

**Denmark: Financial Sector Assessment Program—  
Detailed Assessment of the Securities Clearance and Settlement Systems**

This Detailed Assessment of the Securities Clearance and Settlement Systems for Denmark was prepared by a staff team of the International Monetary Fund as background documentation to the Financial Sector Assessment Program with the member country. It is based on the information available at the time it was completed in September 2006. The views expressed in this document are those of the staff team and do not necessarily reflect the views of the government of Denmark or the Executive Board of the IMF.

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FINANCIAL SECTOR ASSESSMENT PROGRAM

DENMARK

DETAILED ASSESSMENT OF  
THE SECURITIES CLEARANCE  
AND SETTLEMENT SYSTEMS

SEPTEMBER 2006

INTERNATIONAL MONETARY FUND  
MONETARY AND FINANCIAL SYSTEMS DEPARTMENT

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## GLOSSARY

|             |  |
|-------------|--|
| BEC         | <i>Bankernes EDB-Central</i> , the computer center used by Danmarks Nationalbank to operate KRONOS, the Danish Real time gross settlement system for large-value payments          |
| BIS         | Bank for International Settlements   |
| CCP         | Central counterparty   |
| CLS         | Continuous Linked Settlement, an international clearing and settlement system for foreign exchange transactions  |
| CMF         | Change Management Forum of VP  |
| CSD         | Central Securities Depository  |
| CSE         | Copenhagen Stock Exchange, a subsidiary of OMX   |
| CPSS        | Committee on Payment and Settlement Systems of the central banks of the Group of 10 countries  |
| DFSA        | <i>Finanstilsynet</i> , the Danish Financial Supervisory Authority   |
| DVP         | Delivery versus Payment  |
| EEA         | European Economic Area   |
| ECSDA       | European Central Securities Depository Association   |
| EU          | European Union   |
| FUTOP       | The Danish clearing center for futures and options, owned by the Swedish company OMX Group AB  |
| FOP         | Free of Payment, delivery of securities with no corresponding payment of funds   |
| FSAP        | Financial Sector Assessment Program  |
| ICSD        | International Central Securities Depository, an institute that settles trades in international securities and in various domestic securities, usually through links to local CSD's |
| IOSCO       | International Organization of Securities Commissions   |
| ISIN        | International Security Identification Number   |
| ISO         | International Organization for Standardization   |
| IT          | Information Technology   |
| MoU         | Memorandum of Understanding  |
| MTS         | <i>Mercato Telematico dei Titoli di Stato</i> , screen based trading platforms for EU government bonds operated by the MTS Associated Markets SA/NV group                          |
| NOREX       | The strategic alliance between the capital markets in the Nordic and Baltic countries  |
| OMX         | The Nordic exchange, a merger of the exchanges of Denmark, Estonia, Finland, Latvia, Lithuania and Sweden  |
| OTC         | Over The Counter market  |
| PBS         | <i>Payment Business Services (Pengeinstitutternes Betalings Systemer) A/S</i> , the operator of the Sumclearing, the Danish clearing and settlement system for retail payments     |
| RTGS        | Real-Time Gross Settlement   |
| SAXESS      | The common trading system of OMX exchanges   |
| SLA         | Service Level Agreement  |
| SSE         | Stockholm Stock Exchange Ltd   |
| SSS         | Securities Settlement System   |
| STA         | Securities Trading Act   |
| Sumclearing | The multilateral netting system for retail payments in Denmark   |
| T           | Trade date   |
| VP          | <i>Værdipapircentralen A/S</i> , the Danish Central Securities Depository  |

## I. INTRODUCTION

### A. General

1. The assessment of the observance of the Committee for Payments and Settlement Systems (CPSS) and the International Organization of Securities Commissions' (IOSCO) Recommendations for Securities Settlement Systems dated November 2001 was carried out as part of the first Financial Sector Assessment Program (FSAP) mission to Denmark, November 7–18, 2005.<sup>1</sup>
2. Værdipapircentralen (VP) is the sole central securities depository (CSD) in Denmark and registers the ownership of securities issued in the country and clears and settles securities transactions in the regulated markets and in the over-the-counter (OTC) market.
3. Prior to the mission, Danmarks Nationalbank and Finanstilsynet, the Danish Financial Supervisory Authority (DFSA), as overseers of VP, provided a comprehensive and thorough self-assessment which was used as the basis for this assessment.

### B. Scope of the Assessment

4. VP registers, clears, and settles a broad range of securities, such as treasury bills, all other negotiable money market instruments, bonds issued by the public and private sector, mortgage bonds, equities, and investment certificates issued by mutual funds.
5. Derivatives trades in Danish securities are conducted through OMX Derivatives Markets, a secondary name to Stockholm Stock Exchange Ltd (SSE), used for the derivatives trading and clearing operations. When OMX clears derivatives transactions, this means that OMX Derivatives Markets acts as the central counterparty (CCP) for all derivatives trades conducted in this market. The size of the derivatives market in Denmark has so far been relatively small (in mid-2005, around 700,000 contracts were outstanding with an average daily settlement of Dkr 1.5 million). Futures and options on Danish securities have previously been listed on the FUTOP (CSE) but have recently been transferred to SSE in connection with the merger of the Nordic and Baltic stock exchanges into the OMX Group AB.<sup>2</sup>
6. For these reasons, the assessment of systemically important securities settlement systems (SSS) covers only VP as the core institute of the Danish infrastructure for clearing and settlement of securities. No other institution is active as a CSD, SSS, or CCP in Denmark, albeit that the law does allow other entities to offer registration and clearing and settlement services and, thus, does not grant a monopoly to VP.

