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■ Assessment of Securities Settlement in Sweden 2006

Financial markets convert savings into investments, provide means for managing risks and offer payment services. Securities transactions are vital to all three functions. Purchasing securities is a way to make investments and pledging securities is a means of reducing the risks associated with credit exposures. Moreover, members of the large value payment system can obtain intraday credit only if they have pledged securities to the Riksbank. Because of the critical role securities transactions play, both the Riksbank and Finansinspektionen deem it important to assess the functioning of the entire post trade processing of securities transactions on the Swedish market. Because of VPC's central role in post trade processing, the Riksbank and Finansinspektionen judge it to be a systemically important system. Finansinspektionen categorises it as an institution, of importance for the financial system's stability. This assessment follows the recommendations and the methodology developed jointly by the Committee on Payment and Settlement Systems (CPSS) and the Technical Committee of the International Organization of Securities Commissions (IOSCO).¹

Background

In Sweden, stocks are traded primarily under the aegis of the Stockholm Stock Exchange and the majority of fixed income securities are traded OTC. (The Stockholm Stock Exchange operates a small electronic trading platform for some fixed income instruments.) After a deal is struck, market rules clearly specify the timing of confirmation, affirmation when necessary and submission of instructions to the settlement system. VPC is the central securities depository for Sweden and operates the only domestic securities settlement system.

¹ CPSS IOSCO, *Recommendations for Securities Settlement Systems*, BIS November 2001 and CPSS IOSCO *Assessment methodology for "Recommendations for Securities Settlement Systems, BIS November 2002."*

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Legal status and oversight

VPC is authorised and supervised by Finansinspektionen, the Swedish financial supervisory authority, to act as a central securities depository (CSD) and clearinghouse and VPC's system as a securities settlement system (SSS). After having consulted the Riksbank, Finansinspektionen has approved and notified the European Commission that it should be a designated system according to the *Act on systems for settlement of obligations on financial market*², the act which implements the EC Directive 98/26/ on *Settlement finality in payment and securities settlement systems (Finality Directive)*.

Governance

VPC AB is owned in equal shares by four Swedish banks, Swedbank AB, Nordea Bank AB, Skandinaviska Enskilda Banken AB and Svenska Handelsbanken AB which together hold 98.9% of the shares while 11 other banks and securities firms hold the remaining 1.1%.

Brief history

VPC AB was founded in 1971. At that time the Swedish government owned 50% of the shares in the company. It took on the task of managing companies' share registers, distributing instructions for dividend payments and delivering share certificates. The processing of securities transactions changed significantly in 1989 when Swedish share certificates were dematerialised. At that time, VPC took responsibility for providing the account system for these securities and for settling securities transactions.

Originally, VPC's system provided net settlement once a day with an auxiliary real time service. In November 2003, VPC inaugurated a new procedure which allows for gross settlement either continuously or at specific times during the day.

In December 2004, VPC bought all the shares of Suomen Arvopaperikeskus Oy (APK), the Finnish CSD, from OMX Exchanges Oy a wholly owned subsidiary of OMX. The Finnish CSD thus became a subsidiary to VPC. Since the purchase of APK, VPC has been using the brand name NCSD on its documents and information.

Operations

VPC offers settlement of securities transactions in central bank money in both Euro and Swedish kronor (SEK). Settlement of transactions involving payments always uses delivery versus payment (DVP) procedures.

² *Lag (1999:1309) om system för avveckling av förpliktelser på finansmarknaden.*

³ For a description of this arrangement see, Riksbank Decision: Follow up of annual work plan and budget for 2002, Annex 3 About system development for special central bank accounts for securities settlement which are administered by VPC, May 2002 and the Contract between the Riksbank and VPC AB., www.riksbank.se.

⁴ For a more detailed description of the functioning of the VPC system and liquidity management for different categories of participants see "Newclear Product Description Basic and Additional Functionality" June 4, 2003 at VPC's website www.vpc.se.

Services

VPC provides services to support registration, issuance and account holding allowed by its CSD authorisation. VPC offers securities settlement primarily to the Swedish market, allowed by its authorisation as a clearing organisation. VPC's account services include distributing payment instructions for e.g. interest payments, tax reporting and withholding, safekeeping and providing information and services in the area of corporate actions. VPC also operates a settlement system which settles stock exchange and fixed income transactions on a gross basis with the proceeds of settlement being available at specific designated times during the day. A supplementary RTGS service is also offered.

VPC accepts a wide range of Swedish and foreign securities. As of December 2006, 1148 companies were issuers of securities in the VPC system and about 450 of the securities were listed on the Stockholm Stock Exchange or on another authorised marketplace.

Participation

VPC accepts Swedish and foreign entities as participants in its settlement system. The requirements for participation are stated in VPC's rules and regulations. As of December 2006, there were approximately 40 financial institutions participating in VPC's clearing and settlement.

Account structure

VPC operates a holding system which facilitates both direct and indirect holdings. As of December 2006, the system maintained approximately 3.5 million securities accounts.

Technical platform

VPC offers settlement services through an in housed developed settlement system. Communications are routed through the NCSN network or the SWIFT network. In addition some services are supplied via the Internet. VPC can increase the system's processing capacity. The agreements with VPC's hardware and software suppliers allow for on demand increases when needed. The participants have real time information about their accounts and transaction status via computer terminals and through system interface. These are available in both standard ISO 15022 format and VPC's proprietary format.

Clearing and settlement

Participants initiate the settlement process by submitting instructions into the VPC system. The system then matches the buy and sell instructions. Once the instructions have been matched they are unilaterally irrevocable. Instructions can be entered into the system prior to the settlement day or on the settlement day itself. The normal settlement cycle is T+3 for equities and bonds and T+2 for money market instruments.

At 7:15 on the settlement day, the gross settlement process begins. Each of the matched instructions goes through a control process individually to ensure first that securities are available in the seller's securities account and then that the cash is available in the buyer's liquidity settlement account. For settlement in SEK, the settlement banks have a special central banks

■ accounts called liquidity settlement accounts. The Riksbank has given VPC the task of administering these accounts and granting intraday credit for securities settlement on behalf of the Riksbank and the holdings on these liquidity settlement accounts are claims on the central bank.³ For both SEK and Euro the settlement banks in turn grant each customer a debit cap for securities settlement which is the amount of liquidity that the customer has available for the settlement process. The system then checks that each settlement bank has sufficient liquidity to cover all of its own transactions and those of its customers. If securities and liquidity are available, these assets are blocked for settlement. At this point, the transaction is marked *ready for settlement* and is guaranteed to be settled at the next settlement batch during the day even if one party to the transaction is declared bankrupt.⁴

During the control process, different algorithms are used in order to check if a group of transactions may be marked *ready for settlement* simultaneously. For example, if a participant has entered buy and sell instructions for the same security and if this participant has delivery and payment capacity for the net position of these transactions, both will be marked *ready for settlement*. All transactions that have simultaneously been marked *ready for settlement* will obtain identical time stamps and identification numbers. However, for each individual transaction, a securities transaction and a payment transaction will be registered on the proper account. There is no limit to how many transactions can be simultaneously processed in this manner. Moreover, several different algorithms are used in order to optimise the number of transactions that may be market *ready for settlement* for a given amount of liquidity and securities. The calculations to optimise settlement start as soon as the system opens in the morning and continues throughout the day to make use of changes in customers' holdings of liquidity and securities. This economises on the use of securities and liquidity.

As soon as a transaction has been marked *ready for settlement*, the cash or securities which a participant has accumulated in the control process can be used to settle subsequent transactions. Thus, a running account of each participant's net blocked cash and securities holdings is maintained. The fact that a buyer may utilise securities that have been blocked in his favour in order to complete the control process for subsequent transactions (and vice versa for the seller) makes the system more efficient. The final stage in the settlement cycle, the actual settlement, occurs at three specific times for stocks and at four specific times for fixed income instruments. After settlement, liquidity is freely available and can be transferred out of the VPC system.

Funds obtained from securities transactions may be transferred back to the settlement banks' ordinary central bank account at the end of each settlement cycle. Funds which have not been blocked in the control process may be transferred back to the ordinary central bank account at any time during the day. All funds are returned to the settlement bank's ordinary central bank account at the end of the settlement day.

Statistics

VPC cleared about 1727 fixed income and 74 777 stock transactions on average each day during 2006. The gross value per day of these transactions is about SEK 460 billion for the fixed income instruments and SEK 32 billion for stock market instruments.

Recent developments

During the year, VPC has continued to harmonise the procedures and routines in the Swedish and Finnish markets. This work has been in focus since the purchase of the Finnish CSD APK. The Nordic Single project which aims at designing and implementing a single CSD platform for the two markets continued with an evaluation of responses to its consultation on high level guidelines for the design of the single platform. Moreover, the project worked on specifying a single set of procedures for payments from corporate actions and a single account structure.

Since the Riksbank will stop providing payment services in Euro as of December 31 2006, VPC has implemented new procedures for settling Euro transactions in central bank money. It is now a member of the central bank of Finland, Suomen Pankki's payment system (BoF RTGS). VPC has thus opened a client account with Suomen Pankki. The Euro which settlement banks pay into that account are mirrored into cash memorandum accounts in VPC's settlement system and used for settlement. VPC's legal experts have considered the support provided by Finnish law and VPC's agreement with Suomen Pankki and found that these support the separation of client funds in client accounts so the settlement banks do not have any credit risk on VPC

During the year, the network used for communication with participants has been upgraded. The new network enables participants to use one single connection point to reach both VPC and APK. The network is global therefore it does not cost customers outside of Sweden more to be connected. Moreover, the network has security features including multiple routings for messages and twenty four hour surveillance.

