, trading also takes place on OMX DM in warrants. 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, which distinguishes a warrant from, for example, a subscription option. Furthermore, warrants are transferable. In this way, it differs from the non-transferable contracts created for standardised options on OMX DM, which acts as the central counterparty in these transactions (see the section on OMX Derivatives Markets in the chapter *The financial infrastructure*).

During 2007, the turnover in trading in warrants on OMX DM totalled around SEK 8 billion. These were distributed among approximately 270,500 strikes.

Warrants are also traded in Sweden on the Nordic Derivatives Exchange (NDX), which is operated by the marketplace NGM.

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 collateral, which is continuously updated, to the broker, and also pays a daily interest charge as long as the position remains open. 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 closed.

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 the trading in the various sub-markets differ somewhat. In simple terms, the main purpose of the bond market is to channel long-term savings from some participants to others in need of capital. The most important function of the money market is instead to facilitate liquidity management, while another is to provide short-term finance. In the part of the money market where instruments with the shortest maturities are traded (from one day to one week), daily adjustments of deficits and surpluses in the transaction accounts of the participants in the market are carried out. Since a large part of the turnover takes place in this segment, often with special contract arrangements, special attention will be devoted to it in this section.

Debt instruments are traded in the *spot market for debt instruments* where payment and delivery take place immediately or within a few days of the transaction being entered into. Complementing the instruments in the fixed income market, *derivative instruments*¹⁷ 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 their positions and create more or less whatever maturities they want in 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 publication, 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.

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 a year or longer.

¹⁷ "Derivative instruments are contracts that are linked to securities (instruments) in the capital, credit and money markets, and that are entered into (and traded) by the participants in the secondary (second-hand) market. The object of derivative instruments is to manage portfolio risks (exchange rate and interest-rate risks). Derivative instruments include interest forwards, interest options and interest swaps." Terms defined in Nationalekonomi, Dickson, Luukkainen and Sandelin, 1992).

A bond is a debt instrument that usually comprises a series of coupon payments¹⁸ and a final repayment of principal. They may be simply transferred between holders.

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 direct revenue for the issuer of the bond. Thus, the issuer is a borrower in the market.

The dominant borrowers in the bond market are central government 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. If the secondary market is efficient, liquidity in the securities will be good. This will make the bonds easier to sell and buy and thus more attractive to investors. A high demand for bonds in turn reduces the borrowing costs of the issuers.

Issuers in the bond market

The largest issuers in the bond market are the central government and the mortgage institutions. They represent 36 and 41 per cent respectively of the total volume issued. At year-end 2007, this amounted to nearly SEK 2,000 billion, a rise of around SEK 140 billion from the previous year.

The Swedish National Debt Office manages central government debt borrowing in the bond market. Central government borrowing finances the national debt. At the end of 2007, government bonds amounted to nearly SEK 730 billion, which is a reduction of around SEK 40 billion compared with year-end 2006 (see Chart 2).

The mortgage institutions issue bonds mainly to finance lending to the Swedish public for purchases of property. Total borrowing by the mortgage institutions in 2007 rose by around SEK 70 billion, to nearly SEK 820 billion by year-end. It should be mentioned here that a large part part of the outstanding stock of mortgage bonds was converted into covered bonds during 2006 and 2007. Covered bonds give the holder priority right to compensation in the event of the issuer being declared bankrupt.¹⁹

¹⁸ Interest payments and any amortisation payments. Bonds that do not have interest payments during the time to maturity are called discount bonds or zero coupon bonds. The State also issues inflation-linked bonds, where interest payments and final repayment of principal are linked to the trend of inflation.

¹⁹ In addition, covered bonds must be issued by a bank or credit market company subject to particular public supervision. Furthermore, a specified volume of collateral must be attached to the bonds. The value of the collateral must exceed the value of the bonds issued.

Non-financial companies, for example, industrial enterprises, may also raise capital by issuing bonds. At year-end 2007, borrowing by non-financial companies in the Swedish bond market totalled just over SEK 140 billion, an increase of around SEK 10 billion compared with the previous year. Many companies, above all major listed corporations, go to international corporate bond markets to obtain access to capital, where trading is conducted in EUR or USD. Loans in foreign currency are generally converted to SEK using derivatives, mainly foreign exchange swaps (see also the section on the foreign exchange market).

In addition to their tax revenues, municipalities and county councils may need to avail themselves of bonds to finance their operations and investments. Only a small number (seven municipalities and one county council) had outstanding listed bonds at year-end 2007 in their own name. Of these, the City of Stockholm had the largest outstanding stock, followed by Stockholm County Council, the Municipality of Södertälje and the Municipality of Sundsvall. A further 203 municipalities and seven county councils had outstanding bond loans in association with Kommuninvest, a credit market company.²⁰ Borrowing by



Note. Outstanding nominal amounts

Chart 3. Investors in the bond market SEK billion



Source: The Riksbank

²⁰ 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.

the municipalities amounted to approximately SEK 20 billion at yearend, which is substantially the same figure as at the end of 2006.

Banks and also to some extent other credit market companies (such as pension funds and finance companies) increased their borrowing via the bond market in 2007. In the case of the banks, this represented an increase of 70 per cent, to almost SEK 200 billion at year-end. Borrowing by other credit market companies totalled SEK 80 billion at year-end 2007.

Investors in the Swedish bond market

At year-end 2007, insurance companies represented the category of investors with the largest holding in the bond market. At that point, holdings of bonds by insurance companies had risen by just over SEK 40 billion to SEK 744 billion (see Chart 3). As a result, the insurance companies accounted for 40 per cent of the total amount outstanding in the bond market at year-end 2007.

At the same time, non-residential investors²¹ had a holding in the bond market totalling almost SEK 535 billion.

Bond holdings by banks increased slightly during 2007 from approximately SEK 280 billion at year-end 2006 to approximately SEK 340 billion.

Bond holdings in the category "Companies and others"²² totalled SEK 223 billion at year-end 2007.

The Swedish bond holdings of the AP funds, the Swedish national pension funds, have decreased considerably over the years. The AP funds holdings in the bond market totalled just under SEK 150 billion at year-end 2007, a decline of roughly half since the year-end 2000.

Turnover in the bond market

The Riksbank compiles statistics on turnover from its present seven primary monetary policy counterparties (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 dealers in government bonds.²³

²¹ No detailed information exists as to which types of non-residential investor make up the category "nonresidential" in statistics for the financial market issued by Statistics Sweden (SCB). It is likely that major foreign pension funds represent a major share of this category, together with holdings by Swedish investors via foreign companies.

²² The "Companies and others" category 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 by major investors.

²³ The Riksbank's primary monetary policy counterparties are ABN, AMRO Bank NV, Danske Consensus, E Öhman J:or Fondkommission, Nordea, SEB, Svenska Handelsbanken and Swedbank. During 2007, Barclays Capital also became a dealer in government bonds for the Swedish National Debt Office.

The statistics show that turnover in the bond market rose slightly during 2007 compared with the previous year to an average of almost SEK 43 billion per day (see Chart 4). Mortgage bonds accounted for the increase. Turnover increased from an average of just over SEK 10 billion per day in 2006 to just over SEK 13 billion per day in 2007. Turnover in government bonds totalled on average almost SEK 30 billion per day in 2007, more or less unchanged from the previous year.

Of the total turnover in government bonds in 2007, almost 99 per cent took place in the secondary market. The primary market – i.e. new issues – accounted for only just over 1 per cent.

Alongside the institutional trading in bonds, trading also takes place in private bonds on OMX Stockholm. Private bonds are aimed at private individuals. This trade is conducted electronically, unlike institutional trading. Here, trading takes place in, for example, ordinary private bonds, structured products such as equity index bonds and subordinated debentures, which are primarily aimed at private individuals and other small investors. Equity index bonds account for over 90 per cent of the turnover in private bonds. The turnover in private bonds (formerly the SOX list) doubled during 2007 compared with 2006 and totalled SEK 13.5 billion. The number of outstanding loans at year-end decreased from 1,242 in 2006 to 1,165 at year-end 2007.

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.

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



Source: The Riksbank

One important task for the money market is to facilitate liquidity management in the economy. 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. The outstanding volume in money market securities is just over a quarter as large as the outstanding volume of securities in the bond market.

Issuers in the money market

Central government borrowing in the money market through Treasury bills. Other institutions borrow by issuing certificates such as bank certificates and mortgage certificates. A Treasury bill²⁴ 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, for example, banks and companies.

Treasury bills play a dominant role in the money market, even though this decreased during 2007. In 2007, the amount of outstanding Treasury bills accounted for just over 42 per cent of the outstanding stock of short-term securities (see Chart 5), compared with 50 per cent in 2006. The amount of outstanding Treasury bills decreased by SEK 34 billion and totalled SEK 225 billion at year-end. Treasury bills are used, inter alia, for managing fluctuations in the short-term government borrowing requirement.

The banks also decreased their borrowing in 2007. In comparison with 2006, borrowing by the banks decreased by SEK 8 billion and totalled SEK 54 billion at the end of the year.

On the other hand, borrowing by the mortgage institutions increased by over SEK 40 billion in 2007. At year-end, the outstanding loan stock of these institutions totalled over SEK 150 billion. 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.²⁵

²⁴ The Treasury bill is constructed like a zero-coupon bond, i.e. a security without interest payments during the term of the bill.

²⁵ However, the level of borrowing by the mortgage institutions via certificates is relatively low, compared to their short fixed-rate lending. In order to match the fixed-interest periods of funding by the institutions and their lending to households, the institutions issue bonds that are subsequently converted into short interest via swap contracts. In addition, mortgage institutions borrow from their parent banks. For more information, see the description of swap contracts in the sections "Derivative instruments in the fixed income market" and "Standard instruments in the Swedish currency market".

The non-financial companies increased their borrowing slightly between 2006 and 2007. Borrowing by non-financial companies amounted to SEK 70 billion in 2007.

The volume of borrowing by Other credit market companies and municipalities was substantially unchanged in 2007. The volume of borrowing for "Other credit market companies" totalled just over SEK 10 billion at year-end. Borrowing by the municipalities amounted to almost SEK 15 billion at year-end 2007, which was an increase of SEK 4 billion since 2006.

The total outstanding stock of securities in the money market was approximately SEK 528 billion at the end of 2007, which entailed an increase of around SEK 8 billion compared with the end of the previous year.

Investors in the Swedish money market

"Companies and others"²⁶ have the largest holdings in the money market. At year-end 2007, companies and others represented more than 55 per cent of the outstanding stock of short-term debt securities. Their holding increased by SEK 75 billion to over SEK 300 billion (see Chart 6). Holdings by insurance companies accounted for around 17 per cent and their investments increased marginally by around SEK







Source: The Riksbank

²⁶ The "Companies and others" category 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 bond market and the holdings by major investors.

4 billion in 2007 to just over SEK 90 billion compared with the previous year-end. The banks reduced their holdings in the money market in 2007 by just over SEK 60 billion. The banks' outstanding nominal amounts thereby amounted to just over SEK 90 billion at year-end. The banks' holdings accounted for approximately 16 per cent of the total money market at year-end 2007.

The "non-resident" investors²⁷ decreased their holdings by almost SEK 10 billion to almost SEK 43 billion at year-end 2007. Non-resident investments in the Swedish money markets constituted over 8 per cent of the total holdings at year-end 2007.

At year-end 2007, money market investments by the AP funds (the Swedish national pension funds) were largely unchanged compared with the previous year, and corresponded to just over SEK 4 billion compared with almost SEK 3 billion at year-end 2006. However, the share of the outstanding volume represented by the AP funds was only 1 per cent as at the preceding year-end.

It is worth noting that from the AP funds have greatly reduced their holding in short-term fixed income securities since 2000 while insurance companies, companies and others have increased their outstanding volumes.

Turnover in the money market

In 2007, turnover in Swedish Treasury bills amounted to around SEK 8 billion per day, which was the lowest level of turnover for the past ten years. Turnover in mortgage certificates also decreased slightly from almost SEK 3 billion to a daily average of just over SEK 2 billion between year-end 2006 and 2007 (see Chart 7).

Of the total turnover in Treasury bills during the whole of 2007, the secondary market accounted for almost SEK 1,700 billion, while the primary market accounted for around SEK 400 billion (roughly one quarter), i.e. via new issues.

Total turnover in the money market decreased by an average of SEK 2 billion per day in 2007 compared with 2006.

ISSUANCE PROCEDURE AND TRADING STRUCTURE

The procedure for issuing and trading securities in the bond and money market is substantially the same. The issuance procedure and trading structure for both types of securities is therefore described below. The special trading rules (market conventions) applied to the

²⁷ No detailed information exists as to which types of non-residential investor make up the category "nonresidential" in statistics for the financial market issued by Statistics Sweden (SCB). It is likely that major foreign pension funds represent a major share of this category, together with holdings by Swedish investors via foreign companies.

fixed income market differ, however, for the bond and money market respectively. The trading rules applicable for securities denominated in Swedish kronor in these two markets are shown in Annex 2.

Issuance procedures

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 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, there is no auction procedure. The bonds 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





Source: The Riksbank

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 involved 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 borrowing.

Trading structure

There is also an active second-hand market, *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.²⁸ Mortgage bonds also have a relatively good second-hand turnover.

Corporate bonds, on the other hand, are usually retained by investors until maturity, resulting in less trade in the secondary market. The same applies to securities in the money market, Treasury bills and other certificates. Turnover in the money market has moreover generally decreased in recent years (see section on turnover above).

The market for government bonds is still conducted largely by telephone, although electronic trading does take place on a limited scale.²⁹ At present, electronic trading comprises three benchmark bonds and is conducted via the electronic system known as SAXESS.³⁰

The market makers (the dealers) referred to above function as intermediaries in bond trading. The trading that takes place between these dealers is normally referred to as *interbank trade*. 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).

²⁹ The electronic platform for fixed-income trading was introduced in May 2001, as a result of collaboration between the interbank participants, OM Räntebörsen and the Swedish National Debt Office.

²⁸ 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.

³⁰ Benchmark bonds consist of the most frequently traded government bonds with maturities of two, five and ten years.

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

A majority of the market makers in government bonds also act as market makers in mortgage bonds. Because 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.