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<sup>1</sup> The assessment was performed by Jan Woltjer, Monetary and Financial Systems Department (MFD), International Monetary Fund (IMF).

<sup>2</sup> For information on the OMX Group, see: <http://www.omxgroup.com/en/index.aspx>.

### C. Institutional and Market Structure

7. Denmark's capital market is mainly a bond market with active trading in mortgage bonds (turnover 2004: 282.5 percent of GDP) and in government paper (turnover: 157.5 percent of GDP). In 2004, the total turnover of bonds and treasury bills amounted to 486.7 percent of GDP, against a turnover in listed equities of 40.9 percent of GDP. The trading in derivatives was very modest with 1.3 percent of GDP.

8. Mortgage bonds are issued by mortgage banks according to tight regulations. For instance, the regulation require a matching of cash flows on the loan and funding side (the principle of balance). Thus, almost every mortgage loan in the household sector is mirrored by an outstanding bond issue that is secured by the real estate and financed by the loan. When redemption of a loan is brought forward, the corresponding amount of bonds has to be bought back and taken out of the market. In the past, borrowers were offered only a limited range of products, with long-term rate callable loans as the predominant product. Since 1990, the market has been deregulated and, in conjunction with innovation in the mortgage banking sector, this has led to a far broader menu for borrowers to choose from when financing real estate property. The turnover in the market is particularly high at certain times of the year, for instance at the beginning of January, when outstanding (short-term) mortgage loans have to be refinanced. Interest payments on a mortgage loan are channeled via the mortgage banks and VP to holders of these bonds. Due to the special legislation on Danish mortgage bonds, the outstanding mortgage bonds can be characterized as an asset backed securities, since in case of a default of a mortgage bank, the investors have priority recourse with the underlying real estate as collateral for their claims. Due to its asset backed character and, the high quality of the underlying mortgages, mortgage bonds in Denmark have a very high credit standing.

9. Both bonds and equities can be traded on the CSE.<sup>3</sup> All the stock exchanges use the common trading system SAXESS. This trading platform is also operated by the stock exchanges of Iceland and Norway, which together with the OMX exchanges form NOREX, a strategic alliance between the capital markets in the Nordic and Baltic countries.

10. NOREX has implemented a common cross-border trading system with harmonized trading rules and membership requirements. The common infrastructure gives members in the different countries access to an electronic order book for each financial instrument listed on the different exchanges. SAXESS offers functionalities to support both order driven markets and price driven markets. For order driven markets, bids and offers are entered in the relevant book and automatically matched to trades when price, volume, and other order conditions are met. For price driven markets, interests are entered in the relevant order book

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<sup>3</sup> In Denmark, there is also a small marketplace for nonlisted stocks called Dansk Authoriseret Markedsplads A/S. For more information, see <http://www.danskamp.dk/search.asp>.

and transactions are negotiated bilaterally and, if a deal is struck, reported to the system. The CSE has 44 members, mostly local and foreign banks and some specialized broker firms. The total market value of the stock exchange transactions increased by 23.8 percent from 2004 to 2005, of which equity trading increased 57.8 percent during the same period.<sup>4</sup>

11. However, most of the bond trading is done OTC in the informal telephone market. To enhance transparency in the Danish capital markets, trades in the OTC market must be reported to the CSE. Realized prices and volumes are published on an electronic bulletin board. For government bonds, the 14 primary dealers quote bids and offer prices.

12. Danish government bonds can also be traded on the MTS platform located in Belgium. MTS Denmark was launched by the primary dealers in Danish government securities in 2003. Its objective is to promote international trading in Danish government securities. There are 16 MTS participants of which 2 are clearing members of Euroclear Bank. The daily turnover is approximately Dkr 2 billion (US\$325 million). MTS Denmark is governed by a committee composed of the Government Debt Management at Danmarks Nationalbank, the Danish Primary Dealers, and a representative of MTS S.p.A.<sup>5</sup>

13. All securities traded in the regulated markets and in the OTC market are cleared and settled by VP, which is owned by the financial sector and Danmarks Nationalbank. Securities traded on the MTS platform denominated in euros are settled in the International Central Securities Depository's (ICSD), Euroclear, and Clearstream, where also securities denominated in kroner can be settled. With a view to promoting the efficient settlement of cross-border trades, a very effective link has been developed between VP and Euroclear that allows, among other things, for delivery-versus-payment (DVP) and the settlement of back-to-back transactions without the loss of value dates. Also between VP and Clearstream, a link has been established that allows for the settlement on a DVP basis between participants of VP and the ICSD.