The move to the new network together with cost cutting measures and more effective settlement routines have allowed VPC to cut its fees for participants twice during 2006. Participants' communications costs were decreased by 50% or more on average. Prices for other selected services were also cut. Altogether the price cuts are expected to amount to savings of SEK 50 million per year.

Methodology and summary

In accordance with their agreement on co operation in the field of financial stability, the Riksbank and Finansinspektionen have co operated in this assessment. The two authorities have collaborated in planning the focus of the assessment and collecting and reviewing information from the institutions. Both the Riksbank and Finansinspektionen stand behind the conclusions of this assessment.

In this assessment, the Riksbank and Finansinspektionen have considered the various stages in the post trade processing of securities. The assessment is based upon the CPSS IOSCO recommendations which are aimed at a range of market participants and regulators who all play a role in ensuring the safe and efficient post trade processing of securities transactions even

- though the focus is on the VPC system which carries out settlement. This means that different institutions must take responsibility for complying with the recommendations. As a consequence, if the Riksbank and Finansinspektionen are of the opinion that some action is required to comply with the recommendations, the institutions or associations considered responsible have been specified.

The assessment is based on VPC's answers to the key questions in the CPSS IOSCO recommendations, information derived from the Riksbank's ongoing oversight activities, the supervision carried out by Finansinspektionen and the documents cited in the list of references. To get a full picture the two authorities have also interviewed ten (about a quarter) of the participants in the VPC system. The institutions were chosen so that they would represent different types of users.

The two authorities do not deem it appropriate to assign an assessment category to themselves when assessing their compliance with recommendation 18, on supervision and oversight. Instead, they have responded to the key questions in the CPSS IOSCO and highlighted areas which seem satisfactory and those where more work is needed.

For each recommendation, there is a description, a discussion of the considerations taken in the assessment and an assessment. The discussion of considerations states how securities settlement in Sweden fulfils or does not fulfil the key elements emphasized by the recommendation. The assessment category is a translation of this assessment into the four categories defined in the recommendation document: observed, broadly observed, partly observed and non observed.

Assessment category	Recommendations
Observed	1, 2,3,4,5,6,7,8, 10 ,11, 12,13, 14, 15, 16, 17, 19
Broadly observed	
Partially observed	
Non observed	
Not applicable	9
Not assigned	18

The assessment

Recommendation 1: Legal framework

Securities settlement systems should have a well founded, clear and transparent legal basis in the relevant jurisdictions.

■ This recommendation looks both at the legal and regulatory support for settlement in Sweden and at VPC's own rules, regulations and contracts. In accordance with the assessment methodology this section is divided in two parts. First, the national legal basis for settlement is analysed in more depth. Then, the legal support for the rules and regulations provided by VPC are considered. All of VPC's own rules, procedures and contracts are publicly available on the Internet.

National legislation

Swedish legislation gives support and requirements for financial institutions trading, clearing and settling securities in Sweden.⁵ Securities issued in Sweden are primarily dematerialized and held in accounts in the VPC system. In the settlement process, VPC transfers dematerialised securities by book entry. The legal basis for this registration, holding and transfer of ownership of dematerialised securities is the *Financial instruments accounts act*.⁶

The legal basis for settlement finality is the *Act on systems for settlement of obligations on financial markets*.⁷ This act implements the *Finality Directive*.⁸ According to this act, securities transactions carried out in a designated settlement system are protected from any third party even if one of the parties to the transaction goes bankrupt. The act also prohibits the revocation of securities transfers after they have been accepted according to the rules of the settlement system. The *Financial instruments trading act*⁹ provides the legal basis for netting contracts involving financial instruments.

Providing services which facilitate the pledging of collateral is an important function of VPC. Swedish law supports the pledging and liquidation of collateral. The *Rights of priority act*¹⁰ specifies that the party accepting a pledged security as collateral has a special right of priority before all other creditors to the pledged asset in case of bankruptcy. The *Bankruptcy act*¹¹ allows the collateral taker to liquidate the pledged asset immediately in the case of a bankruptcy. Swedish legislation has been amended to implement all measures in the EC Directive 2002/47 on *Financial collateral arrangements*.¹²

Swedish law regulates VPC in its roles as clearing organisation and as operator of a securities settlement system. Finansinspektionen has authorized VPC as a clearing organisation under the *Securities and clearing operations act*¹³ and as a central securities depository under the *Financial instruments accounts act*.¹⁴ VPC is under the supervision of Finansinspektionen and under the oversight of the Riksbank, due to the potential systemic risks involved in clearing and settlement.

As a clearing organisation, VPC shall, conduct business in a way which maintains the public's confidence in the financial markets and so the private individual's capital is not exposed to

⁵ Laws supporting securities lending are described in recommendation 5, those supporting the protection of customers' securities are in recommendation 12, those supporting free access to the system are in standard 14, and those regulating supervision and oversight are in recommendation 18.

⁶ *Lag (1998:1479) om kontoföring av finansiella instrument*.

⁷ *Lag (1999:1309) om system för avveckling av förpliktelser på finansmarknaden*.

⁸ Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on *Settlement finality in payment and securities settlement systems*.

⁹ *Lag (1991:980) om handel med finansiella instrument*.

¹⁰ *Förmånsrättslag (1970.979)*.

¹¹ *Konkurslagen (1987:672)*.

¹² The directive is implemented in the Swedish legislation, see the bill to the parliament 2004/05:30 *Finansiella säkerheter*.

¹³ *Lagen (1992:543) om börs och clearingverksamhet*

¹⁴ *Lagen (1998:1479) om kontoföring av finansiella instrument*.

■ inappropriate risks. Moreover, it shall meet those requirements for security which are consonant with sound business practices.

Finansinspektionen has approved and notified the EU Commission that VPC's settlement system should be designated under the *Act on systems for settlement of obligations on the financial market*.¹⁵

The rules and regulations of VPC

The main document containing VPC's rules is the *General terms and conditions for account operations and clearing*¹⁶. It provides the rules governing each stage in the settlement process from the registration of transactions through final settlement. The document gives a clear description of the stages in securities settlement and rules for how the system delivers settlement finality and Delivery versus Payment (DVP). It also specifies causes on the basis of which VPC can immediately exclude a participant from the system. The causes also include insolvency.

The actions, rights and obligations of the participants are governed by an accession agreement between the participants and VPC. VPC itself is bound by its rules and regulations and its agreements with participants. The documentation is clear and points to the risks involved in settlement.

As described in Recommendation 10, the Riksbank and VPC have specific rights and obligations in connection with the central bank accounts which VPC administers. These are described in the contract between the Riksbank and VPC and in the Riksbank's *Rules and regulations for RIX and monetary policy instruments*. These documents make clear the division of responsibility between the Riksbank and VPC toward RIX members who hold central bank accounts administered by VPC.

Treatment of remote participants

The *General terms and conditions for account operations and clearing* make no distinction between Swedish and non Swedish participants, other than an obligation for foreign institutions to submit, on request, a legal opinion (or equivalent) regarding home country regulations which may be of relevance for participation in VPC.

Rules for Cross border activities

VPC has a limited number of non Swedish participants from EU/EEA member states and handles a small number of cross border transactions through its links. The implementation of the *Finality Directive*¹⁷ in Sweden ensures that Swedish law will apply to all transactions in the VPC system. Thus, conflict of law issues should not arise for settlement services provided to EEA/EU participants. As of December 2006, VPC maintained cross border links either directly with other CSDs or indirectly through custodians to facilitate the transfer of eleven securities plus all Swedish stocks traded on the Helsinki stock exchange. In this case as well, the implementation of the *Finality Directive* should mitigate conflicts of law.

¹⁵ *Lag (1999:1309) om system för avveckling av förpliktelser på finansmarknaden*, The Swedish implementation of the EC Settlement finality directive.

¹⁶ See VPC, *General Terms and Conditions, Account Operations and Clearing*, November 2006, www.vpc.se.

¹⁷ Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on *Settlement finality in payment and securities settlement systems*.

■ Considerations

Both Swedish national law and the complete rules and regulations for the VPC system are publicly available. According to the assessment done by the Riksbank and Finansinspektionen the legal framework in Sweden supports the post trade processing of securities transactions and specifically the operations of VPC. Moreover, the rules of the system viewed in VPC's *General terms and conditions*, support the securities settlement process and specify what will happen if a participant should be insolvent. VPC has limited cross border operations but has determined that the implementation of the Finality Directive should mitigate any conflicts of law.

Assessment

The Riksbank and Finansinspektionen assess recommendation 1 as observed.

Recommendation 2: Trade confirmation

Confirmation of trades between direct market participants should occur as soon as possible after trade execution, but no later than trade date (T+0). Where confirmation of trades by indirect market participants (such as institutional investors) is required, it should occur as soon as possible after trade execution, preferably on T+0, but no later than T+1.

On the stock market, where trading is electronic, the direct market participants can see their matched trades online. This serves as a confirmation. If the counterparties to a trade submit different information or do not agree on the terms of the trade, the exchange protocol or equivalent, e.g. the records from other authorized markets, should apply. Thus, in practice, trade confirmation occurs already in direct connection with trading. Direct market participants have to register the trades to VPC before noon day T+1, according to the rules established by the Swedish Securities Dealers Association¹⁸. Settlement matching occurs as soon as both sides of the transaction are registered.

On the fixed income market, which is an OTC market, the rules by the Swedish Securities Dealers Association stipulate that trades have to "be registered in the VPC system not later than one hour following execution of the trade."¹⁹ Settlement matching occurs directly after registration.