TYPES OF CONTRACT FOR THE MONEY MARKET'S SHORTEST SEGMENT

Ordinary securities are less practical when maturities in the money market are reduced to a week or less. Other contract solutions are used instead, such as deposit contracts, repos and FX swaps. 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 central payment system, RIX³¹, 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 maturities. 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 or monetary policy repos (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 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 pre-

³¹ See the section on RIX in the chapter *The financial intermediaries*.

determined interest rates, a potential alternative always exists to the interest rates offered by the market.³² The market participants therefore have an incentive for agreeing a rate within those offered by the Riksbank for depositing and borrowing.³³ In this way, the terms for the overnight market are decided in practice by the Riksbank.³⁴

Deposit contracts

Deposit contracts are standardised deposit and loan agreements without requirements for collateral. The amount a bank may loan to its counterparties is determined by the bank's own limits, "counterparty limits". Investments in deposit contracts affect the banks' balance sheets and capital adequacy requirements.³⁵ The extent of the effect on the capital adequacy requirement depends on the risk associated with the counterparty borrowing through the deposit contract.³⁶

Normally, market participants do not use deposit contracts for depositing and lending for longer than a week. This is because the counterparty limits and capital adequacy requirements make this form of contract relatively more expensive than other financial contracts with longer maturities. 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 interest rate.³⁷

The major banks estimate that around 90 per cent of the turnover on deposit contracts involves maturities of up to two days.³⁸ In 2007, the institutions designated by Statistics Sweden as Monetary Financial Institutions³⁹ had at the end of each month, average outstanding deposit volumes of SEK 175 billion. The major share of this amount, on average SEK 153 billion, consisted of deposits in Swedish monetary finance institutions. Only a minor part of the deposits thus originated from foreign institutions.⁴⁰

³² 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.se.

³³ See for example the brochure *The Riksbank's Management of Interest Rates - Monetary Policy in Practice*, Sveriges riksbank 2005.

³⁴ More information on the overnight market may be found in an article entitled *The Swedish Market for Balancing Liquidity* in Economic Review 2005:4.

³⁵ 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.

³⁶ See the article entitled The Swedish Market for Balancing Liquidity in Economic Review 2005:4.

³⁷ See the book "Penningmarknaden", Nyberg, Viotti and Wissén 2006.

³⁸ See the article entitled *The Swedish Market for Balancing Liquidity* in Economic Review 2005:4.

³⁹ 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 finance institutions).

⁴⁰ Swedish Monetary Financial Institutions report their outstanding volumes in different currencies monthly 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).

Repos ("repurchase agreements")

A repo is an agreement 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. It also means that the financial risk to the lender in a repo transaction is considerably lower than in a deposit contract. The risk consists only of the risk of a fall in the market value of the security of the repo. The repo functions essentially as a collateralised loan over the life of the repo. Conversely, repos may be viewed as security loans collateralised with cash.

The pledged security may not be sold during the term of the agreement. 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 expose the lender to minimal counterparty risk. In principle, all securities that can be traded of the fixed-income market can be used as securities for repos.

Turnover in repo transactions backed by government and mortgage securities⁴¹ is very high. Among the Riksbank's primary monetary policy counterparties and the Debt Office's dealers, turnover averaged just over SEK 196 billion a day in 2007. This may be compared with the spot turnover in similar certificates which totalled around SEK 50 billion per day in 2007. In other words, spot trades represented no more than just over a quarter of average daily turnover in repos. The turnover in repos increased by SEK 20 billion on average per day during 2007 compared to the previous year (see Chart 8). An estimated 90 per cent of the turnover in repos involved maturities of up to one week.⁴²

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 188 billion in 2007. More than half of this amount, over SEK 100 billion, was attributable to the repo borrowings of Swedish monetary financial institutions.

⁴¹ Includes Treasury bills, nominal government bonds, mortgage certificates and mortgage bonds. Inflationlinked government bonds are not included in these figures.

⁴² See the article entitled The Swedish Market for Balancing Liquidity in Economic Review 2005:4.
Figure 1 presents the financial contracts available in the money market for maturities of up to one week, as well as the participants that use them.

The special conventions used in trade with the money market's short contracts are shown in Annex 2.



Source: The Riksbank





Riksbank facilities for short-term borrowing and deposit requirements

he 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 with the Riksbank. 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* or monetary policy repos.

The Riksbank's counterparties in the fixed-income market comprise RIX participants, monetary policy counterparties and primary monetary policy counterparties. In 2007, the Riksbank had 20 RIX participants, 14 of which were also monetary policy counterparties. Seven participants were also primary monetary policy counterparties.⁴³

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 addition to intra-day facilities, standing facilities and weekly repos, primary monetary policy counterparties also have access to the 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 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 intraday 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 will be needed mainly from when RIX opens until early afternoon when the surpluses and deficits in the banks' transaction accounts have been determined.

When there is not enough collateral for the borrowings from the Riksbank via RIX during the day, certain banks have an informal agreement by which they can provide each other with "interest-free" intra-day credits. The counterparty limits set the ceiling for how much the banks

⁴³ More information about the Riksbank's counterparties is available on www.riksbank.se.

are allowed to lend each other. However, the banks are rarely needed to turn to each other for intra-day credits.

Fine-tuning operations – for primary monetary policy counterparties

At the end of the day, the banks to the greatest possible extent even out any deficits or surpluses between them in the intraday market. 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.⁴⁴ Only the primary monetary policy counterparties may participate in the fine-tuning operations. Other counterparties, which participate in RIX may contact the Riksbank through these primary 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 needs to borrow from the Riksbank overnight pay(s) the Riksbank's repo rate(at present 4.25%) plus 10 basis points (at present 4.35%) 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 10 basis points (at present 4.15%). 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-àvis the Riksbank (virtually) every day. The amounts that are fine-tuned by the Riksbank are 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. In 2007, deposits at the Riksbank which took place via fine-tuning operations averaged SEK 330 million per day. The average lending was SEK 425 million per day. 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 coin take place.

The period to maturity of the monetary policy repo (se below) is also longer than normal at that time.

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⁴⁴ 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. 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 erroneous assumption made during the forecast.

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 finetuning 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 2007, the average deposit in the Riksbank at the rate of interest for this facility amounted to just over SEK 50 million per day. The average lending was almost SEK 20 million per day. Peaks in deposits and troughs in lending are normally the result of the Riksbank's primary monetary counterparties choosing not to participate in fine-tuning. This situation can arise when the counterparty considers that the administrative costs for participating in fine-tuning are greater than interest received for participating.

Monetary policy repos – for monetary policy counterparties⁴⁵

The Riksbank ensures that the banking system as a whole has access to loans

against collateral in securities via its weekly monetary policy repo.⁴⁶ 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. Normally the size of the repo is around SEK 2–3 billion.⁴⁷ The banks (the 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. Because, the Riksbank's method of allocation means that banks with a need for liquidity are rarely allocated the full amount of the bid.⁴⁸ 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. In 2007, the banks were awarded on average 19.9 per cent of their bids.

⁴⁵ However, the monetary policy counterparty must have signed a special repo agreement with the Riksbank to be able to take part in monetary policy repos.

⁴⁶ Not to be confused with the above-mentioned repos/repurchase agreements.

⁴⁷ The amount of the monetary policy repo is to a large extent determined by changes in the public's demand for notes and coin.
⁴⁸ 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.

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)*. These are standardised interest rate forwards that have deposit contracts as the underlying asset and specific maturity dates known as IMM days.^{49,50}

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 128 billion per day during 2007, which is a doubling compared with 2006.

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 or mortgage bonds, or Treasury bills at a specified date in the future.

Relative to the turnover of IMM-FRAs, the market in bond and Treasury bill forwards is not especially large. The average turnover in forwards on government bonds was around SEK 26 billion per day in 2007, an increase of SEK 11 billion per day on average since the previous year. The turnover in forwards on mortgage bonds as underlying asset averaged SEK 6.4 billion per day during 2007, which is more than double the daily turnover (SEK 2.5 billion) the previous year.

The turnover in Treasury bill forwards has also increased during the past year by around SEK 400 million per day and averaged around SEK 1.4 billion per day during 2007. However, viewed in a longer perspective, the turnover in Treasury bill forwards has halved since 2000. The likely explanation for this decline is to be found in the gradually growing use of IMM-FRAs.

⁴⁹ IMM days always fall on the third Wednesday in March, June, September and December.

⁵⁰ When a contract for an IMM-FRA matures, the underlying instrument (the deposit contract) is not exchanged, however. 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.

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.⁵¹

Interest-rate swaps with long maturities are referred to by their abbreviation IRS and involve the exchange of interest rate payments over several years. Another type of interest rate swap – with shorter maturities –used in Sweden is known by the acronym STINA (Stockholm Tomorrow Next Interbank Average). A STINA contract is an agreement, 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.

The turnover in STINA swaps among the Riksbank's primary monetary policy counterparties totalled around SEK 22 billion on average per day during 2007, which is a doubling compared with 2006.

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 the obligation, but not the right 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 and averaged as little as SEK 11 million per day in 2007. Trading in these options totalled around SEK 130 million per day from 2004 to 2006.⁵² However, even these amounts were modest compared to other fixed-income derivatives.

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 credit derivatives and *structured products*).⁵³

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

⁵¹ 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.

⁵² Due to the low turnover in this instrument, the Riksbank ceased to collect statistics as at 30 september 2007. This can also explain the low daily turnover for 2007.

⁵³ 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.

Credit derivatives and structured products

he international market for credit risk transfer has expanded greatly during the 2000s. The trade in credit risk enables these risks to be shared among more parties. The main investors in credit risk instruments are institutional investors such as insurance companies, pension funds and hedge funds. The principal sellers of credit risk are banks, mortgage institutions and other credit institutions.

Credit derivatives

The trade in credit derivatives has made it simple and cheap to trade with credit risk. Credit derivatives are linked to the credit risk of the underlying assets, usually corporate bonds. To buyers of credit protection, credit derivatives work more or less like an ordinary insurance policy. The seller of the credit protection undertakes to compensate the buyer if the company, which the underlying bond is associated with, is declared bankrupt or suspends payments during the term of the contract. In return, the buyer pays a regular premium that reflects the credit risk in the asset.

The most commonly used instruments in the credit derivative category are Credit Default Swaps (CDS). These are linked to an underlying asset, normally a corporate bond. If anything happens which leads to a reduction in the value of the bond, the contract requires the seller to take over ownership of the corporate bond at its nominal amount. The premium for a CDS contract is normally based on the interest differential between the underlying corporate bond and a risk-free bond with a similar maturity, since both reflect the market's perception of the underlying risk of default.

CDS contracts issued against individual corporate bonds are the most common type of credit derivative. However, growth has been higher in other categories of products, including index-linked products and "synthetic" CDOs (Collateralised Debt Obligations). The CDS index reflects changes in a portfolio of CDS contracts. The advantage of index-linked products is that they offer more scope to investors to make diversified investments in the credit market. One disadvantage may be that the complexity of the products makes it more difficult to assess the risk.

In Sweden, the number of transactions with credit derivatives has risen in recent years, although the total number of transactions is low. The most important explanation for this is that the market in corporate bonds is small and demand from customers weak.

Structured products

Additional instruments for trading with credit risk that have expanded very rap-

idly in recent years are what are known as structured products.

The most common form of structured products are CDOs, Collateralised Debt Obligations. In a CDO, the portfolio of securitised loans is divided into different parts (tranches) with different priority. When interest income from the underlying assets (for example, the residential mortgages) is received, it will be distributed to those tranches with the highest priority first, after which the remaining investors will receive their share in falling order of priority. At the bottom is a part that resembles equity capital which will receive payment only when the others have been paid.

One disadvantage with these structured products is that they are often very complex and it is difficult to assess the credit risk in the different tranches. Risk assessment is often made by rating institutes which rate the different parts individually. These products are often customised and complicated which makes them difficult to price and trade with. The advantage is that, by dividing up the claims according to differing priorities, they can sell the different tranches to investors with differing risk propensity.

As well as institutional investors, some banks have also invested in these products by establishing legally separate, freestanding investment companies. These investment companies, known as "conduits" or Structured Investment Vehicles (SIV), obtain funding by issuing company certificates in the short-term money market, "Asset Backed Commercial Paper" (ABCP). Although these investment companies are often not included in the banks' balance sheets, the banks have usually wholly or partly guaranteed their payment capacity.

The Swedish banks have not invested in structured products to any great extent, neither directly nor indirectly via investment companies.

Trading structure in market for interest derivatives

Derivatives can either be traded direct, over the counter (OTC) between a buyer and a 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 OMX Derivatives Markets (OMX DM), which then takes the role of clearing counterparty vis-à-vis buyer and seller.⁵⁴ The active trade in derivative instruments is conducted in a market where a number of market makers set prices by telephone or electronically.

The foreign exchange market

Another important financial market is the foreign exchange 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 fast dissemination of price information. The global turnover in this market every day involves sums 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 this global 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 Swedish kronor for foreign currency and vice versa is to match revenue and disbursements in foreign currency. These payments may be generated for instance by trade in goods and services. Another common reason is to obtain protection against the foreign exchange risk that arises during trading in foreign debt 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 interestrate parity* further on.

Swedish kronor may be exchanged either by *spot transactions*, where delivery normally takes place after two days, or via a derivative

⁵⁴ For more details, see the chapter The financial infrastructure.

instrument, when delivery takes place at some other agreed time. (See the section on frequently used instruments in the Swedish foreign exchange market below).

Even if the major share of turnover, calculated as *amounts*, takes place in the foreign exchange market, it may be worth mentioning that a large share of the *number* of foreign exchange transactions is usually *not* conducted in this 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, a sale in EUR can be balanced against purchases of goods in EUR. In this way, a company can, for example, minimise the hedging it needs. *Netting*, as this is called, does not generate any flows in the foreign exchange market, however, but it offers a method for dealing with transactions in foreign currency without requiring an exchange transaction for each and every one of them. When a bank or a company needs to reduce or raise the amount of foreign exchange in its account with a foreign bank, they normally turn to the institutionalised foreign exchange market, however.