14. The securities registered in VP are all dematerialized and settled on a multilateral netting basis in several settlement cycles during the settlement day. VP does not act as central counterparty, nor does it act as a settlement bank (offering of cash services), and it does not organize a securities borrowing and lending arrangement. Trades can also be settled in VP on a real-time gross basis. All settlements are conducted on a DVP basis with the settlement of the cash leg in central bank money.

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<sup>4</sup> In 2004, trading in bonds at CSE amounted to Dkr 7,059 billion and in 2005 Dkr 8,534 billion, while the trading in equities during the same period amounted to, respectively, Dkr 593 billion and Dkr 936 billion. Note, however that the blue-chip index (OMXC20) increased 37¼ percent during 2005.

<sup>5</sup> For details on MTS, see: <http://www.mtsdenmark.com/>.

15. VP has reached a settlement agreement with Danmarks Nationalbank, which also includes collateral management services by VP for intraday credit granted by the central bank under the so-called “Automatic Collateralization Agreement.” This arrangement, which has a special legal foundation in the Securities Trading Act (STA), is used by the financial sector, among others, for the financing of cash obligations in the different settlement cycles in VP. Under this arrangement, securities in the trading accounts of clearing members can be used as collateral for intraday credit, while further on, the arrangement allows for self-collateralization (by using the securities to be received in a clearing cycle as collateral for an intraday credit from the central bank to finance the securities bought). This arrangement provides settlement members with a very flexible, efficient, and low cost management instrument for collateral, since no special procedures are necessary to pledge securities, and securities do not have to be earmarked as being pledged. Hence they can be substituted and used for trading or other purposes as long as there is excess collateral in the account to cover the outstanding intraday loans. VP, as operator of the automatic collateral accounts, has the contractual obligation to check whether there stays or, there will be, sufficient collateral in the account to secure outstanding intraday credit under this arrangement, before releasing securities from the account or before granting intraday credit on behalf of Danmarks Nationalbank for the settlement of a securities settlement cycle.

16. The transactions settled in VP have been increasing rapidly (Table 1). In 2005, 10.2 million transactions were settled in VP with a market value of DKr 30,924 billion (around US\$5,012 billion), made up of DKr 27,485 billion in bonds and DKr 3,439 billion in shares.

**Table 1. Number and Value of Transactions Settled at VP, 2001–05**

| Year  | 2001   | 2002   | 2003   | 2004   | 2005   |
|---|--------|--------|--------|--------|--------|
| Instructions (in millions)                  | 4.7    | 4.9    | 6.2    | 7.4    | 10.2   |
| Value (in billions DKr)                     | 19,914 | 24,537 | 26,450 | 32,702 | 30,924 |
| <i>of which:</i> Bonds (in billions of DKr) | 18,927 | 23,576 | 25,550 | 30,288 | 27,485 |

Source: Danmarks Nationalbank.

17. Securities in VP are normally registered in the name of the end investor (3.0 million accounts have been opened in VP). Banks and other eligible financial institutions act as account controllers for investors (reporting trades to VP) and offer them cash settlement services (paying transactions and handling of dividends and interest payments for their clients). Large customers such as investment funds or pension funds are allowed to report directly to VP. Account controllers can opt to become clearing members and settle transactions on behalf of their clients. In 2004, VP had 131 clearing members, of which 31 were remote members, i.e., foreign financial institutions located abroad, which act as custodian for clients in their countries that wish to invest in Danish securities. Foreign investors hold especially stocks (28.4 percent of all stocks issued) and bonds (15.9 percent).

Foreign custodians are allowed to open omnibus or nominee accounts for their clients and normally do not register the investment directly in the name of the end investors, as is the case for domestic investors. About 56 percent of the turnover in stocks in VP were related to foreign investors.<sup>6</sup>

18. In addition to registration of securities, VP is doing research for the development of a paperless title registration and exchange system for real estate property. Furthermore, in cooperation with the Soros Economic Development Fund, it is developing a system for issuing and handling mortgage bonds in Mexico, based on the Danish model as described above. This model is seen as conducive to the development of a bond market and unique with respect to efficiency, transparency, security, and the protection of the interests of both borrowers and investors.

#### **D. Description of Regulatory Structure and Practices**

19. The Danish Securities Council (the Council) has overall responsibility for the framework within which the securities market operates and for supervision of the market. The main focus of the Council is on market supervision and surveillance. Thus, it issues rules relating to the general conditions under which the Danish securities market operates, as well as rules that regulate clearing and settlement institutions and CSDs. The Council is composed of representatives of securities dealers, issuers and investors, including Danmarks Nationalbank.

20. The DFSA is responsible for regulating the Danish Financial sector. In this framework it is charged with the authorization and prudential supervision of market participants and market institutions. The latter category encompasses the CSE and VP. The task and responsibilities of the DFSA with respect to the securities sector are outlined in the STA.

21. The overall objectives of Danmarks Nationalbank are to maintain a safe and secure currency and to facilitate and regulate the circulation of money and the extending of credit. In the opinion of the central bank this includes monitoring the stability and efficiency of payments and securities settlement systems. In February 2006, this was acknowledged by the Danish Parliament and the oversight task of Danmarks Nationalbank with respect to payment systems was set out in the legislation via an amendment of the STA. Till that moment, the oversight role had been based on agreements with market participants and on moral suasion. The Nationalbank, as the settlement bank of VP, worked out specific requirements to ensure the safety and soundness of the infrastructure for clearing and settlement of securities. These requirements were laid down in the settlement agreement between the central bank and VP, which oblige VP to observe the CPSS/IOSCO Recommendations for Securities Settlement Systems.