In any trade, Finansinspektionens regulations require that "a contract note shall normally be sent to the counterparty during the trade day, however not later than the business day following the trade day"²⁰. The contract note is forwarded to the indirect market participant and eventually to the end customer. Broker client agreements specify whether or not confirmation (also called affirmation) of trades between direct market participants and indirect market participants is required. Such confirmation (affirmation) is done bilaterally. There is no central trade confirmation (affirmation) between the direct and the indirect market participants. In cases where agreements are required, e.g. where foreign customers are involved, the market participant issues a trade confirmation

¹⁸The Swedish Securities Dealers Association is an association of companies trading securities in Sweden. All companies licensed according to the *Securities Business Act* are eligible for membership. As part of its activities for its members, the association issues rules for trading and prepares standard agreements for different aspects of trading and custody business. These rules are binding for the association's members. The members are not bound to use the standard agreements but it is market practice to do so. See The Swedish Securities Dealers Association's rules governing trading in Securities and settlement of transactions.

¹⁹ The Swedish Securities Dealers Association's rules governing trading in Securities and settlement of transactions.

²⁰ FFFS 2002:7 *Regulations governing rules of conduct on the securities market* and even reflected in The Swedish Securities Dealers Association's rules governing trading in Securities and settlement of transactions.

- (affirmation). Typically this confirmation (affirmation) is passed on to the indirect market participant within hours of the trade.

Considerations

Equity trades from the stock exchange and nearly all fixed income trades are confirmed by T+0. All transactions registered in the VPC system are matched prior to settlement. Matching in the VPC system provides a form of confirmation for fixed income trades. Thus, the recommendation concerning trade confirmation between direct market participants is met for fixed income securities and for equities. Trade affirmation is not generally required on the Swedish market but, where required in the agreement between two market participants, an affirmation is issued within hours of the trade.

Assessment

The Riksbank and Finansinspektionen assess recommendation 2 as observed.

Recommendation 3: Settlement cycles

Rolling settlement should be adopted in all securities markets. Final settlement should occur no later than T+3. The benefits and costs of a settlement cycle shorter than T+3 should be evaluated.

The settlement cycle is normally T+3 for stocks and bonds and T+2 for money market instruments. VPC's *General terms and conditions* clearly state the requirement to settle on time and impose sanctions if settlement is late. In consultation with market participants, VPC has established a regime of incentives to encourage early settlement and a high settlement rate. These incentives are documented in *Special resolution on settlement incentives*.²¹ These specify the amount of liquidity which members and particularly settlement banks must make available to the system at different times during the day. VPC monitors failed instructions in real time. Information about failed instructions is published on VPC's member website every month, or if the situation warrants it, more often. The information includes the securities which have not been delivered and the names of participants which do not fulfil their obligations in time.

The settlement ratio for stock market instruments in 2006 has been on average 99.18% in instructions and 99.32% in value. This can be compared to an average of 99.23% in instructions in 2005. In previous years, trades in stocks which are very illiquid have typically been the source of the unsettled transactions. In 2006, there have been a significant number of failures for liquid stocks. As a result, VPC and market participants are developing stronger incentives to deliver on time.

The settlement ratio for fixed income products was 99.41% in instructions and 99.67% in value in 2006. For 2005, the average was 99.48% in instructions. Unlike the failed deliveries for stocks, the vast majority of those fixed income transactions which appear in the statistics of unsettled transactions are actually settled on the proper day. The statistics reflect those transactions which are not settled in the regular settlement cycle but re entered later for RTGS settlement.

²¹ VPC *Special Resolution on settlement incentives*, June 2005.

There are, however, some cases where VPC's rules limit the obligation for a clearing member to settle on time on behalf of a customer. This is the case, for example, if the clearing member despite reasonable effort is unable to borrow enough securities in the market in order to make a delivery.²²

VPC offers a service which routes transactions from the Stockholm Stock Exchange in real time into VPC's system. With this service, participants get straight through processing and earlier matching of their transactions. This service has long been offered on the Finnish market where all stock market transactions are routed directly to the settlement system. Introducing the same service in Sweden is part of VPC's work to harmonise the two markets. Currently only one customer has chosen to use the service. To encourage greater use, VPC is not charging for this service.

VPC encouraged market participants to consider a shorter settlement cycle but market participants judged that this would i.a. increase fails for cross border trades. Moreover, market participants do not want a settlement cycle which deviates from that in the rest of Europe. Since then, VPC has contributed to the work done by the European Central Securities Depository Association, (ECSDA) to harmonise settlement cycles in Europe.²³

Considerations

The settlement cycle in Sweden is T+3 or less and over 99% of trades are settled on time. VPC provides incentives to settle on time and works with market participants when problems arise. VPC has led market participants in an evaluation of a shorter settlement cycle but found it best to have the same settlement cycle as the majority of European markets.

Assessment

The Riksbank and Finansinspektionen assess recommendation 3 as observed.

Recommendation 4: Central counterparties (CCPs)

The benefits and costs of a CCP should be evaluated. Where such a mechanism is introduced, the CCP should rigorously control the risks it assumes.

There is no CCP for securities transactions serving the Swedish market.²⁴ However, in the course of 2003 both VPC and Stockholmsbörsen initiated independent projects for evaluating a possible CCP. The focus was on the detailed evaluation of the costs and benefits for the market participants. The VPC prototype was primarily aimed at the stock market, given the larger number both of transactions and separate counterparties on that market. In principle, it would also be possible to implement the CCP on the fixed income market. However, compared with a CCP for the stock market, the viability

²² VPC General terms and conditions C.3.1.

²³ European Central Securities Depositories Association's First annual status report relating to its standards for the removal of Giovannini barriers 4 and 7.

²⁴ Stockholmsbörsen offers CCP services to participants in its electronic trading platform for fixed income instruments. All participants have the option of using CCP services. Only a small portion of fixed income trading goes via the platform. Most is done OTC and very little of the platform's trading is cleared via the central counterparty. Thus, for all practical purposes, there is no CCP clearing of Swedish securities transactions. In the market for derivatives on stock market instruments, Stockholmsbörsen acts as a CCP but that is outside the scope of this evaluation.

■ of a CCP on the fixed income market is less obvious. Given the larger size of the transactions, the smaller number of trades and the fewer participants, the costs in terms of capital would be higher while the number of trades and participants who can share these costs would be lower. During 2005, this work continued as part of VPC's project to analyse market needs for a new single settlement platform for both the Swedish and Finnish markets. The work so far has concluded that there is currently no business case for a CCP but the new settlement system should be planned so that it can accommodate a CCP at a later stage.

Stockholmsbörsen has also considered a CCP for the stock market. It proposed integrating this with its CCP for the derivative market. Stockholmsbörsen did not find enough evidence to support a CCP at that time. The Riksbank's analyses from 2002 suggest that a CCP could be beneficial for the Swedish market but that any decision about a CCP must be based on principles of cost effectiveness²⁵.

Considerations

The Swedish market has considered the costs and benefits associated with the introduction of a CCP for securities. Thus far, it has not been shown that there is a business case for a CCP.

Assessment

The Riksbank and Finansinspektionen assess recommendation 4 as observed.

Recommendation 5: Securities lending

Securities lending and borrowing (or repurchase agreements and other economically equivalent transactions) should be encouraged as a method for expediting the settlement of securities transactions. Barriers that inhibit the practice of lending securities for this purpose should be removed.

There is a market for both securities lending and for repurchase agreements using fixed income securities in Sweden. One use of these markets is to facilitate settlement. In both segments, the markets are dominated by a few players but the exact concentration and size of the market is unclear since it is an OTC market.

The legal basis for securities lending is the *Financial instruments trading act*, Chapter 3, § 1.²⁶ It applies to all securities aimed to be traded on securities markets, e.g. stocks, bonds etc. The accounting rules are clearly defined in a regulation from Finansinspektionen (FFFS 2002:22, Chapter 2, §§ 9-11).²⁷ The tax consequences are also unambiguously defined in the *Income tax act* Chapter 44 § 9, §§ 29.²⁸ Repos are for tax purposes considered a sale and a subsequent repurchase and are therefore subject to income tax, while any capital gain earned from trade with a borrowed stock is due first when the stock loan is repaid.

²⁵ For the Riksbank's analysis and a description of multiproduct vs single product CCPs see Financial Stability Report 2002:2.

²⁶ *Lag (1991:980) om handel med finansiella instrument.*

²⁷ FFFS 2002:22 *Föreskrifter och allmänna råd om årsredovisning i kreditinstitut och värdepappersbolag*, Regulation and general guidance on annual reports for credit institutions and securities firms.

²⁸ *Inkomstskattelagen (1999:1229).*

■ As securities lending occurs OTC in Sweden, the details of securities lending transactions are specified by the individual contracts. In addition, the Swedish Securities Dealers Association has published guidelines for these transactions. The 99.41% (instructions) /99.67%(value) settlement rate for fixed income securities and 99.18% (instructions) /99.32% (value) for equities in 2006 suggest that participants are able to borrow securities they need for settlement.

Finansinspektionen supervises the risk management of the individual institutes. This includes the handling of potential positions resulting from securities lending activities.

Considerations

The OTC securities lending market in Sweden is supported by Swedish law and standard documentation from the Swedish Securities Dealers Association. The settlement ratio of 99.41% (instructions) /99.67%(value) for fixed income instruments and 99.18% (instructions) /99.32% (value) for equities suggest that the market functions efficiently. Finansinspektionen has issued regulations for this market and supervises institutions' risk management related to it.

Assessment

The Riksbank and Finansinspektionen assess recommendation 5 as observed.

Recommendation 6: Central securities depositories (CSDs)

Securities should be immobilised and transferred by book entry in the CSD to the greatest extent possible.