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".⁵⁵ However, in the foreign exchange market, payment and delivery in a foreign exchange transaction in practice take place two banking days after trade date. Transactions involving both larger and shorter maturities are considered derivative transactions.

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

⁵⁵ Concise Oxford Dictionary, 11th edition.

Covered interest rate parity

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here 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 and then convert the loan to Swedish kronor using 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 spread of interest rates between two countries is reflected in the price difference between the spot and the forward price for the currency pair of the two countries. 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 riskfree opportunities for arbitrage⁵⁶, 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. This relationship also enables major Swedish participants to borrow abroad and then, using foreign exchange derivatives (above all, foreign exchange swaps), to convert their foreign currency loan to SEK. By using the arbitrage correlation, it is possible to borrow SEK at the same cost in Sweden as abroad.

⁵⁶ Arbitrage is a term that describes the use of imbalances, differences in market prices, between two or more markets.

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). These instruments work 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 at a later date. (See the section on 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.

Interest rate and currency swaps are another type of contract that is also a combination of transactions. An interest rate and currency 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.⁵⁷ 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 to exercise the option.

⁵⁷ See the description in the section "Derivatives in the fixed income market".

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-driven⁵⁸ and there is no standard spot transaction to the same extent. Like fixed-income derivatives, foreign exchange derivatives in SEK are only traded OTC.⁵⁹

Interbank trade and customer trade

Of the trade in the foreign exchange market, just over 40 per cent of the volume in turnover consists of what is called *interbank trade*.⁶⁰ This refers to trade between participants (market makers) who are dealers in various instruments. These dealers may be banks or securities companies. Interbank trade has decreased on average by six per cent per year during the past three year.

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 request its bank, which will quote an EUR rate. If the bank wants to restore its foreign exchange allocations to the position 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. In particular, trade between dealers and other financial institutions such as hedge funds, pension and insurance companies has increased sharply in recent years. This trade now accounts for around 40 per cent of the global turnover.⁶¹

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.

⁵⁸ Orders submitted are automatically matched without the brokers having to contact one another.

⁵⁹ See the description in the section on the fixed-income market.

⁶⁰ Source: Bank for International Settlements (BIS).

⁶¹ Source: Bank for International Settlements (BIS).

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.

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 EBS (Electronic Broking System). 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. 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 irrelevant, 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, the hub currency for derivative trading in SEK against other currencies is not EUR 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 described in Annex 2 as well.

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. These counterparties comprise the four major banks, plus six large international participants.⁶² According to a survey conducted by the Bank for International Settlements (BIS) every three years – most recently in April 2007 – the Riksbank's counterparties account for around a half of the global turnover in SEK.⁶³

According to the Riksbank's statistics, trading among its counterparties, in which SEK was one component in the currency transaction, averaged around SEK 370 billion daily during 2007 (see Chart 9 below), representing a rise of SEK 60 billion per day since the previous year.⁶⁴



Chart 9. Average daily turnover in Swedish kronor SEK billion

⁶² The Riksbank's counterparties in foreign exchange transactions in 2007 were ABN AMRO Bank, Citibank N.A., Danske Bank, Deutsche Bank, JP Morgan Bank, Nordea, SEB, Svenska Handelsbanken, Swedbank and UBS.
⁶³ "The Triennial Central Bank Survey", Bank for International Settlements (BIS), April 2007.

⁶⁴ Only one leg of the swap transaction is included in these figures.

Of this, the daily turnover in spot transactions average around SEK 85 billion in 2007, an increase of SEK 15 billion per day compared to the previous year. The turnover in foreign exchange forwards in SEK at the Riksbank's counterparties in 2007 totalled approximately SEK 39 billion per day. This represented an increase of around SEK 16 billion, compared to the figure for 2006.

The turnover in foreign exchange swaps in 2007 totalled approximately SEK 232 billion per day, an increase of around SEK 30 billion per day on the 2006 figure. Of the total, the turnover in short swaps – with maturities of up to two days,⁶⁵ – accounted for around SEK 141 billion per day, compared to roughly SEK 127 billion per day in 2006. The turnover in longer swaps, with maturities of between two days and 18 months,⁶⁶ totalled around SEK 91 billion per day (compared to around SEK 74 billion per day in 2006).

The turnover in foreign exchange options among the Riksbank's counterparties decreased marginally during 2007, by an average of around SEK 500 million per day to a total of approximately SEK 13.5 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 survey mentioned above, average turnover totalled around SEK 150 billion per day in April 2007.

According to the BIS survey, 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, the SEK attracts interest outside Sweden as an alternative currency to the euro. This provides participants with an option for spreading their currency risks (diversification). 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

⁶⁵ Known as overnight and tomorrow-next swaps.

⁶⁶ 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 regard to maturity periods for foreign exchange swaps are described in the section on derivatives.

takes place. An alternative definition of the Swedish foreign exchange market is all the foreign exchange that takes place in Sweden, irrespective of the currency pairs involved.

One issue examined in the BIS survey 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 1995 to 39 per cent in 2007 (see Table 3 below). 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 3. The six currencies most frequently involved in foreign exchange in Stockholm Per cent

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

Source: BIS

Note. The figures represent the month of April.

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.

Several different kinds of intermediary are often included in one and the same 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 serv-

			FUND		LIFE	
PARENT		MORTGAGE	MANAGEMENT	INVESTMENT	ASSURANCE	FINANCE
COMPANY	BANK	INSTITUTION	COMPANIES	BANK	COMPANY	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 Handels- banken AB	Svenska Handels- banken AB	Stads- hypotek AB	Handels- banken Fonder AB	Handelsbanken Markets, not a separate company but a business division in the group	Handels- banken Liv AB /SPP Livför- säkringar AB	Handels- banken 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 Fonder AB	Swedbank Markets, not a separate com- pany but a business division in the group	Swedbank Försäkring AB	Swedbank Finans AB/ Jordbruks- kredit AB
Danske Bank A/S	Danske Bank Sverige*	Provided by bank	Danske capital**	Provided by bank	Danica**	Provided by bank
Skandia AB	Skandia- banken AB	Provided by bank	Skandia Fonder AB	Skandia Link Multifond AB	Livförsäkrings- aktiebolaget Skandia	-

Table 4. Division of business activities in the Swedish banking groups

** Common specialised entities.

Source: The banks' annual reports

Note. The companies do not group themselves in accordance with the above table. Hence, a company sometimes covers several business activities. The groups may have additional companies which are not listed above.

^{*} Through Östgöta Enskilda Bank/province banks.

ices in the entire financial field. In Sweden, there are four major bank groups – Swedbank, Svenska Handelsbanken, Nordea and SEB.

To gain an idea of the group's lending, for example, it is therefore not sufficient simply to look at the lending activities of the group's banking arm; it is also necessary to include the lending carried out by its mortgage institution and finance company. However, financial groups do not organise their businesses in identical ways. For example, two of the four major banking groups have their securities trading businesses in separate companies, while the others have opted to offer these services within the framework of the bank. Since last year, SEB has decided to merge SEB Finans and SEB Bolån with the bank. Table 4 provides an overview of the way in which the business activities have been divided within the six largest financial groups in Sweden.

To those who analyse financial companies, it is often advantageous to assess the corporate group as a whole, whether the perspective is that of an equity analyst or supervisory authority. Since the statistics in this publication only deal with statistics on the Swedish financial market, it includes the foreign branches of Swedish banks but not their foreign operations carried out through subsidiaries. Since the four major Swedish banking groups have significant operations outside Sweden, which are important to take into account in an analysis, a short review is made of the foreign operations in the Box "Foreign operations of the major banks".⁶⁷



Source: AP pension funds annual reports and the Riksbank. Note. The diagrams show the balance sheet total for banks, mortgage institutions, other credit market companies and securities companies, while for insurance companies and the AP pension funds they show investment assets and for the fund companies they show the funds managed.

⁶⁷ See the Financial Stability report, published by the Riksbank twice a year, for a more detailed review of all of the activities of the major banks.

However, the banks, mortgage institutions, insurance companies, securities companies etc. will be dealt with separately in this publication. Chart 10 provides an overview of the extent of the operations conducted in the most important categories of financial intermediaries. The pie chart on the left shows the total assets of the credit institutions i.e. the total book value of their assets shown on their balance sheets. The chart on the right shows the total value of the assets managed by intermediaries such as insurance companies, fund management companies, the AP funds, and securities companies.

Credit institutions

The credit institutions are specialists in assessing and monitoring credit risk thanks to the often long-term relationships they have with their customers. Consequently, they play an important part in ensuring the supply of capital in the economy. 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 1 July 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.⁶⁸



⁶⁸ According to the Act that came into force on 1 July 2004, other undertakings besides banks and credit market companies may, subject to certain conditions, also accept deposits from the public. However, these deposits are not covered by the deposit guarantee scheme. The purpose of the deposit guarantee scheme is to protect customers' deposits, in short notice accounts, of up to SEK 250,000 per customer per institution. 55

Perhaps the most critical function of banks in society is 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 plus a number of payment services associated with the transactions.

In general, credit market companies are specialist lenders within a particular area. Among credit market companies, *mortgage institutions* and *finance companies* have the largest market share. Chart 11 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 almost half of total lending by the credit institutions to the public. This corresponds to around SEK 2,700 billion (see Chart 11). In the Swedish market, the four largest banking corporations, Swedbank, Handelsbanken, Nordea and SEB, together account for almost 80 per cent of the banks' total assets (see Table 5).

In addition to the limited liability banks, the Swedish market includes savings banks and co-operative banks. There are a large number of independent savings banks in Sweden. These are 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.

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.

Table 5. The ten largest banks and bank branches, total assets at year-end of 2007 SEK billion

Handelsbanken	1,577
SEB	1,368
Swedbank	998
Nordea Bank	905
Danske Bank ¹	617
Skandiabanken	56
Länsförsäkringar Bank	51
Carnegie Investment Bank	50
DnB NOR Bank ¹	39
GE Money Bank	38
Total 10 largest	5,699
All banks	6,083

¹ Foreign branches

Source: The Riksbank

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.

At the end of 2007, there were a total of 126 banks established in Sweden. These comprised 30 limited liability banks (of which two were foreign), 69 savings banks, 25 foreign-owned branches and 2 co-operative banks.

The banks' assets and liabilities

The banks' assets consist for the most part of loans to the public, which at the end of 2007 totalled SEK 2,648 billion, corresponding to 44 per cent of total assets (see Chart 12). Approximately 40 per cent of lending to the public went to Swedish non-financial companies and 20 per cent to Swedish households (see Chart 13). A third of the lending went to the foreign public. However, this only accounts for half of the Swedish banks' total lending to the foreign public since it does not include their lending through foreign subsidiary banks.⁶⁹

As well as lending to the public, the banks also have large claims on Swedish financial institutions.⁷⁰ These claims represented around 10 per cent of the banks' assets. In addition, around 15 per cent of the assets consisted of bonds and other interest-bearing securities.



Chart 12. The Banks' assets

SEK billion





Source: The Riksbank

⁶⁹ See the Box "Foreign operations of the major banks" for a short review of total foreign lending.

⁷⁰ The financial institutions include banks, finance companies and securities companies.

Bank deposits from the public accounted for over 30 per cent of the banks' total liabilities during 2007 and at year-end totalled SEK 1,911 billion (see Chart 14). Swedish households accounted for around 40 per cent of these deposits and Swedish non-financial undertakings for around 30 per cent (see Chart 15). The banks' liabilities to depositors abroad were just under a quarter of all deposits from the public. In addition, the banks had liabilities in the form of deposits from both Swedish and foreign financial institutions. The banks also have liabilities in the form of securities issued. The banks' equity only constitutes a minor part of total assets.

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.⁷¹

MORTGAGE INSTITUTIONS

Chart 14. The banks' liabilities

and equity

The primary purpose of mortgage institutions is to finance 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 35 per cent of the total lending of credit institutions.



Chart 15. The banks' deposits from the public, by lender category SEK billion

⁷¹ More information about these corporate forms is available in the Box Credit derivatives and structured products in the chapter *The financial markets*.

The foreign operations of the major banks

he four major banking groups have significant operations outside Sweden, in particular in the other Nordic countries.⁷² Expansion has taken place through acquisition of subsidiaries or the establishment of branches. A geographical distribution of borrowing shows where operations take place in the respective group.

Lending accounts for around 60 per cent of the major banks' total assets. Foreign borrowers now account for half of total lending. Of this half, between 40 and 60 per cent takes place through lending through foreign branches and the rest through subsidiaries. However, there are clear differences between the major banks. Nordea has only just over a quarter of its lending in Sweden and the majority of the loan volume consists of loans in the other Nordic countries. Handelsbanken and Swedbank have the major part of their lending in Sweden, while SEB has just under half its lending in Sweden.

Handelsbanken also has lending in the other Nordic countries. Swedbank and SEB are the two major banks with considerable operations in the Baltic countries. SEB also has a large part of its lending in Germany. Chart 16 shows the geographical distribution of lending in the major Swedish banking groups.





Source: Bank's annual reports and the Riksbank

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⁷² More information about the four banking groups may be found in the Riksbank publication *Financial Stability* published twice a year.

There are in all seven mortgage institutions in the Swedish market. Four of these are part of a banking group.⁷³ SBAB and Venantius AB are owned by the State. FriSpar Bolån is partly owned by SBAB, Sparbanken Finn and Sparbanken Gripen.

Stadshypotek and Swedbank Hypotek, which are owned by the Handelsbanken and Swedbank groups, respectively, are the largest institutions. Together, they account for approximately 65 per cent of the total assets held by mortgage institutions (see Table 6).

At year-end 2007, lending by the mortgage institutions to the public amounted to SEK 1,595 billion. Lending to single-family dwellings and multi-family dwellings together comprised the largest part, approximately 80 per cent (see Chart 17). Lending to tenant-owner apartments has increased very sharply and is now more than seven 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. During 2007, SEB Bolån was merged with its parent bank and is no longer a freestanding mortgage institution. This is the explanation for the reduction of the market share and volume of the mortgage loan institutions in 2007 compared with 2006.