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<sup>6</sup> The take-over of one of the largest companies, TDC (a telephone company), and the envisaged delisting in 2006, may have contributed to these figures.

22. Danmarks Nationalbank and DFSA work closely together with respect to the oversight of payments and securities settlement systems and have concluded a memorandum of understanding (MoU) on cooperation and coordination concerning oversight. The role of the central bank and the cooperation between the authorities will be laid down in the law and in the amendment to the STA effective March 1, 2006.

### **E. Information and Methodology used for Assessment**

23. The assessment was based on the following:

- self-assessment carried out by the Danish authorities, using the CPSS/IOSCO assessment methodology for Recommendations for Securities Settlement Systems;
- self-assessment conducted by VP and the completed questionnaire of the European Central Securities Depository Association (ECSDA) (not yet published); and
- discussions with Danmarks Nationalbank, the DFSA, VP, and with market participants.

24. The assessment was further enhanced by reference to:

- relevant laws, rules, and regulations; MoUs; and VP's annual reports;
- *Payment Systems in Denmark*, a book published by Danmarks Nationalbank, which provides an excellent description of Danish clearing and settlement infrastructure;<sup>7</sup>
- several articles written by staff members of Danmarks Nationalbank on: (i) the legal basis for clearing and settlement of securities and the provision of collateral; (ii) financial institutions' accounts at and pledging of collateral to Danmarks Nationalbank; (iii) assessment of settlement risk in VP; (iv) contagion risk in the Danish interbank market; and (v) the Danish mortgage market; and
- a questionnaire on securities markets completed by Danmarks Nationalbank.

25. All parties were fully cooperative and the discussions were informative and very cordial. The Danish authorities were well prepared for the FSAP, with all relevant documentation being provided well in advance.

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<sup>7</sup> The book is available on the website of Danmarks Nationalbank:  
<http://www.nationalbanken.dk/dnuk/specialdocuments.nsf>.

## II. ASSESSMENT OF OBSERVANCE

### A. Executive Summary of the Recommendation by Recommendation Assessment

#### Legal risk (recommendation 1)

26. There is a consistent set of laws, regulations, and contracts that form the legal foundation for custody and clearing and settlement of securities. All relevant laws and regulations are publicly available. Finality is well regulated, also in the case of a bankruptcy, and a zero-hour rule does not exist. Customer assets are protected by law against the bankruptcy of an account controller or custodian. Other key issues, such as dematerialization, netting, securities lending arrangements, and the establishment of collateral interest, are also well regulated. All laws, regulations, and contractual arrangements are fully enforceable.

27. VP is fully aware of possible conflicts of laws in cases of linkages and remote participation and has clearly indicated that Danish law will apply to each aspect of the settlement process. If relevant, conflicts of law are identified through legal opinions.

#### Pre-settlement risk (recommendations 2-5)

28. Matching and confirmation are essential elements to trigger settlement in VP. All transactions are matched prior to settlement, mostly on trading day. Transactions in the regulated and OTC market are settled on a rolling settlement procedure on T+3 or on a shorter settlement cycle in VP. Incentives are in place to ensure timely settlement and settlement failures are closely monitored.

29. No central counterparty is established in Denmark for the settlement of securities transactions. In the opinion of market participants, such an entity does not add value and might impair the existing efficient settlement arrangements. However, the cost benefit studies were never published and it is difficult to know whether the existing liquidity and replacement cost risks were adequately balanced against the costs of setting up such an entity and whether alternative measures were studied to reduce the existing risks in the markets. Nor is it clear whether the changing risk profiles were taken into account as a result of the implementation of order driven platforms and internationalization of the trading in Danish securities on the stock exchanges of other Scandinavian and Baltic countries in the framework of NOREX and the cross-border trading of Danish government bonds in the European market (MTS-Denmark).

30. Securities lending is well established in Denmark as a method to promote timely settlement and is fully supported by the legal, accounting, and tax framework. A well developed market for securities lending exists, with banks and the Danish government offering securities lending services and Danmarks Nationalbank acting as lender-of-last-resort if, for whatever reason, participants are not able to borrow the securities in the market.

**Settlement risk (recommendations 6-10)**

31. As one of the first countries to do so, Denmark introduced in 1983 the electronic registration of securities. It has since then been very active in promoting dematerialization of all outstanding securities. At the moment, all shares and bonds traded in regulated markets and in the OTC market are dematerialized, as well as a large amount of unlisted unit trusts.

32. All transactions in VP are settled on a DVP basis in central bank money between clearing members. However, smaller participants in VP make use of a so-called primary cash provider, and are thus exposed to deposit risk. The various netting cycles during the long opening day, as well as the facility for a trade-for-trade RTGS facility, result in almost all trades being settled with intraday finality, and they can be used again for other settlement obligations on the same business day.