All Swedish securities settled in VPC's system are issued in uncertificated, dematerialised book entry form and are transferred or pledged by book entry at the time of settlement. Foreign securities handled by the VPC system are normally dematerialised. A very small share of securities held on account in the VPC system are immobilised with a global certificate being held elsewhere.

VPC is currently the only CSD operating in Sweden. By Swedish law, registration in a CSD account, known as VPC accounts in the VPC system, confers ownership rights. Thus, there is no time lag between settlement and registration.

Considerations

All Swedish securities settled in VPC's system are issued in uncertificated, dematerialised book entry form and are transferred or pledged by book entry at the time of settlement. Most foreign securities handled by the VPC system are dematerialised but a very small share of foreign securities are immobilised with a global certificate being held elsewhere. In Sweden, registration in the VPC system confers the right of ownership so there is no time lag between settlement and registration.

■ Assessment

The Riksbank and Finansinspektionen assess recommendation 6 as observed.

Recommendation 7: Delivery versus payment (DVP)

CSDs should eliminate principal risk by linking securities transfers to funds transfers in a way that achieves delivery vs payment.

All instructions related to a transaction involving payment in VPC's system are settled on a gross basis with delivery vs payment (DVP). Delivery, the debiting of the seller's securities account and crediting of the buyer's occurs simultaneously with payment, the debiting of the buyer's cash memorandum account and crediting the seller's. Both the delivery and payment are final when the accounts are debited and credited. These procedures provide a legally certain DVP which minimises principal risk for VPC's participants. VPC has no control over the procedures which participants use with their customers and at that level the system itself does not provide DVP.

Free of payment (FOP) transactions have many uses i.a. they reflect an institution's internal movement of securities or a pledging transaction. They may also reflect a transaction for which the securities leg is settled in the securities settlement system and the cash leg is settled in another way. Such a transaction would not be DVP. Thus, free of payments transactions could be an interesting indicator of transactions in a market which are not settled DVP. VPC does not monitor how participants use FOP transactions in its system.

The rules and procedures for achieving DVP are described in VPC's General terms and conditions.²⁹

Considerations

All instructions related to a transaction involving payment in the VPC system are settled DVP. The system itself does not monitor the use of FOP transactions so it is impossible to estimate how many of these may be related to actual transactions rather than pledges.

Assessment

The Riksbank and Finansinspektionen assess recommendation 7 as observed.

²⁹VPC General terms and conditions, November 2006, p.53 55.

Recommendation 8: Timing of settlement finality³⁰

Final settlement should occur no later than the end of the settlement day. Intraday or real time finality should be provided where necessary to reduce risks.

VPC's rules clearly define the concept of settlement finality as well as the timing of irrevocability and finality of transactions. Instructions become unilaterally irrevocable when they are matched for settlement. The next step in transaction processing is the control process. In this process, the system checks that there is sufficient liquidity and securities in participants' accounts to cover the transactions. When the instructions have been controlled, the liquidity and securities to settle the instructions are blocked and the instructions are marked ready for settlement. At this point, they will settle in the next settlement batch even if one of the parties to the transaction is declared bankrupt. Transactions are final when settlement occurs. In conjunction with each of the specified settlement cycles, participants may transfer the proceeds of settlement to their ordinary central bank accounts. There are three such cycles for equity transactions and four for fixed income transactions. With four settlement cycles a day for fixed income products and three for stocks, the system allows securities to be reused during the day.

Participants can also choose a real time gross settlement (RTGS) procedure if immediate settlement is necessary, but as a rule they use the standard settlement cycles. Technically the VPC system can offer continuous settlement. This option was suggested to market participants during the construction of the system. However, the participants found the transition to a continuous settlement system would be too costly. VPC has discussed increasing the number of settlement cycles or moving to continuous settlement but market participants are presently satisfied with the current timing of settlement finality. Should participants need real time settlement they can use the RTGS functionality.

VPC does not receive provisional transfers of securities from or deliver provisionally to other CSDs through its links.

Considerations

Settlement is final at three clearly defined times a day for stock transactions and four times a day for fixed income products. This together with the RTGS functionality ensure that participants can obtain the proceeds of settlement when they are needed and reuse them during the day.

Assessment

The Riksbank and Finansinspektionen assess recommendation 8 as observed.

³⁰ For definition of settlement finality see, Committee on Payment and Settlement Systems, *Core Principles for Systemically Important Payment Systems*, BIS January 2001.

Recommendation 9: CSD risk controls to address participants' failures to settle

CSDs that extend intraday credit to participants, including CSDs that operate net settlement systems, should institute risk controls that, at a minimum, ensure timely settlement in the event that the participant with the largest payment obligation is unable to settle. The most reliable set of controls is a combination of collateral requirements and limits.

VPC does not act as principal or in any way extend credit itself to participants. VPC's settlement system is designed to completely eliminate any implicit credit extension by requiring that the securities and cash needed for each individual transaction be blocked before the transaction is marked ready for settlement. After the control and blocking of securities and cash, the transaction is guaranteed to be settled even if one of the counterparties is declared bankrupt. VPC does not allow an overdraft in either securities or money.

Participants still run counterparty risk in that their transactions may not be marked as ready for settlement if their counterparty does not fulfil its obligations. This risk is a bilateral risk and will not stop the settlement process even if the number of transactions actually settled may be very low.

Assessment

Settlement in the VPC system takes place on a gross basis. VPC does not offer any credit in connection with settlement. Therefore this recommendation is not applicable to VPC.

Recommendation 10: Cash settlement assets

Assets used to settle the ultimate payment obligations arising from securities transactions should carry little or no credit or liquidity risk. If central bank money is not used steps must be taken to protect members from potential losses and liquidity pressures arising from the failure of the cash settlement agents whose assets are used for that purpose.

The cash leg of transactions between settlement banks in VPC's system is settled in central bank money. Settlement in SEK takes place in special Riksbank accounts administered by VPC³¹ while settlement in Euro goes through the central bank of Finland, Suomen Pankki's RTGS system (BoF RTGS). Settlement between participants which are not settlement banks takes place in the books of the commercial banks which act as settlement banks.³²

In SEK, settlement banks have special central bank liquidity accounts and associated credit accounts. Even though VPC administers these accounts, the Riksbank takes full responsibility for them. In the

³¹ For a description of VPC's administration of these accounts and the rights and obligations of both parties see the contract between the Riksbank and VPC on www.riksbank.se.

³² There are 11 settlement banks in the VPC system, 9 financial institutions, the Riksbank and the Swedish National Debt Office (Riksgäldskontoret).

■ cash leg of securities transactions, settlement banks have neither a financial nor an operational exposure to the settlement system. The Riksbank has required, as one of the conditions for allowing its accounts to be used by the settlement system, that the settlement system provide the central bank with information about the holdings in these accounts continuously during the day. This would enable the Riksbank to reconstruct the accounts should the securities settlement system suffer an operational disturbance. As soon as settlement occurs, all balances can be transferred back to the regular central bank payment system, the RIX system. Self collateralisation of transactions is possible using the credit accounts administered by VPC and associated with the liquidity accounts. The RIX system has been found for the most part to observe the requirements in the Core principles for systemically important payment systems in an IMF FSAP³³ assessment and in the assessment carried out by the Riksbank. The results of the Riksbank's assessment can be obtained at www.riksbank.se.

The conditions and procedures for settling in Euro changed as of November 2006. The Riksbank decided not to participate in TARGET2 and will no longer offer settlement in Euro as of December 2006. VPC has instead become a member of BoF RTGS. To settle Euro payments, settlement banks transfer funds into VPC's account with Suomen Pankki. VPC's legal experts have considered the support provided by Finnish law and VPC's agreement with Suomen Pankki and found that these support the separation of client funds in client accounts so the settlement banks do not have any credit risk on VPC. Each settlement bank's deposits into that account are mirrored in cash memorandum accounts in the VPC system. Settlement takes place over these cash memorandum accounts and the proceeds are then transferred from VPC's account with Suomen Pankki into each settlement bank's central bank account. Thus, the routines are basically the same in Sweden and Finland but the legal status of the accounts in the VPC system is very different. BoF RTGS system has been assessed in accordance with the Core principles for systemically important payment systems in an IMF FSAP and has been found to observe all of the core principles.³⁴

All VPC participants who are also participants in the relevant central bank's large value payment system and who fulfil VPC's requirements can become settlement banks. There are currently eight commercial banks acting as settlement banks in SEK and five in Euro. The settlement banks are supervised by supervisory authorities in their home country. Once a bank has been accepted as a settlement bank, VPC continues monitoring its eligibility. In SEK five of the eight commercial settlement banks are responsible for 87% of the liquidity used in the system. Because of this, exposures to these banks are large and entail a contagion risk. Currently, the cost level in the RIX system together with the stringent technical and administrative requirements for participation mean that high settlement volumes are necessary before a bank has a business case to become a settlement bank.

The proceeds of settlement in both SEK and Euro are available for reuse within the VPC system immediately after a transaction has been controlled and marked ready for settlement. Settlement banks in VPC's system must wait for settlement to occur at specific settlement times for their cash to be available outside of the system. A move to more frequent settlement batches would decrease the amount of time settlement banks would need to wait for their cash. The settlement banks however have been satisfied with the current frequency of settlement. Participants who employ the settlement banks must come to an agreement with their settlement bank on the time at which their cash will be available.

³³ IMF, *Sweden: Financial System Stability Assessment, including Reports on the Observance of Standards and Codes on the following topics: Monetary and Financial Policy Transparency, Banking Supervision, Securities Regulation, Insurance Regulation, and Payment Systems*, August 2002 available at www.imf.org.