Interest rates on loans can be fixed, for different terms, or variable. The choice of fixed-interest period is affected by customers' expectations as to how short-term and long-term interest rates will change. In December 2007, the percentage of new loans granted at variable rates was 46 per cent. Fixed-rate loans with terms of five years or more and fixed-rate loans with shorter terms accounted for 25 per cent and 29 per cent, respectively, of total new loans (see Chart 18).

Of the mortgage institutions' total loan stock, the percentage of variable-rate loans increased sharply during the period 1998–2002. In 2003, however, the increase in the number of variable rate loans

	TOTAL ASSETS	%	LOANS	%	
Swedbank Hypotek	640	35	529	33	
Stadshypotek AB	541	30	524	33	
Nordea Hypotek	320	18	316	20	
SBAB ¹	346	14	157	10	
Länsförsäkringar Hypotek	53	3	48	3	
Frispar Bolån	21	1.0	20	1.0	
Total	1 877	100	1 594	100	

Table 6. Mortgage institutions in Sweden, total assets and loans at year-end of 2007 SEK billion

¹ Including SBAB's wholly-owned subsidiary the Swedish Covered Bond Corporation.

Source: The Riksbank

⁷³ Handelsbanken, Nordea, Swedbank and Danske bank.

came to a halt but began to grow again between 2004 and 2007 (see Chart 19). The percentage of fixed-rate loans for five years or more has declined since 1998. From having accounted for half of the volume of the loan stock in 1998, the proportion of fixed-rate loans with terms of five years or more is down to around 20 per cent. At yearend 2007, 37 per cent of the total consisted of variable-rate loans. 39 per cent of loans at fixed rates were for terms of up to five years while around 25 per cent had fixed rates for five years or more.

The mortgage institutions mainly obtain funding for the credit granted by issuing bonds and certificates (see Chart 20). These are purchased 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 bank. 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 endeavour 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 too 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.



Chart 17. Lending by mortgage

institutions to the public





Source: The Riksbank

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At year-end 2007, borrowing through bonds and debentures totalled SEK 1,152 billion while short-term borrowing through certificates amounted to SEK 167 billion.

OTHER CREDIT MARKET COMPANIES

Other credit market companies also include finance companies besides mortgage institutions. At year-end 2007, lending by these institutions comprised 9 per cent of total lending by credit institutions. Approximately one-quarter of the total assets of SEK 739 billion is attributable to the four major banking groups (see Table 7).

Table 7. The ten largest companies in the category other credit market companies, total assets at year-end 2007 SEK billion

Svensk Exportkredit AB	289
Kommuninvest i Sverige	105
Handelsbanken Finans AB	56
Landshypotek AB	46
Nordea Finans Sverige AB	40
Swedbank Jordbrukskredit	37
Swedbank Finans	30
AB Volvo Finans	25
SEB Kort	9
Wasa Kredit	9
Total 10 largest	646
Total, other credit market companies	739

Source: The Riksbank





Source: The Riksbank





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 typically have specialist competence in various kinds of financing, for example leasing and factoring services for corporate customers and promissory note loans and credit card accounts to households. For administrative reasons, they still operate as independent companies within the banking groups.

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

The specialised finance companies focus on granting loans to a particular sector. The largest of these institutions 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 at the end of 2007 to SEK 437 billion (see Chart 21). Of these loans, 48 per cent were made to Swedish companies, while 33 per cent went to Swedish households and 21 per cent to public borrowers abroad. There are 55 other credit market companies in the Swedish market, of which 48 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 finance has increasingly been channelled through a special type of intermediary, the private equity investment company. Through venture capital funds, they are able to own unlisted companies, known as portfolio companies.

Private equity investment may basically be categorised as investments in early phases of a company's life cycle, known as venture capital, and investments in later phases of the company's life cycle, known as buy-out investments. Early phase investments usually entail high risk since 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 and undertaking therefore have to seek another form of financing. 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.

In Sweden, the first private equity investment companies were established at the end of the 1980s. However, the sector has grown rapidly, especially in recent years. According to the Swedish Venture Capital Association (SVCA), 128 private equity investment companies, with a total capital of around SEK 320 billion were operating in May 2007. The majority – almost 75 per cent – of these focus on the buyout segment. Approximately half of the assets managed are invested in portfolio companies.⁷⁴

In Sweden, just over 1 per cent of GDP is invested in private equity through private equity investment 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. In-

⁷⁴ Information from the Swedish Venture Capital Association, www.svca.se

stitutional investors, such as pension funds, fund-in-fund managers and banks are among the predominant categories of investors.⁷⁵

Insurance companies, pension funds and fund management companies

Financial intermediaries also include a number of middlemen whose prime concern is not the provision 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 other's 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 enables private individuals to assure their livelihood after retirement. Life assurance provides security for their survivors on the early death of the assured. Life assurance products are therefore often regarded as a form of long-term saving. The insurance companies invest the premiums they receive in the securities market.

Other forms of long-term saving 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 2007, there were 361 Swedish insurance companies active in the domestic market. In addition, 31 foreign companies were operating through branches in Sweden. Altogether, the insurance companies/groups had investment assets for SEK 2,609 million at year-end 2007. Most of the Swedish insurance companies were small local non-life companies but the market is concentrated to a few major companies. The ten largest insurance companies together accounted for around 90 per cent of the total investment assets (see Table 8).

The insurance companies are either limited liability companies that distribute their profits or companies run according to mutual principles. Companies run on mutual principles do not distribute any surpluses as dividend. They are instead passed on to policyholders. 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, although totally different types of risks.

Life assurance companies can pay out compensation when an insured person is unable to work, dies or reaches retirement age. The type of compensation offered by the insurance cover depends on how the policies are formulated. The products may be seen as insurance, but also 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 yield from a unit-linked policy is determined by the performance of the individual funds. Saving in unit-linked insurance works essentially in the same way as saving in mutual funds (see the section on mutual funds).

Non-life insurance companies compensate damage to property and pay third-party damages. Policyholders pay a premium to the companies in order to receive compensation for damaged property in connection with the insurance event. Unlike life assurance, non-life assurance policies are not a form of savings. The activities of these companies in the securities market takes 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.

The assets of a dividend-paying limited liability life assurance company consist of investment assets. Their liabilities comprise prima-

Table 8. The ten largest life assurance companies, investment assets at year-end 2007 SEK billion

LIFE ASSURANCE COMPANIES	INVESTMENT ASSETS
Alecta	427
Skandiakoncernen	402
SEB Trygg Liv	364
AMF Pension	290
Länsförsäkringar	234
Folksam	184
Handelsbankskoncernen	170
Swedbank Försäkring	71
If Skadeförsäkring	67
Trygg-Hansa	34
Other	115
Total	2,356

Sources: The Swedish Insurance Federation

rily of equity and technical provisions. The technical provisions must correspond to the amount needed by the company to meet all the commitments that arise from the insurance contracts it has entered into.⁷⁶ 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 policyholders do not take on any financial risk. On the other hand, financial risk is assumed by the policyholders in a company operated on mutual principles, where they themselves "own" the equity.

The total investment assets of the nationwide life assurance and non-life assurance companies amounted at year-end 2007 to SEK 2,609 billion. Of these assets, the life assurance companies accounted for roughly 80 per cent (see Chart 22).

The investment assets of insurance companies comprise mainly equities and bonds (see Chart 23). The percentage invested in equities fell during 2002, although it has risen during the past five years. In December 2007, equity accounted for around 50 per cent of the capital managed. Holdings of bonds and short-term investments made up 39 per cent and 6 per cent respectively of investment assets. Investments in properties only accounted for a minor part and 31 per cent of investment assets were foreign investments.



Chart 22. Investment assets of the





Source: Statistics Sweden

Source: Statistics Sweden

⁷⁶ The size of these technical provisions is calculated using a number of factors, 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.

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. At year-end 2007, 79 insurance associations were operating, with total assets amounting to just over SEK 137 billion.⁷⁷

Pension foundations are another form of pension savings. 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 2007, there were around 2,300 pension foundations in Sweden.

FUND MANAGEMENT COMPANIES

Fund investment in Sweden totalled SEK 1,572 billion in managed capital at year-end 2007.

The funds are managed and administered by fund management companies. 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 9). In the case of these fund management companies, the banks' branches or Internet services act as distribution points.

The assets managed in equity funds amounted to SEK 895 billion at year-end 2007. 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 354 billion and SEK 247 billion respectively for the same period. There are also hedge funds, which differ from other

⁷⁷ 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, since these assets are also included in investment assets of fund management companies.

funds in that their management is characterised by a relatively large amount of freedom regarding both investment strategies and the financial instruments that may be used, such as derivatives. The assets managed in hedge funds totalled around SEK 76 billon at year-end 2007 (see Table 10).

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 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.

At the end of 2000 equity funds accounted for almost 65 per cent of the total investment fund assets. In 2001 and 2002, however, this proportion decreased due to the fall in prices in the stock market.

Table 9. The ten largest fund managers,
assets managed at 2007-12-31
SEK billion

Robur	390
SEB	282
Handelsbanken	213
Nordea	191
Länsförsäkringar	65
Skandia	54
Folksam	52
AMF Pension	44
Danske Fonder	26
Catella	22
Total 10 largest	1,338

Source: Svensk Fondstatistik (part of MoneyMate)

Table 10. Mutual fund wealth SEK billion

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Equity funds Fixed-income	365	592	595	522	343	445	514	733	868	895
funds	104	116	123	162	205	244	275	310	340	354
Mixed funds	121	169	205	154	119	141	158	202	238	247
Hedge funds	-	-	-	28	36	43	50	71	82	76
Total	591	877	924	867	702	873	997	1,316	1,528	1,572

Source: Svensk Fondstatistik (part of MoneyMate)

In 2003 the stock market started to recover, which led to investment fund assets again increasing. Of the total investment fund assets, equity funds accounted for 57 per cent at year-end 2007, fixed income funds for 22 per cent and other funds for 21 per cent (see Table 11).

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 paid out 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 also 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.⁷⁸ One restriction is that at least 30 per cent of the funds' assets must be invested in low-risk debt securities. 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 2007, the investment assets of the AP funds totalled SEK 987 billion. This can be compared with life assurance companies and fund management companies, whose investment assets amounted to SEK 2,141 billion and SEK 1,572 billion respectively in December 2007.

⁷⁸ Up to 5 per cent of the assets may be invested in unlisted securities. However, these investments must take place indirectly through mutual funds or private equity investments 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. The term also covers foreign companies that engage in securities trading through a branch in Sweden. At present, 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. 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. In this way, they make an important contribution in reducing the information gap between issuers and investors in different kinds of securities issues. They are also able to provide credit to customers in conjunction with securities purchases and administrative services. They also accept deposits, to a limited extent, for these services.

At year-end 2007, 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 2007, seven were full-range companies, i.e. they were licensed for all the above-mentioned securities trading activities. These companies are as a rule also members of the OMX Stockholm.

The securities companies not licensed for all activities often specialise in one or a small number of activities and therefore only need licences for those. This group includes, for example, a large number of smaller asset management companies, as well as companies with other specialisations.

Among the securities companies, there are a number of power and commodity dealers.

Because many securities companies concentrate on arranging contracts between potential buyers and sellers, their balance sheets are often relatively modest. At year-end 2007, the total assets of the securities companies amounted to about SEK 26 billion.⁷⁹

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 31 banking companies registered in Sweden at year-end 2007, 25 were licensed for securities trading. Eleven of these were members of OMX Nordic Exchange Stockholm and eight of them were licences for a full range of securities trading services.⁸⁰ These include the four major banks Swedbank, Handelsbanken, Nordea and SEB.

Another group of companies operate basically only in securities trading, but have, for various reasons, applied for and been granted a banking licence, mainly to avoid restrictions and competitive disadvantages vis-á-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, 61 savings banks had one or more securities trading licences at year-end 2007. 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 full-range bank.

 $^{^{\}prime 9}$ Based on the 33 largest securities companies, which account for most of the securities companies' total assets.

⁸⁰ See review of investment business licences in the in-depth study "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 in Sweden are contained in the **Banking and Financing Business Act.** A licence 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.

Banks may operate in limited liability form, as savings banks and as co-operative banks. The operations of all forms of banks are regulated by 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 member banks are regulated in separate acts.

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. The term also covers the acquisition of claims for financing purposes 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 institutions⁸¹ 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 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 1 January 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 adequate internal capital valuation and capital base in relation to their risk taking, risk management system and internal control.

⁸¹ In accordance with the Obligation to Notify Certain Financial Operations Act.

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 250,000 per customer and institution. However, the deposit companies referred to above are not covered by the deposit guarantee.

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**, 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 on the supervision of Swedish insurance companies. The commercial rules distinguish between non-life assurance and life assurance business, operations that in principle must be conduced 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 they must comply with.

On 1 November 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

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Authority may grant licences for the following securities activities:

- Reception and passing on orders relating to one or more financial instruments,
- 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,
- Provision of investment advice to customers relating to financial instruments,
- 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 platforms.

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. Questions relating to marketplaces for securities trading and clearing and settlement of securities transactions are mainly regulated in the Stock Exchange and Clearing Operations 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

One of the financial system's most important functions is to create the right conditions for safe and efficient payments and securities transactions. This requires various routines, instruments and systems and is referred to by the common term "the financial infrastructure".

This chapter first describes some different types of common payments and the routines associated with these. This is followed by a discussion of the use of different payment instruments in Sweden and the most important systems in the Swedish financial infrastructure. The chapter concludes with an illustration of the payment flows in Sweden.

Different types of payments

When we engage in trade, we exchange money for goods or services. Payment and delivery either take place immediately or at a later time. We describe here how different types of payments are carried out. In a simple payment, cash is exchanged for a good or service. A more complex payment is, for example, what takes place in securities trading. This requires a number of intermediaries and takes several days to carry out.

A simple payment

Every payment is basically a transfer of an amount between two parties, a payment sender and a payment recipient. The way in which this transfer is made is determined by which *payment instrument* is used and the *payment channel* chosen by the parties.

The payment instrument is means used to pay for a good or service. Cash payment, for example, means that the claim is extinguished through the exchange of the payment instrument, banknotes

Figure 2. Exemple of a cash transaction



and coins. No intermediaries are required here. An example of a cash transaction is shown in Figure 2. A and B may be individuals, companies or public authorities. A buys a product or service from B and pays for it by giving B cash.