33. No rigorous risk control measures are in place to ensure timely settlement in the event of bankruptcy of the participant, with the largest obligation to settle in the deferred netting schemes. However, stress test studies of Danmarks Nationalbank indicate that in the present situation, participants can raise sufficient liquidity under the automatic collateralization arrangement to reduce the liquidity pressure that may occur in such an event. However, the effects of multiple failures were not analyzed.

**Operational risk (recommendation 11)**

34. VP has developed an appropriate information technology (IT) security policy and has proactively assessed possible threats to the system and the organization. The risk and the adequacy of the risk control measures are reviewed annually. Adequate contingency plans and back-up facilities are available and tested periodically. Operational reliability is high and sufficient capacity is available to handle stress volumes.

**Custody risk (recommendation 12)**

35. In Denmark, investors are protected against claims of an account controller, custodian, or VP. Normally, securities are directly registered in VP in the name of the end-investor. In case of the use of omnibus or trustee accounts, segregation of the custodian's own investments and the securities of its clients is required. Liabilities of account controllers and custodians are clearly defined and monitored and ample compensation schemes are in place in case of theft, misuse, or errors.

**Other issues (recommendations 13-19)**

36. The governance structure of VP is clearly specified, transparent, ensures the fulfillment of public interest requirements, and promotes the objectives of owners and users. The access criteria do not limit access other than on grounds of legal risk to finality. The operations of the CSD are cost effective and VP provides its participants with sufficient

information to identify the risks and costs associated with using the system. VP has developed efficient and safe DVP links with Euroclear and Clearstream and free-of-payment (FOP) links with Iceland and Sweden. No provisional deliveries take place over these links.

37. VP is supervised and regulated by the DFSA under the STA. Danmarks Nationalbank is also involved in the oversight based on its responsibility for safe and efficient payment arrangements as defined in the central bank act. The cooperation and coordination between the two authorities are effectively organized and laid out in a MoU.

### **Steps to be taken to achieve full observance**

38. To achieve full observance, the effects of the failure of the largest participant and the effects of multiple failures should be analyzed in more depth. In addition, the costs involved in guaranteeing the settlements or preventing losses in the event of significant failures should be determined, for instance by collateralization of the market risks and the establishment of a CCP. Within this context, the changing risk profiles due to cross-border trading and the use of order driven trading platforms should be taken into account, since these make it difficult to manage counterparty risk.

**Table 2. Summary Observance of CPSS-IOSCO Recommendations for Securities Settlement Systems—Værdipapircentralen**

| <i>Assessment Grade</i> | <i>Principles Grouped by Assessment Grade</i> |  |
|-------------------------|---|--|
|                         | <i>Count</i>                                  | <i>List</i>  |
| Observed                | 17  | 1, 2, 3, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 17, 18 and 19 |
| Broadly observed        | 2   | 4 and 9  |
| Partly observed         | none  |  |
| Nonobserved             | none  |  |
| Not applicable          | none  |  |

## B. Detailed Assessment

**Table 3. Observance of CPSS-IOSCO Recommendations for Securities Settlement Systems—Værdipapircentralen**

|                   |  |
|-------------------|--|
| Recommendation 1. | Securities settlement systems should have a well-founded, clear and transparent legal basis in the relevant jurisdiction.  |
| Description       | <p><b>Key questions and answers</b></p> <p><b>1. Are the laws, rules and procedure, and contractual provisions governing securities settlement arrangements public and readily available?</b></p> <p>The major rules and regulations with respect to VP are: (i) the Danish STA; (ii) executive orders based on this law; (iii) VP's Clearing Rules; and, (iv) VP's participation agreement.</p> <p>VP's Clearing Rules describe the rules and the practicalities of registering and clearing and settlement processes. The VP's standard participation agreement forms the contractual framework for VP's activities and its relations with participants (account operators and clearing members). All relevant documents are public and accessible on the websites of the Finanstilsynet, the DFSA (<a href="http://www.finanstilsynet.dk">www.finanstilsynet.dk</a>), and VP (<a href="http://www.vp.dk">www.vp.dk</a>).</p> <p><b>2. (I) The legal framework should demonstrate a high degree of legal assurance:</b></p> <p><i>a. Transactions are enforceable</i><br/>Transactions, after having been matched and reported (instruct) for settlement, are legally binding and parties involved can claim observance of the agreement under Danish Contract Law.</p> <p><i>b. Customers' assets are adequately protected in case of an insolvency of the custodian and the intermediaries</i><br/>Normally, assets of Danish investors are held in accounts that are registered in their own name. At the moment 3.0 million investors accounts have been opened in VP. Although their banks or another entitled institution acts as their account operator/ controller, the securities in the accounts of the customers form no part of the assets of the account controller and, based on the provisions in the Danish STA, stay outside the bankruptcy of such an institution.</p> <p>According to section 72 of the Danish Financial Business Act, protection also applies for so-called nominee-accounts, which are mainly used by foreign custodians to register the assets of their non-Danish clients, instead of opening a direct account in the name of each of their customers. Custodians are obliged to separate their own holdings from their clients' holdings in VP and have no title to the securities in the nominee account.</p> <p><b>(II) Does the legal framework demonstrate a high degree of assurance that there is a clear and effective legal basis?</b></p> <p><i>a. Arrangements for immobilization and dematerialization of securities and the transfer of securities by book-entry</i></p> |