³⁴ IMF, *Finland: Financial System Stability Assessment, including Reports on the Observance of Standards and Codes on the following topics: Financial Policy Transparency, Banking Supervision, Insurance Supervision, Securities Regulation, and Payment Systems* November 2001. Available at www.imf.org.

■ Considerations

The Riksbank and Suomen Pankki are the settlement agents for securities settlement in VPC. The settlement systems, the RIX system and BoF RTGS, essentially observe the requirements in the Core principles for systemically important payment systems. Participants which are not members of the RIX system employ a settlement bank. Exposures to these banks are very concentrated but they are all supervised by financial supervisory authorities and VPC monitors them. The proceeds of settlement are available intraday.

Assessment

The Riksbank and Finansinspektionen assess recommendation 10 as observed.

Comment

There are only six commercial banks which act as settlement banks in the VPC system. As a result of this, exposures to settlement banks are concentrated and contagion risk increases. To be a settlement bank in SEK, a bank must be a member of the large value settlement system owned by the Riksbank, the RIX system. Currently, the cost levels in the RIX system together with the participation requirements mean that high settlement volumes are necessary before a bank has a business case to become a settlement bank. The Riksbank will introduce a new fee structure when it launches the new technical system for RIX in fall 2007.

Recommendation 11: Operational reliability

Sources of operational risk arising in the clearing and settlement process should be identified and minimised through the development of appropriate systems, controls and procedures. Systems should be reliable and secure, and have adequate, scalable capacity. Contingency plans and back up facilities should be established to allow for timely recovery of operations and completion of the settlement process.

VPC has a separate risk management function which employs a well defined process for identifying and managing operational risks in business processes, the technical infrastructure, IT systems and implementation projects. The function supports the business areas to manage their risks.

The risk management function is constituted of two persons from VPC (and one person from APK) and they are in charge of the regulations for risk management. The assignment of risk management function includes:

- Producing policies, guidelines and regulations.
- Co ordinating the risk management for the VPC (and APK).
- Supervising the development of international standards.
- Being in charge of insurances.
- Investigating incidents.
- Working with security awareness.
- Co ordinating continuity plans and tests.
- Co ordinating VPC's crisis management functions.

■ This function is independent of operations and business and reports directly to the CEO. The annual process for managing company wide operational risks was updated in 2006. The first step in the new process is a risk workshop where each business area identifies and ranks its own operational risks. These risks are consolidated and presented to the management together with suggestions for risk mitigation. In addition VPC's operational risk management procedures are reviewed by the risk management group and an external audit is made on a yearly basis.

VPC's technical systems are the source of most of its operational risks. These risks are included in the process described above but are also managed in other ways. Special risk assessments are carried out for any change in the technical system. At least two audits of IT operations/security are performed each year, one by external and one by internal auditors. Any resulting recommendations are reported directly to management. Management also monitors key indicators of operational reliability such as availability and response times regularly. VPC is not certified according to ISO 17799 but benchmarks its IT security policies against this standard. As a result of the benchmarking, VPC deems that it complies with the standard.

VPC has developed contingency plans to handle the operational risks which it has identified. They encompass local disturbances as well as widespread (9/11 type) disasters and are supported by a second site with an independent infrastructure at a suitable distance from its main site and a third tape back up processing site. Both the plans and the sites are tested regularly, at least twice a year. Some participants are involved in the testing. The plan requires that operations can be re established within one hour though in tests it has been done in less time. VPC has an inventory of those infrastructure providers which it depends on and monitors the providers and its dependence on them.

In addition, VPC has considered how it would handle a situation in which its computer systems are unavailable. VPC requires that participants maintain a record of their transactions so that they can recreate their transaction if VPC's system should fail. Activities related to this requirement are followed up at VPC's bilateral meetings with participants. VPC also has a manual process to empty the liquidity accounts that it holds for the Riksbank. This process is tested regularly with the Riksbank and certain participants.

VPC helps participants choose a communications solution with sufficient capacity and monitors them to ensure no more capacity is needed. VPC offers its participants back up workstations and alternative means of entering transactions.

All data are continuously copied over by synchronous disk mirroring to two separate operating centres as soon as they are received or generated by VPC's system. Message integrity is controlled both at the transactions handler and at the relational database. In addition, there are transactions logging mechanisms at several points in the transaction chain.

VPC measures availability as the percentage of time during which the system was available to a majority of system participants during the opening hours of 7:00 to 21:00. During 2006, availability was 99.96%.

- Capacity and transactions volumes are monitored both on a daily and weekly basis. To estimate maximum capacity, stress tests are performed in a test environment. In addition, VPC is adopting a new licensing model with its supplier of computing capacity to allow VPC to increase its computing capacity in minutes.

Considerations

VPC has established routines to identify monitor and manage operational risk. This has resulted in contingency plans and adequate back up systems. VPC has an independent function to work with operational risks; it reports directly to senior management and provides them with regular information about the operational status of the system.

VPC's contingency plans are tested regularly and some participants are involved in the tests. VPC has considered situations in which it has no access to computer systems and has informed participants how it would handle such situations.

VPC performs capacity tests regularly, has estimated its maximum capacity and has taken steps which would allow it to increase capacity should this be needed. In 2006 system availability was 99.96%.

Assessment

The Riksbank and Finansinspektionen assess recommendation 11 as observed.

Recommendation 12: Protection of customers' securities

Entities holding securities in custody should employ accounting practices and safekeeping procedures that fully protect customers' securities. It is essential that customers' securities be protected against the claims of a custodian's creditors.

The Financial instruments accounts act³⁵ specifies which institutions may act as a custodian in business with the CSD. These institutions include central banks, other clearing organisations, other CSDs, and institutions engaged in securities business³⁶ under the supervision of Finansinspektionen and securities institutions or comparable institutions (i.e. banks) from other countries under the supervision of the relevant competent authority. Thus, in practice all financial institutions acting on behalf of others in the CSD are under supervision by a relevant competent authority.

According to the *Funds accounting act*³⁷ and the *Financial instruments accounts act*³⁸, a custodian must employ procedures ensuring that all customers' assets are appropriately accounted for and kept

³⁵ Lag (1998:1479) om kontoföring av finansiella instrument kap. 3, § 2.

³⁶ This would be banks and licensed securities institutions in Sweden.

³⁷ Lag (1944:181) om redovisningsmedel.

³⁸ Lag (1998:1479) om kontoföring av finansiella instrument.

■ safe and segregated from the assets of the custodian. This is further outlined in Finansinspektionen's regulation (*FFFS 2002:7*, Chapter 2, § 4)³⁹. Thus the legal framework supports the segregation of customer assets and they are in this way also protected in the case of a custodian's bankruptcy. In addition, all customers have the option to register their securities either with a custodian or directly on an account with the VPC.

In addition, Finansinspektionen appoints an auditor in all major financial institutions. These auditors have, among other things, a responsibility to check the procedures for internal controls. Finally, Finansinspektionen supervises the financial institutions. In the extreme case, if a custodian commits fraud and does not honor the segregation of assets, the *Act on investor compensation scheme*⁴⁰ will protect each customer's assets up to an amount of SEK 250,000.

Considerations

Assessment according to this recommendation is based on the legal framework and the regulation governing the protection of customers' securities and not the actual routines of individual institutions. Swedish law supports the segregation of customers' securities and this is backed up by supervisory regulation. Entities holding securities in custody are subject to supervision that includes the appointment of an auditor.

Assessment

The Riksbank and Finansinspektionen assess recommendation 12 as observed.

Recommendation 13: Governance

Governance arrangements for CSDs and CCPs should be designed to fulfil public interest requirements and to promote the objectives of owners and users.

VPC is a limited liability company. Of its stock, 98.9% is owned by four major banks operating in Sweden. The remaining 1.1% is owned by other banks and brokers. VPC has published information about its governance, objectives and its operational structure on its web site in both English and Swedish. The VPC objectives are reconsidered once a year. This was last done in May 2006.

The vision for the NCSD group, the CSD group made up of VPC and APK, has been published on the NCSD website. The vision encompasses activities aimed at harmonising procedures for the Nordic market and interconnecting CSD services, meaning a single service platform. Objectives for NCSD were established by the board in May 2006 and are published on the Internet. NCSD has objectives for harmonisation of services in its markets, a high quality of services and reasonable pricing. In addition, NCSD has one objective which specifically supports the public interest. This is:

³⁹ Finansinspektionen regulation (FFFS 2002.22) *Föreskrifter och allmänna råd om årsredovisning i kreditinstitut och värdepappersbolag.*

⁴⁰ *Lag (1999:158) om investerarskydd.*

■ *NCSD shall meet international standards and European best practices in respect of functionality, transparency, security, interconnectivity and open access, all on a competitive level.*⁴¹

The public interest aspects of security settlement are also supported by Swedish law, the *Securities and Clearing Operations Act*⁴², which stipulates that all exchanges and clearing organisations shall conduct business in a way which maintains the public's confidence in the financial markets and so the private individual's capital is not exposed to inappropriate risks. Moreover, they shall meet those requirements for security which are consonant with sound business practices.

To take the views of users and the public into account, VPC solicits opinions from its users concerning major decisions. Customer suggestions and satisfaction are gathered directly from the market participant or through industry organisations. All new functionality and major changes in VPC's system and routines are designed and implemented in consultation with market participants and customers, inviting them to be represented in project steering groups and working groups.

Beyond the supervisory fit and proper test, the activities of VPC's management are followed by its board whose members represent institutions active in financial markets. A board member is according to *The Swedish Companies Act* obliged to be loyal to the company (lojalitetsplikt), which means that the board member should not represent specific shareholders or groups of interest. In addition, VPC has instituted a bonus system based on concrete measure of operations, reliability of the system, customer satisfaction and performance.