Examples of other payment instruments are cards, credit transfers, giro transfers, cheques and money orders. Unlike cash payments, payments using these instruments are not finalised at the time of payment, instead they entail a transfer of money between two accounts at one or more banks, which then act as payment intermediaries. These instruments are therefore said to fall in the category *accountbased instruments*. Such instruments can often be used in different *channels*. A bank card, for instance, can be used for payments in a shop, on the Internet or by telephone. The payment channel thus states which route has been chosen to transmission of the information on the transaction.

Payment using an intermediary

The main difference between cash payments and account-based payments is that the latter require intermediaries. This means that more participants are involved in the transaction.⁸² It follows from this that in account-based payments, a time lag often arises between when the payment was initiated and when it is finalised.

The payment sender initiates the payment by giving the bank an order to transfer the funds. The bank transfers the funds from the sender's account to the recipient's account and informs the recipient that his/her account has been credited. When the money has been transferred, the payment has been *settled*.

Figure 3 illustrates the transaction between A and B. The difference from the previous example is that A now pays via an accountbased instrument. Both A and B have accounts at the same bank. The bank receives information about the transaction, debits A's account and credits B's account with the same amount.





⁸² However, cash also requires an infrastructure for storing and distributing the cash to post offices, banks and the general public. The banks are central participants in the payment system⁸³ because they provide the accounts through which the households and companies make their payments. In addition, the banks supply their customers with the actual instruments of payment. A can pay B in cash, as in Figure 2, or by card, cheque or giro transfer, as in Figure 3. All of these are payment instruments to which A has access via a bank branch or, as is often the case with cash, via a bank-owned ATM or a cash dispenser in a shop.

Payment using more than one intermediary

The picture becomes more complicated if A and B have accounts with different banks. It is then necessary to have a more highly developed *financial infrastructure*, where information on the transaction can be transferred between the parties concerned. Such an infrastructure covers all of the systems, routines and rules required to manage an account-based payment from beginning to end.

The financial infrastructure manages not only payments but also transactions in financial instruments (see the separate section on *Transfers in trading with financial instruments* further on).

A payment using an account-based instrument from A to B, given that A and B have accounts with different banks, requires a financial infrastructure as illustrated in Figure 4.

The processes managed within this financial infrastructure can usually be summarised in three steps. Firstly, the payment must be *checked* and *authorised*. This is often performed at the actual point of payment and consists of a check of the parties' identities and the validity and genuineness of the payment instrument. It will also involve a check that sufficient funds are available to cover the transaction amount (funds sufficiency check). After these checks have been verified, payment can be authorised, that is approved.

Figure 4. Exemple of a payment where the payer and payee have different banks



⁸³ A payment system comprises the systems, routines and regulatory frameworks required to make payments and transfer securities between different parties.

Secondly, *clearing* of the transaction takes place. This means that instructions are compiled. Clearing is carried out by a *clearing organisation*. In this example, clearing involves a compilation of transactions between two parties, A's and B's banks, and is therefore known as *bilateral* clearing. If several accounts and payment intermediaries are involved and if the compilation of transactions is conducted between all parties at the same time, this is called *multilateral* clearing.

In addition, clearing positions can be calculated either as gross amounts or net amounts. A's bank may, for example, have to pay B's bank SEK 100, while B's bank has to pay A's bank SEK 50. The clearing positions can then be calculated as gross amounts, i.e. total amounts. In this case, it means that A's bank pays SEK 100 and B's bank pays SEK 50.

Alternatively, the clearing organisation can use bilateral netting. This takes place when two parties offset their debts and claims against one another. The effect is to reduce the parties' risks in relation to one another and liquidity requirements. In this case, netting of the clearing positions takes place, which means that A's bank pays SEK 50 to B's bank.

Multilateral netting involves all participants' debts and claims being offset against one another. Each participant then has a single claim on, or a debt to, the other participants.⁸⁴

In some cases, clearing can instead be performed through a central counterparty. This participant then becomes the counterparty in every transaction. The recipient then has a claim on the central counterparty and not on the payment sender while the central counterparty has a claim on the sender. It is also possible for the central counterparty to use netting.

In the third and final step, the payment is *settled*.⁸⁵ This means that the actual transfer is made from the payment sender's account to the recipient's account. If the payment sender and the recipient have accounts with different banks, settlement takes place via the accounts the banks themselves operate for this purpose in a *settlement system*. A settlement system can thus be likened to a bank for the banks. The payment leads to the sender bank's account being debited and the recipient bank's account being credited with the amount transferred. The sending, or receiving, bank in turn debits or credits respectively

⁸⁴ If we assume instead that there are three participants, where A is to pay 100 to B and 120 to C, where B is to pay 50 to A and 20 to C and where C is to pay 150 to B, the net positions that arise are as follows: for A: -170, for B +180 and for C: -10. The payment flows can then be simplified so that A pays 170 to B and C pays 10 to B.

⁸⁵ The three components of the process – checking/authorisation, clearing and settlement – also take place when the payment sender and the payment recipient have accounts at the same bank, but are then dealt with by the bank's internal systems instead.

the customers' accounts. This settlement process normally takes place in the accounts that the banks and certain other financial companies, such as the clearing organisations, have with the central bank of a country. Payments are settled in the central bank's settlement system which require transfer of funds between different banks and clearing organisations. The payment is completed when the three components checking/authorisation, clearing and settlement have been processed.

Large-value payments and retail payments

Payments between banks and clearing organisations are different in character from those made by individual companies and households. The former type of payments are usually referred to as *large-value payments*, while the latter are termed *retail payments*.

The large-value payments are usually for substantial 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 require more rapid settlement.

Retail payments are payments of relatively small amounts that are carried out in large numbers. They include both recurring payments, such as monthly bills, company invoices and salary payments, and also less urgent one-off payments, which are made by cash, cheques or cards, for instance. Retail banks often have one or more banks as intermediaries. However, in some cases, company payments may cover sufficiently large amounts to be classified as large-value payments.

Transfers when trading financial instruments

In a transaction with financial instruments, such as equities or bonds, the process is similar to the example with payment using more than one intermediary. A similar infrastructure is therefore needed. The difference is that trading in securities necessitates two flows. In addition to the transfer of the payment from buyer to seller (the payment leg), there is also a transfer of the actual security from seller to buyer (the security leg). It is therefore also natural to integrate as far as possible the infrastructure required for the security leg with the infrastructure for the payment leg. A chart showing securities trading is provided in Figure 5.

A securities transaction consists of three steps: When A and B have given their buy and sell orders respectively to the marketplace and these have been matched, a transaction is created. This is the first step. Matching entails that a check is made to ensure that the brokers on the buying and selling side have the same perceptions with regard to amounts, products and times. Given that trading in securities Figure 5. Exemple of a transaction using financial instruments



Note. Some securities are traded on marketplaces such as for example a stock exchange. Other securities can be traded bilaterally. In both cases the transactions are sent to a settlement system for control, clearing and settlements.

involves large amounts of money, the security aspect is especially important; any misunderstanding during such a deal could have serious financial consequences.

In the next step, the transaction is sent to the settlement system. The identity of the parties is then checked and whether it is possible to make the two transfers. It also compiles instructions on the transfers. The deal is finally settled in the third stage. This takes place by transfers being made in both the payment leg and the security leg. The securities transaction is then concluded.

Transfers in foreign exchange transactions

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

Foreign exchange transactions can give rise to substantial risks when they are to be settled. If the banks that are trading with one another are in different time zones and are open at different times, there is a risk that one party in a foreign exchange transaction will pay in the currency sold while the other party will not receive the currency purchased. This entails full credit risk⁸⁶ and is called Herstatt risk. This risk is eliminated when the currency is settled in systems where, as in the case in the international system CLS, Continuous Linked Settlement, payments take place simultaneously (you can read more about CLS in a later section).

However, not all foreign exchange transactions are settled in CLS. This may be due to the counterparty with which the transaction is entered not being a member of CLS. It may also be because the financial instrument or currency traded with cannot be settled in CLS.

⁸⁶ Credit risk is the risk that a borrower will not be able to meet his commitments.

Currency payments that cannot be settled via CLS require mediation by banks in other countries. This is usually the case when the foreign exchange trade derives from ordinary payments and not from trading in, for example, financial instruments. If, for example, a foreign bank wishes to make payments in Swedish kronor on its own behalf or on behalf of a customer at a Swedish bank, the bank opens an account at a Swedish bank. The Swedish bank will then be 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 the final payment recipient. The Swedish bank withdraws in turn the stated amount in kronor from the foreign bank's account. If the recipient of the payment has an account in the same bank as the foreign bank, the amount will be paid in directly to this account. The payment will then have been settled. If the recipient is another Swedish bank or has its account with another bank, the payment must first pass through the Swedish payment system. A payment will then arise in the central bank's settlement system.

Use of different payment instruments

The previous section provided an outline of the steps between participants in different kinds of payments. This section goes into greater detail as to how and to what extent the different payment instruments are used in Sweden. As pointed out above, payments can be classified according to the type of payment instrument used. A rough classification can be made between *cash payments* and *account-based payments*. Another distinction may be made between *retail payments* and *large-value payments*. Today, large-value payments are now made only through transfers between accounts. Retail payments, on the other hand, can be made using different instruments of payments, both account-based and cash.

CASH PAYMENTS

From the point of view of risk, cash payments have the advantage of that they do not entail any time lag between the completion of the deal and payment settlement. The seller supplies the product or service at the same time as the buyer hands over cash. Both sides of the transaction are thus finalised. In addition, banknotes and coins, because they are issued by the Riksbank, are claims against the central government that can always be redeemed by the banks. Holders of banknotes therefore run no credit risk. On the other hand, other types of risk arise with cash, such as counterfeiting or loss through theft or robbery. Cash is primarily used in transactions involving small amounts. Cash payments account for a large proportion of the number of transactions. However, this proportion has fallen in recent years, in favour of the use of cards. As there are no overall statistics on cash usage, this can only be estimated. Measuring the value of currency in circulation ("M0" in economic terminology) relative to gross national product (GDP) can give an indication of cash use (see Chart 24). Over time, this measure has declined in Sweden. The value of banknotes and coins as a percentage of GDP has more than halved since 1950, from 10 to 3.2 per cent. This reflects the emergence of alternative payment instruments, particularly cards.

Given the rapid rise in the use of cards, especially in the late 1990s, it might have been expected that the use of cash would continue to fall. This, however, has not been the case; the trend of falling demand for cash has halted in recent years.⁸⁷ In December 2007, the public's holdings of banknotes and coins totalled SEK 100 billion in Sweden. This was in line with the previous year when the corresponding figure was SEK 101 billion.

ACCOUNT-BASED PAYMENTS

The expression "account-based payments" is a collective term for different types of account transfers. These include cards, giro transfers, direct debit, cheques etc.





Sources: The Riksbank, Danmarks Nationalbank, Norges Bank and Bank of Finland Note. No figures are given for Finland after 2001 as the Eurosystem's reporting of the Euro banknotes affects the amount of the banknotes in circulation since January 2002. This has meant that Finland's banknote figure is not comparable with previous years.

⁸⁷ In recent years, withdrawals from cash machines has decreased. Instead, cash withdrawals in shops (known as cash back) have increased.

Cards are usually divided into three categories: debit cards, charge cards and credit cards. A *debit card* enables the amount for the transaction to be deducted directly from the cardholder's bank account. A charge card provides the cardholder with credit up to a set limit. The debt is paid in full after a specified period. A *credit card* provides the cardholder with credit up to a set limit are cardholder with credit up to a certain limit. Either the entire debt is paid in full, or part of it is repaid, after a specified period. In the latter case, the outstanding debt is rolled over to a new period. Interest is charged on the outstanding amount.

A giro payment is a special type of transfer. The difference between giro payments and other transfers is only of a practical nature. Giro payments use a special number to identify the sender and the recipient of the payment.⁸⁸ Other transfers use the ordinary bank account number. No difference is made in English between giro payments and transfers, both being called "credit transfers".

Direct debit is an agreement giving the payment recipient the right to withdraw a specific amount from the payment sender's account.

Giro payments are mainly used for long-distance payments including monthly bills, and for one-off payments such as final settlement of credit card payments.

A *cheque* is a written instruction from the writer of the cheque to the redeeming bank to pay a particular amount. The payment is made either to the person writing the cheque or to a third party indicated by that person.

In addition to those already mentioned, there are a few more types of account-based payments, although these have limited use. One such example is the *bank money order* which is a special type of cheque. It is made out by the bank to the customer wanting to execute a payment. After the customer has paid the bank, he or she is given a promissory note for the amount paid. The customer can then transfer this promissory note to the payment recipient, who can redeem it at the bank.

⁸⁸ Several bank giro numbers can be linked to one account number.

Single Euro Payments Area (SEPA)

n 2002, the European banking industry produced a vision of a common market for payment services –the Single Euro Payments Area (SEPA). Through SEPA, it is to be possible to send and receive electronic payments in euro, both national and cross-border. This is to work in the same way, on the same conditions, and at the same price as for domestic payments.

The first SEPA payment service was introduced just over five years later. As from 28 January 2008, it has been possible to send and receive SEPA account transfers. It shall also be possible to pay by SEPA direct debit at the latest by November 2009.⁸⁹ Eventually, it is to be possible to use all SEPA-adapted cards in every EU Member State.

To start with, the new SEPA payment services will be offered in tandem with the national payment services. This requires dual systems, which is expensive. The aim is for the SEPA payment services to have received a critical volume by the end of 2010 after which the national payment services can then be phased out.

The SEPA project has most impact on countries in the euro area, although banks from all countries in the EU/EEA and Switzerland participate in the SEPA project. The major banks in Sweden are now able to offer SEPA account transfers in euro. As regards card payments, Swedish bank customers usually have cards which are linked to VISA or MasterCard, which can already be used abroad.90 Since Sweden does not have euro. it will not be possible for the banks' system for national payment services to be phased out and replaced by the systems used for SEPA. However, the Swedish banks have made it clear that all future changes in their own payment systems shall be adapted to SEPA.

⁸⁹ A characteristic of these payment services is that they are based on international standards such as IBAN (International Bank Account Number), BIC (Bank Identifier Code) and UNIFI (ISO 20022) XML message standards.