|  |   |
|--|---|
|  | <p>Section 59 of the STA forms the legal basis for dematerialization and electronic book-entry. All securities in VP are issued in dematerialized form and no share certificates or other physical securities can be issued at the same time. Transfers of securities in VP take place in book-entry only and are legally binding (see finality).</p> <p><i>b. Netting arrangements</i><br/>Both bilateral and multilateral nettings are recognized under Danish law (Sections 50 and 57 of the STA). After the implementation of the European Finality Directive, the netting arrangements are protected even in case of a participant's insolvency and VP is notified to the European Commission as a designated system within this framework. Netting through close-out is recognized and regulated in Part 18a of the STA.</p> <p>Special legal provisions are in place in case the netting arrangements are protected via collateralization to ensure fulfillment of the obligations. If agreed upon, in the event of a breach of the contractual obligations, for instance a default, the collateral taker is allowed to realize the collateral immediately, without prior approval by public authorities or prior notification to the collateral provider. No special procedures are applicable on the realization of the collateral in such cases (Section 58j of the STA).</p> <p><i>c. Securities lending arrangements</i><br/>Securities lending arrangements in the form of repos or securities swaps can be freely conducted under Danish law and are legally binding. The implementation of the European Collateral Directive in Danish law has expanded the scope and the protection of claims via the provision of collateral under such arrangements and allows, among other things, for margin calls and substitution of collateral (Part 18a of the STA). VP is allowed to arrange a securities lending and borrowing scheme under section 53 STA.</p> <p><i>d. Finality of settlement</i><br/>Section 69 of the STA forms the basis for finality and stated that "once an agreement to the rights pertaining to investment securities has been finally registered by book-entry at a securities depository, an assignee in good faith may not be met with any objections as to the validity of the agreement." This provision, in combination with section 57 on netting, supports VP's rules on irrevocability and finality with respect to the different netting blocks and with respect to real time gross settlement of securities. According to VP's rules, a transaction is irrevocable after it has been matched and both parties have confirmed the transaction via the so-called "instruct" in the VP's system. After the confirmation has been submitted, the transaction cannot be unilaterally cancelled or revoked by either of the counterparties to the trade or by any third party. A settlement is final once the settlement block in which the transaction is netted is completed. Real-time gross-settlement finality occurs upon transfer of the securities and registration in the account of the buyer that takes place simultaneously with the debiting of the account of the seller.</p> <p>Danish bankruptcy regulation does not entail a zero hour clause and the provisions in Part 18a of the STA offer protection of the finality of netting in the event of a bankruptcy, thus preventing any retro-active action by the liquidator or a third party, other than in case of fraud.</p> <p><i>e. Arrangements for achieving DVPs?</i><br/>The simultaneous performance of the obligation of the seller and the buyer is the leading principle in Danish law, as expressed in section 14 of the Danish Sales of Goods Act. It thus supports VP's DVP procedures, as described in detail in VP's clearing rules.</p> |
|--|---|

|            |   |
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|            | <p><b>(III) Has a court in the jurisdiction ever failed to uphold the legal basis for these activities/arrangements? And, if so, for what reason?</b></p> <p>No.</p> <p><b>3. Are the rules of the system and contracts between system participants enforceable notwithstanding the insolvency of a participant?</b></p> <p>Yes. In accordance with VP's clearing rules, settlement of transactions that had become irrevocable before VP received notification of the bankruptcy will continue in spite of the member's insolvency for the rest of the insolvency day. If, the transactions could not be settled, the counterparties to the insolvent party still have the right to take legal action regarding the bankruptcy proceedings. As stated, a zero hour rule does not apply and no retroactive action will be applicable on transactions settled on the day of insolvency by the liquidator or any third party.</p> <p><b>4. (I) Is there a significant level of cross-border participation in the SSS? If so, please describe and answer Question 4(II)</b></p> <p>Yes. Of the 131 direct members, 31 members are remote members operating from abroad. They have opened accounts in their own names with a Danish account controller, allowing them to report their transactions directly to VP. These foreign participants act as clearing members for their own transactions and those of their clients through omnibus accounts. Two of them have opened a cash account with Danmarks Nationalbank (primary cash provider). Also a number of branches of foreign banks are participants in VP.</p> <p><b>(II) Are other jurisdictions relevant for determining the adequacy of the legal framework? How has this been determined? Has the legal framework been evaluated for the other relevant jurisdictions? Are there conflicts of laws issues and, if so, have they been addressed?</b></p> <p>According to VP rules and regulations, Danish law prevails on registration, clearing, and settlement in VP. All foreign participants have to accept VP's rules to become members. Owing to the European Finality Directive, which is implemented by all countries of European Economic Area (EEA), EU including countries such as Norway, Lichtenstein, and Iceland, and that supports the choice of Danish law by VP, even in case of a bankruptcy of a participant out of another country in this area, the finality of transactions or the netting cannot be challenged under the bankruptcy laws in its home country. For members outside the EEA, a legal opinion is required to ensure that the legal framework of VP is enforceable in the member's country under all circumstances. At present, there is only one participant from outside the EEA.</p> <p>The leading principle in Denmark with respect to the applicable property law is the law of the country where the security is registered in a book-entry account. Thus, on all securities issued abroad that are transferred to a VP account via a link with another CSD, Danish property law is applicable (Section 58n of the STA). Under Danish property law not only are the registration and transfer of ownership regulated, but also the legal nature and requirements for securities collateral and the proprietary effects attached hereto, as well as the steps required for the realization of collateral.</p> |
| Assessment | <b>Observed</b>   |