The board of directors is made up of eight members, where five members are chosen by VPC's owners and two are employee representatives. One of the five who are chosen by the owners is nominated by the Swedish Securities Dealers Association. This information together with the names of the directors is available at VPC's web site.

Considerations

VPC publishes information about its governance in both its annual report and its disclosure framework. The names and experience of the board members are provided as well. VPC publishes major decisions of the board and informs participants of the relevant decisions. Changes in rules and procedures are worked out with input from participant groups. VPC accepts suggestions from participants and handles them in a transparent way. Information on all projects and on important plans for the system are presented at participants' meetings and the minutes of these meetings are published. NCSD has established objectives for the group as a whole. These are published on the NCSD website.

Assessment

The Riksbank and Finansinspektionen assess recommendation 13 as observed.

⁴¹ <http://www.ncsdgroup.com/569.html>

⁴² *Lagen (1992:543) om börs och clearingverksamhet*

Recommendation 14: Access

CSDs and CCPs should have objective and publicly disclosed criteria for participation that permit fair and open access.

The *Securities and clearing operations act (1992:543)* and the *Financial instruments accounts act, (1998:1479)* require that clearing organisations and CSDs respectively have fair and open criteria for membership.⁴³ The criteria for participation in VPC's settlement system include: suitable management, sufficient capital, risk management organisation to cover the contingencies which may arise in connection with securities settlement and technical capacity to function in VPC's system. VPC has harmonised the Swedish and Finnish procedures for applying for membership and the application forms themselves. Thus the process has become more transparent for participants in one market who also want to participate in the other.

VPC's *General terms and conditions*⁴⁴ state procedures for the orderly exit of participants. VPC may not unilaterally expel a participant from the system unless that participant has defaulted or has in some way broken the rules of the system. VPC has designated a contact person for help with any problems or dissatisfaction with the application or exiting processes.

Considerations

The criteria for participating in the VPC system are objective in that they focus on characteristics which participants must have so that they do not cause disturbances in the settlement process. They are clearly stated in VPC's Rules and Regulations available on the VPC website. The criteria for VPC's exit procedures are stated in its *General terms and conditions*.

Assessment

The Riksbank and Finansinspektionen assess recommendation 14 as observed.

Recommendation 15: Efficiency

While maintaining safe and secure operations, securities settlement systems should be cost effective in meeting the requirements of users.

The VPC system is subject to regular internal reviews of its pricing and costs. VPC benchmarks its IT costs, the largest part of its costs, against other units producing IT services. VPC also benchmarks prices with other CSDs. It has proven to be difficult both for VPC in its analyses and for the Riksbank and Finansinspektionen in its assessment to perform any meaningful costs and price comparisons with other CSDs because of differences in pricing strategy, services offered and market size.

⁴³ *Lag (1992:543) pm börs och clearingverksamhet* and *Lag (1998:1479) om kontoföring av finansiella instrument* respectively.

⁴⁴ See VPC, *General Terms and Conditions, Account Operations and Clearing* November 2006, www.vpc.se.

So far, its benchmarking studies have shown that VPC's prices and costs are in line with the prices and costs of other Nordic CSDs. VPC also has plans to start comparing its costs and prices with other European CSDs.

In April 2006 and November 2006 VPC reduced its participants' fees for various services. The size of the reduction was determined by factors such as fee harmonisation with APK and business considerations. The April reduction was evaluated in a customer survey in September (after a period of six months) which showed that the customers were satisfied with the development. The introduction of the new NCSD network has also reduced communications costs to participants by some 50% on average.

The VPC system uses customer surveys, members' meetings and visits to monitor customer satisfaction. The Riksbank's and Finansinspektionen's interviews with participants indicate that they are generally satisfied with the services offered by VPC and very satisfied with the technical reliability of system. Participants have opportunities to offer suggestions for new services or adaptations of old services and know VPC's routines for handling these. Each customer suggestion is given a number so that customers can follow the progress in handling their suggestions. VPC also monitors operational reliability and capacity (availability was 99.96% 2006).⁴⁵

The actual settlement method entails blocking cash and holding it in the system until it becomes available at three discrete times during the day for stock market transactions and four times during the day for fixed income transactions. The VPC system was built to provide continuous gross settlement but provides discrete settlement batches to cater to the wishes of its major participants. When this settlement procedure was implemented, the Riksbank pointed out that the use of batch settlement cycles instead of real time settlement could draw more liquidity than a continuous gross settlement system. Now that the system has been in use for three years, participants in the system are satisfied with the current number and timing of settlement cycles. They have chosen to provide the system with enough liquidity so that most transactions can be settled in the first settlement cycle of the day. For the fixed income market, the first settlement occurs at 8:00 am. This means that most of the liquidity transferred into the system is used and can be retransferred into the large value payment system shortly after 8:00 am so that banks have access to this liquidity for most of the banking day.

Considerations

Computing costs are a major cost for VPC. These costs are reviewed regularly and special studies have been carried out by external experts. VPC meets with members individually and at regular members meetings. Members have opportunity to make suggestions and give information about their satisfaction with VPC's services between regular surveys. Interviews carried out by the Riksbank and Finansinspektionen found the participants to be generally satisfied with the service they received and very satisfied with the system's technical reliability. VPC tests its capacity and has consistently provided very high (99.96% in 2006) availability.

⁴⁵ See recommendation 11.

■ Assessment

The Riksbank and Finansinspektionen assess recommendation 15 as observed.

Recommendation 16: Communications procedures and standards

Securities settlement systems should use the international communications procedures or standards in order to facilitate efficient settlement of cross border transactions.

VPC offers both a proprietary interface and ISO 15022 message standards for communication. VPC introduced the opportunity to use ISO 15022 message standards both via proprietary communications network and via SWIFT on April 5, 2004.

Considerations

VPC offers international message standards and international communications networks.

Assessment

The Riksbank and Finansinspektionen assess recommendation 16 as observed.

Recommendation 17: Transparency

CSDs and CCPs should provide market participants with sufficient information for them to identify and evaluate the risks and costs associated with using the CSD or CCP services.

VPC provides its users with the information about the risks and costs connected with using its services. VPC's *General terms and conditions* alerts participants to the risk that their transaction will not be settled if their counterparty does not make good on his contract. The publication of statistics showing failed transactions also contributes to this knowledge. Information on failed transactions including the participants responsible and the securities is available for participants on the restricted part of VPC's web site.

Participants can gain some information about operational risk from VPC's availability statistics and disturbance reports published on the Internet and presented at meetings. They can also get current operational information, previous operational information and information about planned system changes as well as previous system changes. There is however no information about operational risk management. Information about the costs associated with joining VPC as well as ongoing costs on a service by service basis is available on the Internet. This information is available freely on VPC's website in English and is updated regularly.

- Over all the participants interviewed are satisfied with the information they receive from VPC. They consider VPC's price list and invoice to be clear, they receive information about disturbances and regulation changes in time and are pleased with the member meetings.

Since the purchase of APK in December 2004, a separate NCSD website provides information on the goals and activities of the group as a whole. There are also separate websites for VPC and APK. The additional group element makes it more difficult to make a clear distinction between the organisational structure of the group and its legal structure.

Considerations

VPC provides the public with information about its costs on a service by service basis, its availability and the percentage of transactions settled on time. This information should allow for an evaluation of the risks and costs associated with the system. Regularly updated information is available in English and, in most cases, Swedish. The NCSD website is striving to consistently differentiate between legal structures and organisational structures.

Assessment

The Riksbank and Finansinspektionen assess recommendation 17 as observed.

Recommendation 18: Regulation and oversight

Securities settlement systems should be subject to transparent and effective regulation and oversight. Central banks and securities regulators should cooperate with each other and with other relevant authorities.

The Riksbank and Finansinspektionen each provide information to answer the key questions in the assessment methodology but do not assign an assessment category. In this way, the reader can assess the extent to which the authorities fulfil the requirements in this recommendation. The Riksbank and Finansinspektionen do not deem it appropriate to assign an assessment category to their own oversight/supervisory work. The last external assessment of the Swedish authorities work was the IMF's Financial Sector Assessment of Sweden in 2002 where the authorities were assessed against recommendation 18. At that time the Swedish authorities were assessed as partly compliant. In its assessment, the IMF argued that the supervision should be developed and that the Riksbank's lack of legal power to bring about change in the system weakens its oversight. The IMF also recommended that the Riksbank and Finansinspektionen develop an explicit cooperative framework which clarifies the division of responsibilities and sharing of information. This framework should be published.⁴⁶

⁴⁶ IMF "Sweden: Financial System Stability Assessment, including Reports on the Observance of Standards and Codes on the following topics: Monetary and Financial Policy Transparency, Banking Supervision, Securities Regulation, Insurance Regulation, and Payment Systems". IMF Country Report No. 02/161 August 2002, item 55 page 23.

■ Finansinspektionen

The Swedish Financial Supervisory Authority, Finansinspektionen, is a public authority. Finansinspektionen authorizes, supervises and monitor all companies operating in Swedish financial markets. Banks and other credit institutions, investment firms and fund management companies, stock exchanges, authorised marketplaces, clearing houses and CSDs as well as insurance companies, friendly societies and insurance brokers are all under the supervision of Finansinspektionen.