 $^{^{\}rm 90}$ Bankomat cards, which are national, must be replaced, however.

As mentioned earlier, payments are often classified as large-value payments or retail payments. Although retail payments are often made using cash, the statistics on retail payments only cover the account-based instruments. A breakdown into large-value payments and account-based retail payments by number of transactions and value is contained in Tables 11 and 12.

Countries are often divided into giro/credit transfer-based or cheque-based, depending on how account-based instruments are used. Sweden, like the other Nordic countries, has a largely giro-based payment system. Charts 25 and 26 show how the use of accountbased payment instruments in Sweden has changed in recent years in terms of both number and value of transactions. In terms of value, giro transfers have long been growing in importance, and in 2007 accounted for 94 per cent of the total value mediated. However, their percentage of total transactions has declined during the period. In 2007, giro transfers accounted for 29 per cent of the number of transactions. In 2002, the corresponding figure was 46 per cent. The decline in the proportion of giro transfers corresponds to an increase in the percentage of card payments. Over the period 2002–2007, their percentage of the number of transactions rose by 4 percentage points.⁹¹ Cards now account for 62 per cent of the number of transac-

Table 11. Transaction value, breakdown into large-value and account-based retail payments SEK billion

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Retail payments	10,141	9,105	9,465	9,135	6,896	7,032	7,853	8,763	9,762	11,127
Large-value payments	91,701	100,924	107,210	113,374	114,011	112,358	108,998	111,171	124,751	122,873

Note. The statistics include payments between accounts at different banks. However, they do not include cash payments nor, in most cases, transfers between accounts at the same bank. The reported reductions in volume and value of mass payments in 2002 are due to the acquisition of Postgirot by Nordea so that it became an internal bank system. The credit transfers between postal giro accounts are no longer included in the reported statistics. Most retail payments pass through BGC's netting system. The netted amounts from this system are also included in the category of large-value payments. The large-value payments are defined here as those settled in RIX.

Source: The Riksbank

Table 12. Number of transactions, breakdown between large payments and account-base retail payments Billion transactions

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Retail payments	1,014	1,140	1,207	1,264	1,078	1,308	1,561	1,743	1,959	2,191
Large-value payments	0.3	0.3	0.5	0.7	1.1	1.3	1.3	1.2	1.7	1.9

Note. The statistics include payments between accounts at different banks. However, they do not include cash payments nor, in most cases, transfers between accounts at the same bank. The reported reductions in volume and value of mass payments in 2002 are due to the acquisition of Postgirot by Nordea so that it became an internal bank system. The credit transfers between postal giro accounts are no longer included in the reported statistics. Most retail payments pass through BGC's netting system. The netted amounts from this system are also included in the category of large-value payments. The large-value payments are defined here as those settled in RIX.

⁹¹ The Riksbank only gathers card information for the cards accepted as general instruments of payment. These are often issued by banks in collaboration with the large international card companies such as Visa and MasterCard. It also includes cards issued by American Express and Diners Club. It does not include cards issued by petrol companies, etc.

tions. The use of cheques has gradually declined and at year-end 2007 was virtually non-existent.

INTERNET AS A CHANNEL FOR PAYMENT

Use of the Internet is widespread in Sweden. Today, around 80 per cent of the Swedish households have access to the Internet.⁹² This trend has resulted in an increased use of the Internet as a channel for payments. As may be seen in Chart 27, the number of Internet bank customers⁹³ in Sweden has risen sharply since 2000.

Today's payment solutions for the Internet generally require traditional payment instruments to be adapted to the new payment channel. A good example of this is giro transfers over the Internet. The proportion of persons aged over 15, who pay their bills via Internet has increased from 9 per cent in 1999 to 59 per cent in 2007.⁹⁴

Electronic invoicing services, which are information services, are now linked to the Internet giro transfer service. The payment recipient sends the billing information directly to the Internet bank of the payment recipient, where the recipient can see the entire invoice and



Chart 25. Use of account-based retail payment

Chart 26. Use of account-based retail payment systems SEK billion



Source: The Riksbank

instruments

Note: The reduction in the number of credit transfers in 2002 is explained to the credit transfers between two postal giro accounts no longer being included in the statistics since these are now internal transactions in Nordea. Source: The Riksbank

Note: The reduction in the number of credit transfers in 2002 is explained to the credit transfers between two postal giro accounts no longer being included in the statistics since these are now internal transactions in Nordea.

⁹² Source: Eurostat.

⁹³ When interpreting information on Internet bank customers, it should be borne in mind that a person may

hold accounts at several Internet banks.

⁹⁴ Source: Banker i Sverige (Banks in Sweden), Swedish Bankers' Association, June 2007.

pay it as an ordinary Internet giro without having to key in all the information about the payment itself.

One common method for paying for goods or services on the Internet is to use bank or credit cards. In addition, a number of different techniques are available for making Internet payments secure. One such technique is "e cards", which are fictional bank cards that may only be used on one payment occasion.

Systems for payments in Sweden

The first section of this chapter contained a description of different types of payment. This was followed by a detailed review of how payment instruments are used in Sweden and neighbouring countries. What follows below is a more detailed description of the systems that process payments and trade in financial instruments. These make up the cornerstones of the Swedish financial infrastructure.

RIX

As mentioned in the first section in this chapter, the basis of the payment system is the customers' deposit accounts at the banks. Customers can use these accounts to carry out the payments they need to make.

The banks can in turn make payments via their accounts in the Riksbank's RIX system, which in this way constitutes a central hub in the infrastructure. The banks' accounts with the Riksbank are used for both the direct payments between the banks and for the final settlement of payment orders from bank customers. This means that





Source: The Swedish Bankers' Association Note. When interpreting the data on the number of Internet bank customers it should be noted that the same person can be a customer of several Internet banks.

New payment instruments

Electronic money (e-money)

In simple terms, electronic money may be described as a substitute for cash. Digital value units are credited to a card, a computer or a central server without being linked to a bank account. Electronic money is thus impersonal. No ID check needs to take place at the time of payment. Neither is a PIN code or signature required for payment with electronic money. In this way, the customer can use it anonymously. Electronic money can also be transferred to other people than the person who originally filled the card or the computer with the units. Correspondingly, the value is lost if the card or computer etc. where the money is stored is mislaid or lost. Accordingly, this type of payment instrument is usually used for low-value payments.

Companies that process prepaid payments, known as e-payments, are becoming increasingly common in Internet commerce. By using these companies, neither purchaser nor seller need state sensitive information – such as card number or account number – on the Internet. The most well-known payment company is PayPal, which is registered in Luxembourg, but which operates throughout the world.

Mobile telephone payments (m-payments)

Mobile telephone payment are a payment instruments that includes a mobile telephone at some stage of payment. Today, it is mostly used for communicating a payment instruction.

One example is that journeys by bus and underground with AB Storstockholms Lokaltrafik (SL) may now be paid by sending a text message. A few seconds later, the sender receives a text message from the operator, confirming the ticket purchase, which can be shown to the driver or conductor. The cost is deducted directly from pay-as-you-go telephones and otherwise charged to the telephone bill. 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 retail payments in aggregate form, such as wage payments. Payments arising from transactions in financial instruments are also settled via the RIX system.

In addition to the Riksbank, which owns and operates the system, all of the major banks and clearing organisations participate in RIX (see Figure 6).⁹⁵ Participants in the RIX system can also make payments on behalf of other, mainly smaller banks, which do not participate in the RIX system themselves.

Settlement in the RIX system is based on the principle of real-time gross settlement, which means that payments are settled immediately and individually, provided that the payer has sufficient liquid funds, i.e. cash in its account. This method of settlement entails low settlement risks, but, on the other hand, requires substantial liquidity.⁹⁶ If liquidity at the payer bank is insufficient, the payment is queued until sufficient liquidity is available. In order to ensure the smooth settlement of payment, the banks are able to cover their liquidity requirements by borrowing intra-day funds from the Riksbank. All such borrowing is fully secured.





⁹⁵ The participants in the RIX system are 14 Swedish credit institutions, BGC, VPC, OMX Nordic Exchange Stockholm, CLS, the Swedish National Debt Office and the Riksbank.

⁹⁶ Multilateral net settlement involves offsetting all the participants' debts against one another. This method requires less liquidity, but at the cost of increased risk, as the entire settlement process is halted if one participant – regardless of size – cannot meet its obligations.

Some payments are first netted at one of the clearing organisations BGC, VPC, OMX DM or CLS (see below for more information about these systems). Then, only the resulting net amount is settled in RIX. The vast majority of all payments, however, are sent directly from the participants for settlement in the RIX system.

In 2007, the number of transactions in RIX average around 7,700 per banking day while the daily turnover average SEK 496 billion. This may be compared with the bank giro system, which was designed to handle a high volume of payments, but for considerably lesser amounts. In 2007, the bank giro system mediated on average around 2.5 million payment assignments with an average daily turnover of SEK 27 billion.

Bankgirot

In Sweden, BGC is the main intermediary for retail payments between the banks.⁹⁷ BGC is owned jointly by several banks in Sweden. BGC operates and develops the bank giro system, which is a clearing system for payments in Swedish kronor between bank accounts in Sweden. BGC also carries out certain clearing and settlement services outside the bank giro system.

Currently, 19 banks are members of the bank giro system. The transfers between the banks are made via a bank giro number. This number is an address that refers to a specific bank account. BGC compiles and mediates information to the banks regarding the size of the transfers to be made and the accounts to be credited.

The transactions are cleared in the BGC system as bilateral net transactions. This means that only one payment obligation arises for each pair of participants. The actual settlement of the net positions is made via the participants' accounts in RIX.

This procedure is carried out for a number of different types of payment products designed to meet different needs, for example, giro payments, direct debits, payments to suppliers by companies, salary payments into accounts and tax payments. Each of the payment services has one or more predetermined settlements times each day. In 2007, 620 million payment transactions were mediated by the bank giro system to a total value of SEK 6,734 billion.

The way transactions are managed in the bank giro system differs according to the type of transaction. In certain transactions, the bank giro system manages both authorisation and checking, as well as clearing and settlement. Other transactions, known as pre-debited transactions, will have been authorised at the time of the transaction

⁹⁷ BGC stands for Bankgirocentralen in Swedish.

by another system. The bank giro system then receives information from these systems and is only responsible for clearing and settlement, as well as crediting the customer's account after settlement.

As regards authorisation, BGC only handles electronic payments. Paper-based bank giro products are authorised by an external company, Privatgirot.⁹⁸ These are checked and then converted into data files before being forwarded to BGC.

BGC also manages certain transactions that do not derive from the payment products offered within the bank giro system. Examples of such payments include cheque payments, account-to-account transfers, Internet payments not using a bank giro number, card payments and cash withdrawals via ATMs. What all of these payments have in common is that they have been initiated in systems other than the bank giro system.

Dataclearing is one such system, which is used mainly for standard bank transfers from account to account that do not use a bank giro number as well as for cheque payments. These payment assignments are authorised by the participants in Dataclearing. The assignments are then sent to BGC which takes care of clearing and production of the settlement documentation in the corresponding way as for bank giro products. Dataclearing is operated by BGC on behalf of the Swedish Bankers Association.

Another example is CEKAB.⁹⁹ CEKAB deals with authorisation and clearing of cash withdrawals from certain ATMs as well as authorisation of card payments. Clearing of card payments takes place, however, via Visa's and MasterCard Europe's international networks. The totals for clearing from cash withdrawals and MasterCard Europe's card payments in Sweden are calculated and forwarded via BGC for settlement in RIX.

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

VPC¹⁰⁰

As mentioned earlier, financial transactions require two-stage settlement unlike other types of payments, one for the security and one for the payment. In addition, systems are required for to register the securities and keep account of them. In Sweden, VPC AB clears and settles transactions from the equity market and the fixed-income market.

⁹⁸ www.privatgirot.se

⁹⁹ CEKAB (Centralen för elektroniska korttransaktioner aktiebolag) was established in 1989 as part of the collaboration for operation and management of ATMs within the Bankomat system. CEKAB now has two major business areas – ATM, which deals with ATMs and POS for payment terminals for cards.

¹⁰⁰ VPC is the Swedish abbreviation for "Värdepapperscentralen" (Swedish Central Securities Depository).

OMX Derivatives Markets (OMX DM) clears derivative transactions. Both these institutions participate in the Riksbank's RIX-system where the payment in the securities transaction is settled.

In Sweden today, securities hardly exist in physical form. Instead, securities exist almost exclusively as electronic registrations. As a result, the institution that keeps the accounts in which the various participants' holdings are registered, the central securities depository, is an important participant in the financial infrastructure. VPC registers all transactions arising from issues of, trade in and pledging of securities in Sweden.¹⁰¹

Transactions involving equities or debt securities begin with the investor giving his or her broker an order to buy or sell. Brokers normally trade by acting as counterparties themselves or by seeking a counterparty at a marketplace, for example, a stock exchange. After the broker has found a counterparty to trade with and the transaction is completed, he or she notifies VPC. As part of the clearing process, VPC checks the identity of the brokers, checks that the broker and the counterparty agreed on the securities, the number, the amount, the date of settlement etc. VPC also checks that the seller can deliver the security and that the purchaser can pay. After this, the information required to make the actual transfers is compiled. Only then can the transfers be made, i.e. the transaction is settled.

Transactions with financial instruments often involve large amounts. This makes it important for settlement of both stages of the transaction to take place at the same time. This is known as delivery versus payment.¹⁰² In delivery versus payment, transfer of money and the securities takes place simultaneously. To further reduce the risk, it is important to enable settlement of the payment to be made in "central bank money", at least when the transfer is being made between the main participants of the market. This means that the liquid funds in the settlement accounts used to settle the payment leg of the transaction consists of claims on the central bank and not the commercial bank, which could default.¹⁰³ Settlement therefore takes place in the settlement accounts provided by the central bank.

Each transaction is cleared and settled separately in VPC. The VPC system therefore does not include any netting. The transactions are checked one by one. Settlement takes place by earmarking the seller's securities and the buyer's money in the account and by marking the transaction as ready. At this stage, the transfers are irrevocable.

¹⁰¹ Central Securities Depository is abbreviated as CSD.