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| Comments          | The laws, regulations, rules and procedures, and contractual provisions governing the operation of VP are public and accessible to system participants. The legal framework demonstrates a clear legal basis and a high degree of legal assurance for each aspect of the settlement process in all circumstances. VP is fully aware of possible conflicts of law in case of linkages and remote participation and has clearly indicated that Danish law will apply to each aspect of the settlement process. If relevant, conflicts of law are identified through legal opinions.   |      |               |      |               |      |               |
| Recommendation 2. | Confirmation of trades between 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.   |      |               |      |               |      |               |
| Description       | <p><b>Key Questions and answers</b></p> <p><b>1. What percentages of trades between direct market participants is submitted to a trade confirmation system on the trade date (T+0)? How soon after submission are problems communicated to the appropriate parties?</b></p> <p>Trades conducted on the SAXESS trading platform of the CSE and on MTS Denmark, are matched and confirmed automatically on trade date. MTS Denmark is a division of the MTS (Mercato Telematico dei Titoli di Stato) group, which operates screen-based trading platforms for the trading of government bonds in the EU. The Danish government bonds are traded on the MTS platform based in Belgium. However, straight-through-processing of trades on the aforementioned platforms with automatic notification of the trade to VP is not always possible. An account operator has to add additional information on the clients account and the cash account (primary cash provider) on which the cash leg of the transaction will be settled. Thus, the information has to be put in again in the VP system, which could result in some delay.</p> <p>Also in the informal telephone market, where the largest part of the trading is bonds, including mortgage bonds, are conducted, the general practice among securities dealers is to seek confirmation of all trades already on T+0. This normally takes place immediately after trade execution, in view of the securities dealer's obligations to immediately notify CSE of the terms and conditions of the trade for listed securities. This is according to an Executive order of the DFSA on enlarging trading transparency. CSE will publish the prices and amounts traded on an electronic bulletin board.</p> <p>In the OTC market, as a first step, both securities dealers report the trade to VP in the form of a pre-advice. After receiving the pre-advice, VP matches the trades and makes the output data available to all parties that must report a confirmation (also referred to as "instruct") to make the trade ready for settlement. In case the trade has already been matched elsewhere, participants can submit the pre-advice and instruct together. After matching the relevant information on price, volume, etc., the trade is reported to the CSE.</p> <p>The following percentages shows what in fact has been matched and confirmed by the settlement system of VP before settlement day (s):</p> <table data-bbox="526 1755 824 1843"> <tr> <td>S-3:</td> <td>88,70 percent</td> </tr> <tr> <td>S-2:</td> <td>97,70 percent</td> </tr> <tr> <td>S-1:</td> <td>99,80 percent</td> </tr> </table> | S-3: | 88,70 percent | S-2: | 97,70 percent | S-1: | 99,80 percent |
| S-3:              | 88,70 percent   |      |               |      |               |      |               |
| S-2:              | 97,70 percent   |      |               |      |               |      |               |
| S-1:              | 99,80 percent   |      |               |      |               |      |               |

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|                   | <p>Figures for matching on trade day or the days thereafter are not available, since VP does not know the day on which the securities are traded by its participants. The table seems to suggest that confirmation on trade day might be substantially below international practices (98 percent confirmed on trade day). However it has to be taken into account that not all securities are traded on a T+3 cycle. For instance, treasury bills and money market transactions in the Danish markets are settled on a T+2 cycle and, thus, normally submitted to VP for matching and confirmation on S-2. Furthermore, a small part of all trades are matched, confirmed, and settled on a same day basis (T+0). On the regulated markets (CSE and MTS), matching takes place automatically at the moment the trade is conducted and, in the OTC market participants are obliged to report their trades to the Stock Exchange the same day and, normally, before reporting them, enter their trades in the VP-system for matching and confirmation. Thus, it can be concluded that the largest part of all trades are matched and confirmed on trade day, thereby conforming with international practices.</p> <p>Matching in VP is performed in real-time and the results are communicated continuously, during VP's opening hours.</p> <p><b>2. Does the CSD require settlement instructions to be matched prior to settlement?</b></p> <p>Yes. Matching is mandatory and no settlement can take place without matching (see question 1).</p> <p><b>3. Are there trade confirmation procedures that are capable of comparing trade information between direct and indirect market participants by T+1? Is use of the system mandatory? For what types of indirect market participants? Of those trades involving indirect market participants for which confirmation is required, what percentage is confirmed by T+0, by T+1, by the contractual settlement date?</b></p> <p>Yes, a matching service is available and the use of this service is mandatory for all indirect market participants, which have entered into an agreement with VP about clearing and settlement. Institutional investors, for instance, report trades themselves to VP.</p> |
| Assessment        | <b>Observed</b>   |
| Comments          | Matching and confirmation are essential elements to trigger settlement in VP. Except FOP transfers, no settlement occurs without matching and confirmation of the transaction, which has taken place, and most trades are matched and confirmed on trade day.   |
| Recommendation 3. | 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 assessed.  |
| Description       | <p><b>Key questions and answers</b></p> <p><b>1. Are trades settled on a rolling basis of T+3 or shorter?</b></p> <p>VP applies a rolling settlement cycle, supporting any agreed settlement day for up to one year (from T+0 to T+ 365). The market practice is T+3 for bonds and shares, and T+2 for treasury bills and money market transactions.</p> <p><b>2. What percentages of trades (by number and value) fail to settle on the contractual date?</b></p> <p>In the period January to March 2004, the following percentages of trades were settled on the contractual date or on the days thereafter:</p>  |