Regulation and supervision

A clearing house must obtain authorisation according to the Securities and Clearing Operations Act⁴⁷, to act as a clearing house in Sweden. VPC has been so authorised by Finansinspektionen which also supervises these authorised entities. After having consulted the Riksbank, Finansinspektionen has approved and notified the European Commission that VPC should be a designated system according to the Act on systems for settlement of obligations on financial markets⁴⁸, the act which implements the EC Directive 98/26/ on Settlement finality in payment and securities settlement systems.⁴⁹

Finansinspektionen has the right to require VPC as well as other financial institutions to provide the information necessary for supervision. Finansinspektionen also has the right to perform on site inspections. Should VPC no longer meet the requirements for authorisation as a clearing house, Finansinspektionen has the right to withdraw its authorisation. This means that the institution no longer would be in business. Finansinspektionen's powers are granted by the Securities and clearing operations act⁵⁰ the Financial instruments trading act⁵¹ and the Act on systems for settlement of obligations on financial markets.⁵² The regulation covers not only the institution authorised to provide clearing services but also its participants.⁵³

The supervision of exchanges and clearing houses is carried out by a supervisory group of three persons in the Market Conduct Department. The granting of authorisation and legal questions are handled by the Legal Department which has two legal experts who specialise in exchange and clearing questions. Questions related to supervision and the analysis of specific risk areas are handled by the Prudential Supervision Department whose analysis follow the current supervisory plan.

Objectives of supervision

Finansinspektionen's overarching objectives are to promote stability and efficiency in the financial system as well to ensure an effective consumer protection. To reach these goals, Finansinspektionen issues regulations for financial operations, grants authorisation, carries out supervision and analyses changes in the financial environment.

⁴⁷ Lag (1992:543) om börs och clearingverksamhet, cap. 1, § 1.

⁴⁸ Lag(1999:1309) om system för avveckling av förpliktelser på finansmarknaden.

⁴⁹ Directive 98/26/EC of the European Parliament and of the Council of 19 May 1998 on *Settlement finality in payment and securities settlement systems*.

⁵⁰ Lagen (1992:543) om börs och clearingverksamhet

⁵¹ Lag (1991:980) om handel med finansiella instrument.

⁵² Lag(1999:1309) om system för avveckling av förpliktelser på finansmarknaden.

⁵³ Those participants which act on behalf of others must be financial institutions under the supervision of Finansinspektionen or a corresponding regulator in its country of origin. Participants which only act on their own behalf and which are not supervised in Sweden or in their country of origin must upon Finansinspektionens request provide information about their clearing activities.

■ Risks in the financial sector are not distributed equally among the institutions supervised by Finansinspektionen in as much as they differ in size and type. Finansinspektionen therefore employs a supervisory strategy in which a two stage risk analysis is carried out.

First, financial institutions are categorised according to their significance for the financial markets. In this categorisation, both the institutions activities and size are considered.

Secondly, the probability that the institution will experience a disturbance is calculated and other variables such as risk for contagion are taken into account. Then the institutions are divided into four categories based on their size and activities undertaken. Finansinspektionen's assessment of the existence of any acute problems or more long term risks for disturbance determine thereafter the intensity of supervision and the analysis and supervisory initiatives which shall be undertaken.

Currently, the most highly prioritised institutions are the four big Swedish banking groups, VPC AB and the Stockholm Stock Exchange.

The goals and major policies of Finansinspektionen are reflected in Annual Reports, annual reports on the Stability of the Swedish Financial Sector as well as in various brochures and policy documents. These and other documents are available on the Internet. (www.fi.se). Finansinspektionen has also published its annual reports on the Stability of the Swedish Financial Sector. In its report "Risks in Clearing and Settlement" (FI Dnr 02 3436 000) Finansinspektionen has discussed risks in settlements systems, how such systems are supervised and how they should be supervised in the future to ensure compliance with regulation and international standards. The different roles of Finansinspektionen and the Riksbank are also delineated in this report.

Regulatory reporting

Finansinspektionen meets with representatives of VPC on a regular basis to discuss changes in operations according to a fixed agenda which includes changes in products and services offered organization, system and rules. In addition, updated financial information, transactions volumes and settlement ratio are taken. VPC is required by general guidelines to send Finansinspektionen reports on significant events such as disturbances in its technical system and events which may result in an inability to meet its obligations toward its customers.

International cooperation

Finansinspektionen and Rahoitustarkastus, the Finnish supervisory authority, have entered into an agreement on co operation in the field of supervision of VPC AB and its subsidiaries (the NCSD Group). The purpose of the agreement is to guarantee effective and comprehensive supervision. The agreement was signed in September 2006 and the two supervisory authorities are now working on suitable methods of cooperation.

The Riksbank

The Riksbank has three major roles in relation to VPC. It is the settlement agent for the cash leg of all transactions denominated in SEK and settled in VPC. It is also a member of the VPC system and uses VPC to hold the securities pledged as collateral for intraday credits in the large value payment system. Finally, the Riksbank is the overseer of the VPC system.

■ *Oversight*

The basis for the Riksbank's oversight roll can be found in the *Sveriges Riksbank Act*⁵⁴. There, the Riksbank is given the responsibility to promote a safe and efficient payment system and to provide emergency liquidity assistance. The *Sveriges Riksbank Act* moreover gives the Riksbank the right to collect information which it deems necessary to carry out its oversight work from financial institutions.

The Riksbank has determined that VPC is systemically important because the values settled in the VPC system are large and the securities settled are used as collateral in particular in the payment system. Thus, disturbances in VPC's operations can potentially spread to other institutions and other parts of the payment system. Moreover, the VPC system is the only entity to offer services as a central securities depository and for settling securities transactions in the Swedish market. Thus, there are no alternatives to using the VPC system. The Riksbank therefore conducts regular oversight over the VPC system and assesses it against the CPSS IOSCO *Recommendations for Securities Settlement Systems* annually.

At the Riksbank oversight is carried out in the Financial Infrastructure Division in the Financial Stability Department. A team of three is primarily responsible for oversight of clearing and settlement systems. In addition, risk management, legal and technical expertise is also available within the department.

Objectives of oversight

To operational the responsibility granted by the *Sveriges Riksbank Act*, the Riksbank has set two major objectives for its oversight work. The Riksbank will work to reduce the risk of a crisis in the Swedish financial system and thereby the need to provide emergency liquidity assistance. The Riksbank will also establish and maintain the plans and analysis necessary to be able to manage any crisis which may occur with the least cost for the economy as a whole.

A central component in reducing the risk for a crisis is the Riksbank's oversight over systemically important institutions and components of the payment system. The basis for this oversight is an identification of the risks which arise in the clearing and settlement of payments and securities transactions. In the oversight process, the Riksbank identifies the extent to which these risks have been mitigated by market practices or the construction of the financial infrastructure. Where gaps in risk mitigation exist, the Riksbank recommends actions to fill the gaps or, where no solution is apparent, initiates an investigation into which actions would be appropriate. The Riksbank *has no legal power to require that market participants eliminate the gaps in risk mitigation but uses moral suasion*. One instance of that is the publication of the results of its oversight work in the Riksbank's Financial Stability Report.

The oversight of VPC follows this pattern. The Riksbank works to ensure that VPC has procedures and routines which minimize the settlement risks arising in its system. Assessing the VPC system against the CPSS ISOCO Recommendations for securities settlement system plays a central role in evaluation of the mitigation of the settlement risks arising in VPC's system. Should a crisis arise on the Swedish markets, the Riksbank will work to minimize the resulting cost. The oversight of VPC also contributes to this objective. A crucial element in reducing the costs of crisis management is an accurate analysis of the crisis situation. A clear understanding of VPC's system and the risks involved in using the system is vital for a crisis analysis.

The Riksbank provides a description of its oversight role and important policy considerations on the Internet. More detailed information is regularly presented in publications. Examples of these are the general description of the Riksbank's role from 1995,⁵⁵ the presentation of the Riksbank's view from

⁵⁴ *Lag (1988:1385) om Sveriges Riksbank*

⁵⁵ Financial Markets Report, 1995:1.

1997⁵⁶ and the policy statement focusing on the oversight of the financial infrastructure issued in Sveriges Riksbank *Economic Review*, in September 2001.⁵⁷ The Riksbank's oversight work with i.a. VPC is regularly summarised in the Financial Stability Report and the assessments are published annually. The Riksbank's policy in questions relating to financial infrastructure expressed in speeches and formal replies to domestic consultations are also published on the website.

Collection of oversight information

The Riksbank has the legal power to obtain all the information it needs to meet its objectives from VPC. The Riksbank utilises a number of channels for obtaining information and compiling an accurate picture of the risks associated with settlement at VPC.

These channels include:

- Quarterly meetings with representatives of VPC. The focus at these meetings is the operative and settlement risks associated with settlement in the VPC system, and the reliability of VPC's technical systems.
- VPC's availability figures in the RIX system. The Riksbank obtains information about the robustness of VPC's technical systems from studying its availability in the payment system.
- The annual assessments of VPC which requires VPC to provide updated information. In connection with these assessments the Riksbank chooses certain focus areas where additional information is collected to thereby improve knowledge about the system.
- The Riksbank is involved in gathering statistics and information about specific aspects of the settlement system in connection with its international work.

International cooperation

The Riksbank and Suomen Pankki, the central bank of Finland, have signed an agreement to cooperate in the oversight of VPC and APK OY, the two CSDs which together make up the NCSD group.⁵⁸ The two CSDs are separate legal entities with separate settlement systems but have plans to harmonise procedures and perhaps to move to a single settlement platform. The central banks' co operation covers areas which the two systems have in common.

Cooperation

In February 2003, the Riksbank and Finansinspektionen signed an agreement on cooperation in the area of financial stability. The agreement was revised in 2005 and was augmented with a section which also includes the Ministry of Finance. This new section comprises an agreement on the guidelines for consultation and exchange of information in the areas of financial stability and crisis management.⁵⁹

The Riksbank and Finansinspektionen decided in the fall of 2005 that they should carry out the assessments of securities settlement in Sweden together, starting in 2006. In conjunction with this assessment, the authorities have worked to improve their cooperation by sharing information and methods with each other.