¹⁰² Delivery versus Payment is abbreviated as DvP.

¹⁰³ While, Sweden, like many other countries, has a government deposit guarantee, this only applies up to a limited amount, which does not cover the risk of professional participants.

To ensure that the settlement of the securities leg and the payment leg occur simultaneously and that settlement can be made in central bank money, the Riksbank allows VPC to administer the accounts in the Riksbank's RIX system. This means that participants can be sure that no unnecessary risks will arise during settlement. To cover the need for liquidity that a clearing member may have in the settlement of a security transaction, the member can move funds between the Riksbank accounts administered by VPC and their normal RIX accounts at a number of times during the day. The Riksbank can also grant credit on these accounts during the day.

The whole process normally takes three days, from when a transaction is matched in the marketplace to the final settlement. This applies to both the equity and the fixed-income markets. In the case of debt securities with maturities of less than one year, the entire process takes just two days.

In February 2008, the gross figure for settlements of equities average around SEK 43 billion per day. The corresponding figure for money market settlements amounted to SEK 542 billion. Turnover in the money market is thus considerably higher than in the equity market. However, the number of transactions in the equity market is a great deal higher. In the equity market, an average of 127,078 transactions were settled per day while the average in the fixed-income market was 2,084.

VPC is owned by the four major Swedish banks, each of which owns just under a quarter of the company. The remainder, just over one per cent, is owned by other Swedish market participants.¹⁰⁴

VPC has more than 1,100 affiliated issuers and registers holdings in the accounts of approximately 3.5 million investors. There are very few countries where the central securities depository holds accounts for investors. In almost all other countries, investors must open a custodial account with a broker. In these countries, it is only the brokers who have accounts with the central securities depository.

OMX Derivatives Markets (OMX DM)

There are a couple of major differences between transactions with derivative instruments and transactions with equities and debt securities. Firstly, a transaction with a derivative instrument, unlike an equity or a bond deal, does not require a transfer of the right of ownership to the underlying instrument.¹⁰⁵ Instead, a derivative transaction re-

¹⁰⁴ In June 2008, Euroclear notified its intention to purchase shares in the NCSD group, which includes VPC and its Finnish equivalent, APK OV. This purchase is expected to be completed in the fourth quarter of 2008.

¹⁰⁵ The underlying instrument can be a security, a currency or a commodity.

quires the parties to enter into a contract whose value is determined by changes in the value of the underlying instrument. Secondly, a derivative transaction means that the investor has an open position for a longer period of time than in equity or bond deals. An open position may last for several months and the value of the claim on the counterparty may change during this period. As a result, the risk arises that the counterparty will not be able to pay as planned. This risk normally lasts until the derivative contract matures. It is also only when maturity is reached that the position is settled.

It is to manage precisely this risk that OMX Derivatives Markets (DM) acts as central counterparty in trading in standardised derivative contracts and some of the government securities traded via the electronic platform (see also the chapter *The financial markets*). When OMX DM assumes the role of central counterparty in the deal between buyer and seller, this means that each transaction is replaced by two new deals, where the central counterparty is seller to all buyers and buyer to all sellers. As a result, the original parties either have a claim or a debt in respect of the central counterparty instead of each other. Accordingly, the risks to which parties would have been exposed vis-à-vis each other are shifted to the central counterparty.

The actual clearing is conducted on a multilateral basis. The offsetting of the payment flows of all participants against one another also reduces the number of final payment flows to a minimum. This also reduces the total risk exposure of the counterparties. In addition, the participants are familiar with OMX DM as a counterparty and manage their risks accordingly. This arrangement is specially valuable when trading takes place anonymously as is the case in OMX DM's derivatives trading.

At the same time, the arrangement entails a concentration of risks on to the central counterparty, which must therefore be both financially strong and have routines for handling risks. The central counterparty must be able to deliver securities or cash without delay, even if a member suffers delivery problems.

When derivative contracts are signed, payment flows mostly arise, in the form of option premiums for example.¹⁰⁶ Payments may also arise during the term of derivative contracts, in the form of marginal collateral requirements.¹⁰⁷ These payments are cleared on OMX DM and settled in RIX.

¹⁰⁶ The price of an option is called an option premium. It reflects the compensation for the risk assumed by the writers of the option.

¹⁰⁷ Marginal collateral is provided when options are written or on purchase and sale of forwards. The collateral only covers part of the underlying value.

When the derivative contract matures settlement is either via a cash payment or delivery of the agreed volume of the underlying instrument. In the case of cash settlement, the amount is cleared by OMX DM as described above and settled directly in RIX. When delivering the underlying security, the securities leg of the deal is settled by transferring the financial asset in VPC's system, while settlement of the payment leg takes place in the RIX accounts administered by VPC.

OMX DM is a legal secondary name of OMX Nordic Exchange Stockholm AB which is in turn part of NASDAQ OMX Group Inc. In recent years, OMX has established an integrated Nordic derivatives market. Through this, OMX DM offers trading in and clearing of options and forwards in Swedish, Danish, Finnish, Norwegian, Icelandic and Russian equity-based derivatives. In addition, a clearing service is offered for interbank-traded fixed-income derivatives, trading in and clearing of Finnish share loans and clearing of tailor-made contracts (TMC – Tailor Made Contracts) in equities, tradable indexes, clientspecific indexes and fixed-income products. In 2007, an average of approximately 570,000 derivative contracts were traded daily on OMX.

CLS¹⁰⁸

As previously mentioned, settlement of international foreign exchange transactions may give rise to substantial risks. This is because the two legs in a foreign exchange transaction are settled separately in the home country of each currency. As a result, a time lag arises leading to major exposures between the banks. In order to reduce the risks arising from foreign exchange transactions, Continuous Linked Settlement (CLS) was established in September 2002. In CLS, foreign exchange transactions are settled on a "payment versus payment" basis. This takes place through the leading commercial banks having accounts – one for each currency – at CLS where both currencies in a transaction are transferred simultaneously. CLS has in turn accounts at the central banks of the participating currencies. The net of each member's transactions are paid in or out from CLS via the respective country's central payment system. This eliminates the settlement risks.

The system is operated by CLS Bank and is subject to the supervision of the Federal Reserve Bank of New York. In February 2008, turnover amounted to an average of 3,900 billion US dollar per day, which is more than eight times larger than Sweden's annual gross domestic product, GDP.¹⁰⁹

¹⁰⁸ More information can be found about CLS and elimination of settlement risks in connection with foreign exchange transactions in "Progress in reducing foreign exchange settlement risk", Committee on Payment and Settlement Systems, BIS, May 2008.

¹⁰⁹ Sweden's GDP amounted in 2007 to around USD 455 billion or to around SEK 3,074 billion.

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

Payment flows in the Swedish financial infrastructure

After having presented the most important systems in the Swedish financial infrastructure, we now go on to describe the payment flows.

As mentioned at the beginning of the previous section, RIX is the central system in the financial infrastructure. During February 2008, approximately SEK 449 billion flowed through the system on average every day.¹¹⁰ In other words, an amount corresponding to the annual GDP of Sweden passes through RIX in a week. The banks account for the largest flows in the RIX system. It is through the banks that households, companies and public authorities manage the major share of their payments. In addition, the banks are major owners in both VPC and BGC.

Figure 7 illustrates how the payment flows from different sources of payment reach RIX, either directly or via clearing at VPC, OMX Derivatives Markets (DM), BGC or CLS. The Figure shows the average payment flows per day during February 2008.¹¹¹

As Figure 7 shows, trade in the fixed-income market gives rise to the largest payment flows in the infrastructure. During this period, VPC cleared SEK 542 billion per day from the fixed-income market and SEK 43 billion per day from the equity market. These amounts were settled in the RIX accounts administered by VPC. The participants in RIX are able to transfer, during the day, some of their liquidity in the system between the ordinary accounts and the accounts administered by VPC. Via this liquidity bridge, SEK 50 billion per day was transferred during February 2008.

Derivatives trading on OMX DM generates relatively small payment flows. The underlying values may be substantial in many cases, but the amount actually settled and thus paid is very limited compared with other types of payments in the financial infrastructure. The amounts are netted in OMX DM's system and only a small amount is finally settled in the RIX system.¹¹²

¹¹⁰ The approximately SEK 587 billion that was on average held via RIX in VPC accounts per day in February 2008 is not included in this figure.

¹¹¹ Figure 7 is not intended to reflect the turnover in the respective markets but is restricted to the number of payment transactions.

¹¹² Note that the securities leg in a derivatives transaction is settled via VPC.

Figure 7. Payment flows in the Swedish financial infrastructure SEK billion, average per day, February 2008



¹ Covers all spot trading and the derivatives trading that leads to transfer of the ownership of the underlying asset. The population studied is comprised of VPC's 20 or so clearing members with regard to trade in fixed income instruments.

² Refers to delivery of underlying securities, although not to internal transactions (i.e. when a clearing member has itself as counterparty on the stock exchange). The figure includes both trade on the stock market and outside of it. The population studied is comprised of VPC's 40 or so clearing members with regard to trade in equity.

³ Refers to derivative transactions cleared at OMX DM, for example, equity options, equity forwards, index options and index futures. The statistics cover only the derivative transactions that actually generate a payment, which comprise a minor part of the turnover as derivative positions are to a great extent netted between participants. The studied population comprises OMX DM's 47 members in the derivatives market.

⁴ Refers to account-based payments to and from private persons and companies.

⁵ Refers to payments in SEK for foreign exchange transactions, usually based on foreign exchange contracts (spot, forward, FX-swaps and options). These are largely made through the CLS. The foreign payments that arise directly from foreign exchange transactions are largely made through the CLS. The studied population consists of CLS's 57 member banks who come from seventeen different currency areas.

⁶ Refers to interbank payments regarding foreign exchange transactions, e.g. a transfer between a Swedish bank and a foreign bank's account with another bank.

⁷ Refers to payments in SEK made to a Swedish bank, which in turn acts as a correspondent bank for a foreign bank, also known as foreign clearing.

⁸ Refers to payments in SEK between Swedish banks in Sweden.

⁹ VPC administers the VPC accounts in RIX for settlement from the fixed income market and the equity market.

Note. The statistics in the figure show the flows in RIX. The figure is not intended to reflect the turnover in the respective markets; it is limited to payment flows. The corresponding flows over a number of years are described in Table Z in the Tables annex. Transactions to and from the clearing organisations employing netting, i.e. the CLS, BGC and OMX DM, are dealt with 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 via a netting clearing organisation will enter the statistics as two payments; one from the sending bank to the clearing organisation, and one from the clearing organisation to the receiving bank. To study the netting effect, i.e. the difference between gross and net flows, the stated amounts from the CLS, BGC and OMX DM in principle need to be halved.

Sources: The Riksbank, BGC, VPC, the CLS and the OMX.

Account-based retail payments are managed through BGC. This involves the majority of all payments to and from individuals and most companies, in the form of salary payments, card purchases and supplier payments. SEK 27 billion per day was cleared in BGC's system. After netting in BGC, SEK 17 billion remained to be paid daily between the major banks.

In terms of clearing and settlement, foreign exchange trading can be managed in two different ways: either through CLS or via a correspondent bank. The majority of these payments, SEK 475 billion per day, are cleared in CLS. After netting, only SEK 25 billion per day remains to be finally settled in RIX. The foreign exchange transactions to be cleared via a correspondent bank and settled in RIX amounted to SEK 22 billion per day during the period.

One of the largest items in RIX is cross-border payments. These accounted for SEK 215 billion per day. The correspondent bank model can also be used for these payments. If the recipient Swedish bank has accounts at the foreign bank, no transaction will appear in RIX. This means that the reported value of SEK 215 billion per day only covers the payments made between Swedish banks, where one bank has acted as a corresponding bank for the other. The total value of the cross-border payments is therefore probably much higher.

Domestic payments comprise payments that arise in the shortest segment of the money market and also purely interbank payments. An interbank payment can arise, for instance, when a company needs to make quick payment to another company and the sending and receiving companies have different banks. In this case, payment will go through RIX. A small payment, which is not urgent, will normally be settled via BGC.

Annex 1. Tables

THE SWEDISH FINANCIAL MARKET 2008

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

	TURNOVER VALUE	YEAR-END 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
-		

Source: OMX

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

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Issuers in the bond market										
Central government	808	796	719	623	660	732	772	769	766	727
Mortgage institutions	657	591	505	462	488	549	552	685	747	821
Other credit market companies	40	38	40	42	45	52	59	61	74	75
Non-financial companies	85	99	123	146	119	122	113	137	158	143
Local governments	8	8	6	8	26	14	13	16	20	21
Banks	46	44	39	32	36	46	70	91	115	196
Total	1,644	1,577	1,432	1,314	1,374	1,516	1,579	1,758	1,879	1,982
Issuers in the money market										
Central government	231	250	271	230	240	269	267	294	259	225
Mortgage institutions	55	88	79	43	88	104	93	72	113	154
Other credit market companies	16	18	16	16	18	16	12	10	9	10
Non-financial companies	43	53	55	83	78	51	62	62	66	70
Local governments	5	6	7	7	6	5	5	6	7	15
Banks	20	36	19	18	32	45	47	69	62	54
Total	369	451	448	396	463	490	486	515	516	528
Investors in the bond market										
AP funds	446	370	307	105	93	113	126	134	157	148
Insurance companies	441	472	462	455	493	542	599	613	701	744
Banks	231	193	186	141	140	177	129	262	281	337
Non-residents	231	250	224	290	402	455	529	638	409	535
Companies and others	295	292	253	323	246	228	196	112	330	218
Total	1,644	1,577	1,432	1,314	1,374	1,516	1,579	1,758	1,879	1,982
Investors in the money market										
AP funds	5	51	98	12	2	2	2	7	3	4
Insurance companies	40	48	38	46	134	126	117	138	88	92
Banks	115	88	91	138	141	137	152	129	151	87
Non-residents	68	72	53	91	75	85	82	75	52	43
Companies and others	141	192	168	109	111	140	133	166	222	301
Total	369	451	448	396	463	490	486	515	516	528

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

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

	GOVERNMENT BONDS	MORTGAGE BONDS
1998	36.4	9.5
1999	32.0	10.1
2000	21.3	8.5
2001	21.5	7.4
2002	19.8	6.5
2003	19.5	9.5
2004	22.5	9.1
2005	28.1	9.5
2006	29.5	10.2
2007	29.7	13.2

Source: The Riksbank

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

	TREASURY BILLS	MORTGAGE CERTIFICATES
1998	14.0	1.3
1999	12.4	2.0
2000	9.1	3.0
2001	9.9	1.7
2002	9.0	3.6
2003	10.6	3.4
2004	12.2	3.1
2005	9.9	2.0
2006	10.4	2.7
2007	8.2	2.2

Source: The Riksbank

Table E. Average turnover per day in repos SEK billion

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

	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

Table F. Average turnover per day in the Swedish foreign exchange market SEK billion

Source: The Riksbank

Table G. Total assets and asset composition of the financial intermediaries at the end of 2007 SEK billion

	TOTAL ASSETS/ INVESTMENT ASSETS	LENDING TO THE PUBLIC	OTHER LENDING	DEBT SECURITIE	s equities	OTHER
Credit institutions						
Banks	6,083	2,648	1,631	822	419	563
Mortgage institution	s 1,822	1,595	156	32	8	31
Other credit						
market companies	739	437	52	224	5	21
Total Credit institutions	8,643	4,679	1,839	1,079	432	615
Investors						
Insurance companies	2,609	32.4	16.9	1,174	1,289	96
AP-funds	987	-	-	358	607	22
Fund management						
companies	1,486	-	-	317	994	175
Total Investors	5,082	32	17	1,849	1,891	293
Securities companies	15	2	7	1	0.5	5

Sources: Statistics Sweden, annual reports and the Riksbank

Note that Column 1 displays total assets for banks, mortgage institutions, other credit market companies and securities companies but the invested assets of insurance companies and AP funds and assets under management by fund management companies.

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

			MORTGAGE	OTHER CREDIT-
	TOTAL	BANKS	INSTITUTIONS	MARKET COMPANIES
1998	2,206	941	1,017	248
1999	2,330	1,016	1,050	265
2000	2,542	1,189	1,070	284
2001	2,765	1,330	1,130	305
2002	2,883	1,361	1,196	327
2003	2,961	1,337	1,283	341
2004	3,177	1,426	1,393	358
2005	3,614	1,701	1,528	384
2006	4,080	1,995	1,663	422
2007	4,679	2,648	1,595	437

Table I. The banks' assets SEK billion

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Lending to Swedish public	702	770	864	972	996	993	1,016	1,156	1,317	1,834
Lending to foreign public	239	246	325	359	365	344	410	546	678	813
Lending to foreign banks Lending to Swedish	387	391	479	501	471	454	627	676	732	631
financial institutions	254	275	380	367	363	413	487	612	713	908
Debt securities	453	385	387	430	472	508	555	724	790	822
Other	382	409	536	530	613	569	806	870	919	1,073
Total	2,417	2,476	2,972	3,160	3,281	3,280	3,901	4,583	5,150	6,083

Source: The Riksbank

Table J. The banks' liabilities and equity capital SEK billion

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Deposits from Swedish public	778	829	870	928	968	1,005	1,055	1,183	1,323	1,505
Deposits from foreign public Deposits from Swedish	169	141	247	259	277	291	328	363	408	405
financial institutions	182	160	170	222	160	160	170	183	223	309
Deposits from foreign banks	506	441	587	660	668	627	897	1,035	1,148	1,234
Securities issued	241	301	329	390	378	350	428	643	752	1,082
Other	433	492	633	534	675	681	811	948	1,058	1,255
Equity capital	108	111	136	167	155	166	212	227	238	294
Total	2,417	2,476	2,972	3,160	3,281	3,280	3,901	4,583	5,150	6,083

Source: The Riksbank

Table K. The banks' lending to and deposits from the public SEK billion

	NON-FINANCIAL COMPANIES	HOUSE- HOLDS	LOCAL GOVERNMENT	FOREIGN PUBLIC	OTHERS
Lending					
1998	447	208	28	239	19
1999	495	226	35	246	13
2000	551	259	33	325	21
2001	644	275	33	359	19
2002	641	289	33	365	32
2003	618	292	30	344	52
2004	637	307	31	410	41
2005	752	345	31	546	28
2006	840	395	30	678	53
2007	1,106	641	35	813	5
Deposits					
1998	271	425	22	169	60
1999	313	427	20	141	69
2000	360	414	16	247	79
2001	390	487	18	259	33
2002	403	520	16	277	25
2003	387	521	20	291	77
2004	399	537	26	328	93
2005	462	584	28	363	109
2006	517	676	27	408	103
2007	533	831	27	405	115

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Table L. The banks's average deposit and lending rates and Treasury bill yields Per cent

TREASURY	REASURY BILLS										
	LENDING RATE	DEPOSIT RATE	YIELD, 6-MONTH								
dec-98	5.94	1.91	3.49								
dec-99	5.53	1.65	3.78								
dec-00	5.82	2.15	4.23								
dec-01	5.55	2.10	3.74								
dec-02	5.64	2.26	3.58								
dec-03	4.79	1.51	2.65								
dec-04	4.00	1.00	2.03								
dec-05	3.31	0.79	1.95								
dec-06	4.35	1.87	3.13								
dec-07	5.17	2.83	4.19								

Source: The Riksbank

Note. From September 2005 onwards major amendments have been made to the statistics

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

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Single-family dwellings	463	499	511	555	603	673	749	869	966	915
Apartment blocks	443	428	418	419	415	400	400	395	391	369
Commercial and office premises	35	35	37	40	34	33	28	28	28	31
Tenant-owned apartments	33	44	58	75	96	119	152	196	240	241
Other	40	42	44	37	40	42	40	40	37	39
Total	1,014	1,048	1,068	1,126	1,187	1,267	1,369	1,528	1,663	1,594

Source: The Riksbank

Table N. New lending by mortgage institutions according to original fixed-rate term Per cent

NEW LOANS PER MONTH	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Variable rate	28.5	49.4	64.8	51.1	53.5	40.4	54.8	49.5	54.1	46.4
Interest rate period < 5 years	28.2	24.0	21.0	32.5	31.7	42.0	32.3	31.5	27.3	28.8
Interest rate period > 5 years	43.3	26.6	14.1	16.4	14.8	17.6	13.0	19.0	18.6	24.8

Table O. Loan stock of mortgage institutions according to original fixed-rate term SEK billion

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

Source: The Riksbank

Table P. Mortgage institutions' borrowing SEK billion

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

Source: The Riksbank

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

	COMPANIES	HOUSE- HOLDS	LOCAL GOVERNMENT	FOREIGN PUBLIC	OTHERS
1998	125	64	18	41	0
1999	131	75	16	43	0
2000	134	80	19	51	0
2001	125	88	24	66	3
2002	139	94	29	60	5
2003	145	104	34	52	5
2004	149	115	37	54	4
2005	166	118	38	59	4
2006	183	123	40	72	4
2007	184	126	41	81	4

Table R. Insurance companies' investment assets SEK billion

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Non-life insurance companies	316	334	350	346	331	329	363	420	439	469
Life insurance companies	1,141	1,430	1,478	1,436	1,281	1,443	1,567	1,833	1,979	2,141
Total	1,458	1,764	1,828	1,782	1,612	1,771	1,930	2,253	2,418	2,609

Source: Statistics Sweden

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

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Equities	672	902	892	861	589	697	807	1,051	1,204	1,290
Bonds	620	653	713	695	725	783	844	894	953	1,026
Short-term investments	59	72	60	86	175	176	160	188	140	148
Loans	38	50	66	71	55	57	59	51	49	69
Property	69	87	96	68	68	59	61	70	72	76
Total	1,458	1,764	1,828	1,782	1,612	1,771	1,930	2,253	2,418	2,609

Source: Statistics Sweden

Table T. Banknotes and coins in circulation in relation to GDP in the Nordic countries Per cent

	SWEDEN	DENMARK	FINLAND	NORWAY
1998	3.6	3.0	2.2	3.7
1999	3.7	3.0	2.3	3.5
2000	3.7	2.9	2.2	2.9
2001	3.8	2.9	1.8	2.8
2002	3.7	2.8		2.7
2003	3.7	2.9		2.6
2004	3.6	3.0		2.5
2005	3.5	3.1		2.4
2006	3.3	3.1		2.3
2007	3.2	3.1		2.2

Source: Central banks of the different countries

Note: No figures are given for Finland after 2001 as the Eurosystem's reporting of the Euro banknotes affects the amount of the banknotes in circulations since January 2002. This has meant that Finland's banknote figure is not comparable with previous years.
Table U. Use of different payment instruments

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Number of transactions, millions										
Cheques	4	4	2	2	2	1	1	1	1	1
Credit cards	53	57	67	76	80	89	177	184	195	190
Debit cards	160	198	256	327	541	670	782	892	994	1,148
Paper-based cree	dit									
transfer	175	171	154	128	132	83	89	87	86	95
Electronic credit										
transfer	549	626	639	636	304	335	376	426	487	550
Direct debit	74	85	91	98	119	130	143	160	197	208
Total	1,014	1,140	1,209	1,267	1,178	1,308	1,567	1,791	1,959	2,191
Value of transaction	s. SEK bill	ion								
Cheques	43	30	22	16	21	46	59	55	54	60
Credit cards	52	55	68	75	68	77	90	80	94	127
Debit cards	97	119	143	186	297	287	296	334	358	497
Paper-based credit										
transfer	1,407	1,388	1,330	1,190	854	552	475	437	384	346
Electronic credit										
transfer	8,282	7,231	7,580	7,341	5,348	5,803	6,631	7,512	8,484	9,674
Direct debit	210	227	257	261	250	268	302	344	387	424
Total	10,090	9,050	9,400	9,068	6,837	7,032	7,853	8,763	9,762	11,127

Source: The Riksbank

Table V. Number of card transactions per capita in the Nordic countries

	SWEDEN	DENMARK	FINLAND	NORWAY
1998	24	68	58	85
1999	29	74	63	97
2000	36	80	71	111
2001	45	87	76	124
2002	66	94	85	137
2003	85	105	99	154
2004	106	120	111	171
2005	119	123	129	187
2006	131	142	154	206
2007	146			229

Sources: ECB and Norges Bank

Table X. Number of Internet bank customers Thousands

1998	628
1999	1,540
2000	2,728
2001	3,900
2002	4,575
2003	5,225
2004	5,850
2005	6,461
2006	7,210
2007	7,742

Source: The Swedish Banker' Association

Note. When interpreting the data on the number of Internet bank customers it should be noted that the same person can be a customer of several Internet banks.

Table Y. ATM's and payment terminals

		1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
	ATM's										
	Number of ATM's	2,485	2,580	2,617	2,567	2,647	2,676	2,701	2,800	2,807	2,809
	Number of trans-										
	actions, millions	333	310	321	335	321	328	320	316	315	302
108	Value of trans-										
100	actions, SEK billion	287	257	271	282	269	276	274	275	278	260
8000	Payment terminals										
KEL	Number of terminals,										
MAR	thousands	94.4	106.1	121.3	124.7	142.0	153.1	161.1	176.6	182.6	187.3
ICIAL	Number of trans-										
INAN	actions, millions	171	227	256	326	454	542	616	755	968	1,184
I HSIQ	Number of trans-										
swel	actions, SEK billion	92	127	143	185	211	241	269	299	366	434

Source: The Riksbank

Table Z. Payment flows in the Swedish financial infrastructure

Daily amounts in SEK billion

THE SWEDISH FINANCIAL MARKET 2008

	2005	2005	2006	2006	2007	2007	2008	2008
DATA FROM FEBRUARY	GROSS	MENT ³	GROSS	MENT ³	GROSS	MENT ³	GROSS	MENT ³
Fixed income market ¹	341	341	463	463	452	452	542	542
Equity market ¹	26	26	35	35	42	42	43	43
Liqudity bridge between RIX and RIX accounts administered by VPC	¹ N/A	36.2	N/A	62.5	N/A	44.4	N/A	50.0
Derivatives market	1.0	0.1	0.5	0.1	0.4	0.2	0.7	0.3
Retail payments	20	11	29	13	28	15	27	17
Foreign exchange transactions via CLS ²	1221	21	366	26	387	24	475	25
Other foreign exchange transaction	s 4	18	4	24	4	17	4	17
Cross-border payments	4	179	4	238	4	223	4	215
Domestic payments + miscellaneous	5 ⁴	114	4	122	4	154	4	170

¹ Up until November 2003 amounts from the fixed-income and equity market were netted in VPC's clearing so that only the net was settled in RIX. From 2004 gross amounts are settled in the RIX accounts administered by VPC. This reorganisation also means that liquidity transfers have been enabled so that RIX participants can transfer liquidity between RIX and the special RIX accounts administered by VPC.

² SEK was included in CLS in September 2003. Therefore the figures for foreign exchange transactions in CLS are given for 2004 and onwards.

³ Settlement refers to the settlement that takes place in the Riksbank's RIX system.

⁴ The Riksbank has no information about these gross flows.

Sources: VPC, OMX, BGC, CLS and the Riksbank

Annex 2. Market conventions in the Swedish fixed income market and the foreign exchange market 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 to be expressed in decimals.

Trade Date: Designated as T.

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

Value Date: Three business days from the trade date (also called T+3) When the bond's maturity becomes shorter than a year, it is called a Period Bond (the bond is traded T+2).

B. Conventions in the Swedish money market

Day count basis: Deposits, repo rates, T-bills and bank, mortgage and Riksbank certificates actual number of days/360 days per year (Actual/360).

Quotations Basis: Prices/interest rates are to be expressed in decimals.

Trade Date: Designated as T.

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

Value Date: Two business days from the trade date (also called T+2).

C. Conventions in the money market's shortest segment

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 to be expressed in decimals.

Trade Date: Designated as TO.

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 a week thereafter (T2 to T9)

D. Conventions for the foreign exchange market in Swedish kronor

Foreign Exchange Quotation: 1 euro = x units SEK

Quotations Basis = Prices/interest rates are to be expressed in decimals Trade Date: Designated as T.

Value Date: Two bank days from the trade date (also called T+2).



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