⁵⁶ Financial Markets Report, 1997:1.

⁵⁷ Martin Andersson, Gabriela Guibourg och Björn Segendorf, "The Riksbank's oversight of the financial infrastructure," *Economic Review*, 2001:3.

⁵⁸ Memorandum of Understanding between the Central Banks of Sweden and Finland on Co operation in the Oversight of the Central Securities Depositories VPC AB and Suomen Arvopaperikeskus Oy January 18, 2006 see www.riksbank.se.

⁵⁹ See www.fi.se and www.riksbank.se.

Recommendation 19: Risks in cross border links

CSDs that establish links to settle cross border trades should design and operate such links to reduce effectively the risks associated with cross border settlements.

VPC operates links for two reasons – to facilitate the transfer of securities listed on more than one stock exchange and to handle foreign securities held in VPC Service Accounts. Service Accounts are end user accounts which VPC sets up and administers in the VPC system on behalf of a participant, i.e. the Service Account customer. In 2006, VPC processed approximately 3.634 instructions via links.

For those securities which are listed on more than one exchange, VPC has established either direct or indirect FOP links. Direct FOP links have been established with VP A/S, the Danish CSD, CrestCo Ltd., the United Kingdom's CSD, APK Oy, the Finnish CSD and SIS AG (SegalInterSettle), the Swiss CSD. Indirect FOP links have been established with Denmark using Danske Bank, Finland using Nordea, Iceland using Handelsbanken and USA using Brown Brothers Harriman and Company (BBH).

In connection with the Service Accounts, VPC has established DVP links for securities held in Euroclear and for securities held in the USA. For Service Account securities held in Euroclear, VPC has established a direct DVP link in commercial bank money. For the settlement of instructions over that link, VPC employs the Service Account customer to act as settlement bank while VPC itself is a member of the securities settlement system. This means that the Service Account customer holds a cash account in its own name with Euroclear to cover the cash leg of its transactions. Should a Service Account customer not wish to act as settlement bank itself in Euroclear, the Service Account customer would then be asked to employ a settlement bank to handle the cash leg of the transactions. Thus, the Service Account customer takes credit risk on Euroclear or its settlement bank while VPC itself takes no settlement banks risk or any other credit risks in operating this link.

To handle American equities for Service Accounts, there is an indirect DVP link through BBH. VPC is not a direct member of the settlement system but instead has a securities account with BBH. The Service Account customer has access to a cash account with BBH for the proceeds of securities transactions.

As regards cash distributions such as dividends through the above mentioned links, these are deposited into cash accounts held by VPC. When a distribution is paid to the cash account, VPC makes an FX transaction, transfers the funds and distributes them in SEK to the Service Account holders. VPC has a credit risk on the Swedish bank for payments related to Service Account securities in Euroclear and on BBH for payments related to American securities until the dividend is credited to the Service Account holders. Thus, VPC has a credit risk for cash distributions but not for the cash used in securities transactions.

VPC has carried out risk analyses for these links with an emphasis on operational risks and contingency plans. VPC also monitors its settlement banks.

- VPC does not allow provisional transfers. It provides its customers with information about how the links work and which custodian is used on its home page so that customers can evaluate the custodial risk they take in using the links.

Considerations

Less than one per cent of VPC's transactions are processed through links. VPC has done a risk analysis of both its FOP and DVP links. The bulk of VPC's link business is FOP with no provisional transfers. This construction gives rise to little risk for VPC. A small share of its linked transactions is handled with DVP links. VPC uses a settlement bank for its DVP links but is only exposed to settlement bank risk for transactions with American securities. This is the only direct risk the system runs. The amounts involved are very small and VPC monitors its settlement bank and in that way minimises the risks involved.

Assessment

The Riksbank and Finansinspektionen assess recommendation 19 as observed.

■ Documentation

1. National legislation and regulation

- 1.1 Act on investor compensation scheme Lag (1999:158) om investerarskydd.
- 1.2 Act on systems for settlement of obligations on the financial market, Lag(1999:1309) om system för avveckling av förpliktelser på finansmarknaden.
- 1.3 Bankruptcy act, Konkurslagen (1987:672).
- 1.4 Financial instruments accounts act, Lag (1998:1479) om kontoföring av finansiella instrument.
- 1.5 Financial instruments trading act, Lag (1991:980) om handel med finansiella instrument.
- 1.6 Finansinspektionen General guidelines 2005:1.
- 1.7 Finansinspektionen regulation (FFFS 2002:7) Regulations governing rules of conduct on the securities market.
- 1.8 Finansinspektionen regulation (FFFS 2002.22) Regulation and general guidance on annual reports for credit institutions and securities firms.
- 1.9 Funds accounting act, Lag (1944:181) om redovisningsmedel.
- 1.10 Income tax act Inkomstskattelagen(1999:1229).
- 1.11 Priority Rights Act, Förmånsrättslag (1970.979).
- 1.12 Securities and clearing operations act, Lagen (1992:543) om börs och clearingverksamhet.
- 1.13 Sveriges Riksbank Act, Lag (1988:1385) om Sveriges Riksbank.

■ 2. Market agreements and market practices

- 2.1 Custody agreement, Bank, Swedish Securities Dealers Association May 2003.
- 2.2 Custody and Cash Account Agreement, securities company, Swedish Securities Dealers Association, May 2003.
- 2.3 General Conditions Governing Custodian Services, Bank, Swedish Securities Dealers Association 2003.
- 2.4 General Conditions Governing Custody and Cash Account Services, Securities Company, Swedish Securities Dealers Association, May 2003.
- 2.5 General terms and conditions for the lending of securities interbank, Swedish Securities Dealers Association, February 2000.
- 2.6 General terms and conditions for the lending of securities customer, Swedish Securities Dealers Association ,February 2000.
- 2.7 Master Agreement for the lending of securities, interbank, Swedish Securities Dealers Association, February 2000.
- 2.8 Master Agreement for the lending of securities, customer, February 2000.
- 2.9 Sweden Country report to the International Council of Securities Associations, May 2005.
- 2.10 The Swedish Securities Dealers Association's rules governing trading in securities and settlement of transactions.

■ 3. Documentation provided by VPC

(All documents are available on the website www.NCSD.com unless otherwise noted)

- 3.1 Annual Report, 2005.
- 3.2 Application instruction for participation, VPC and APK.
- 3.3 Clearing and Settlement in the VPC system.
- 3.4 Disclosure Framework VPC, November 2006.
- 3.5 General terms and conditions, Account operations and clearing.
- 3.6 ISO 15022 interface, VPC, April 2005.
- 3.7 Minutes of members meeting 28 September 2005.
- 3.8 Newclear Product Description "Basic and Additional Functionality" June 4, 2003.
- 3.9 Price list, VPC.
- 3.10 Produktbeskrivning Servicekonto May 2004.
- 3.11 Special resolution, Settlement incentives, VPC.
- 3.12 Special resolution, Settlement timetable, VPC.
- 3.13 VPC's response to the Association of Global Custodians 2005 2006 questionnaire.

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4. Documentation from the Riksbank (All documents are available at www.riksbank.se)

- 4.1 Riksbank Decision: Follow up of annual work plan and budget for 2002, Annex 3 About system development for special central bank accounts for securities settlement which are administered by VPC, May 2002.
- 4.2 Financial Stability Report, Riksbank 2002:2
- 4.3 Rules and Regulations for RIX and monetary policy instruments, August 2005.
- 4.4 The contract between the Riksbank and VPC AB.
- 4.6 Memorandum of Understanding between the Central Banks of Sweden and Finland on Co operation in the Oversight of the Central Securities Depositories VPC AB and Suomen Arvopaperikeskus Oy, January 18, 2006.

5. Documentation from Finansinspektionen

- 5.1 MoU between Finansinspektionen and Rahoitustarkastus on cooperation in the supervision of the NCSD Group, September 2006.
- 5.2 Clearing och avvecklingsrisker, Rapport 24 oktober 2002, (Dnr 02 3436 000).

6. Other Documents

- 6.1 Bill to Parliament 2004/05:30 Collateral, Propositionen 2004/05 30 Finansiella Säkerheter.
- 6.2 Committee on Payment and Settlement Systems and Technical Committee of the International Organisation of Securities Commissions, Recommendations for Securities Settlement Systems, BIS November 2001.
- 6.3 Committee on Payment and Settlement Systems and Technical Committee of the International Organisation of Securities Commissions, Assessment methodology for "Recommendations for Securities Settlement Systems, BIS, November 2002.
- 6.4 Committee on Payment and Settlement Systems, Central bank oversight of payment and settlement systems, BIS, 2005.
- 6.5 Committee on Payment and Settlement Systems, Core Principles for Systemically Important Payment Systems, BIS January 2001.
- 6.6 European Central Securities Depositories Association's First annual status report relating to its standards for the removal of Giovannini barriers 4 and 7.
- 6.7 Directive of the European Parliament and of the Council 98/26/EC on Settlement finality in payment and securities settlement systems.

European Directive
- 6.8 Directive of the European Parliament and of the Council 02/47/EC on Financial Collateral Arrangements.
- 6.9 IMF "Sweden: Financial System Stability Assessment, including Reports on the Observance of Standards and Codes on the following topics: Monetary and Financial Policy Transparency, Banking Supervision, Securities Regulation, Insurance Regulation, and Payment Systems". IMF Country Report No. 02/161 August 2002.