|                | Percent by number | Percent by value |
|----------------|-------------------|------------------|
| Settlement day | 99.288            | 99.287           |
| S+1            | 0.570             | 0.496            |
| S+2            | 0.107             | 0.197            |
| S+3            | 0.016             | 0.016            |
| S+4            | 0.015             | 0.004            |
| S+5            | 0.003             | 0.001            |

This implies a settlement failure rate of 0.712 percent by number and value on the contractual settlement date. In case of failures, the largest part of the delayed settlement was settled the next day.

**3. Do market practices, regulations or SSS rules provide incentives for counterparties to settle their obligations on the contractual date? What forms do these incentives take, for example are penalties assessed for failing to settle? What steps, if any, are taken, to mitigate the risks of fails? Are fails required to be mark to market? Are open positions required to be closed out at market prices if the duration of the fail exceeds a specified number of business days? What entity or entities establish, monitor, and enforce these requirements?**

According to current market conventions, VP participants must ensure sufficient securities and cash cover for timely settlement of executed trades. In addition to cash cover of the total net purchase, there must be a liquidity buffer, enhancing a participant's ability to settle its obligations, even if other participants are not able to fulfill their obligations to that participant. Failure to settle, whereby the participant does not have sufficient cash or could not raise intraday credit from Danmarks Nationalbank, is subject to a sanction. In the event of repeated violation over a six-month period, the sanction is gradually increased to Dkr 50,000. In case of such violations, VP will also inform the company's management and report the violation to the DFSA.

The holding of a liquidity buffer and the fulfillment of the payment obligation are facilitated by the automatic collateralization scheme that allows VP's participants with a settlement account with Danmarks Nationalbank to use the bulk of the securities in their trading account, as well as securities to be delivered in the netting (self collateralization) as collateral to obtain intraday credit from the central bank.<sup>8</sup>

The amount of available collateral under the automatic collateral scheme is taken into account for the calculation of the liquidity buffer.

Market conventions stipulate that delay of settlement beyond the value date incurs interest claims, while it is not allowed to change the market price with respect to accrued interest.

<sup>8</sup> Only government bonds and mortgage bonds are eligible, but these securities are the most common tradable securities in Denmark. Next to the automatic collateralization scheme, participants can transfer eligible securities in VP to a so called pooling pledge account. This account is used to collateralize overdrafts on the current account the participant have with Danmarks Nationalbank and monetary policy transaction. Participants use their current account to transfer cash to the VP settlement account in KRONOS. The sum of the cash in the VP settlement account in KRONOS and the liquidity that can be raised under the automatic collateralization scheme forms the cash cover and the liquidity buffer.

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|                   | <p>No steps other than the requirement to hold a liquidity buffer are taken to mitigate the effects of delayed settlements or in case of a permanent default, neither in terms of liquidity nor in terms of market risks (see also rec. 9).</p> <p>The settlement process is monitored by VP. VP will also impose a fine in case of insufficient liquidity to settle.</p> <p><b>4. If settlement is on an account period basis or on a rolling basis at T+3 or longer, have the benefits and costs of a rolling cycle or a shorter settlement cycle been evaluated? If so, by whom? What was the conclusion? Did the conclusion differ depending on the type of securities?</b></p> <p>The system is thought to be able to handle a shorter settlement cycle, according to an investigation in 2001. Market participants, however, deemed a shortening of the settlement cycle from T+3 to T+2 too cumbersome and too costly, while the benefits, in the form of a reduction in potential replacement costs risk are relatively small, since the bulk of the securities traded in Denmark are bonds (relatively low price volatility). Owing to the large number of cross border trades, and the relative large number of parties involved in most of the local and foreign trades (investor, broker dealer, account operator, settlement member, and primary cash provider), the fail rate would substantially increase, all the more while the bulk of transactions on T+3, in practice, are settled at the beginning of VP's 24-hour opening hours with value date T+3, which starts at 6:00 p.m. T+2. The early start of the settlement day and the high settlement activity during the early evening (95 percent of the trades are settled at 6:00 p.m.) and during the night, serve to ensure a timely cross border delivery of securities via the direct links with Euroclear and Clearstream.</p> |
| Assessment        | <b>Observed</b>   |
| Comments          | <p>VP executes a rolling settlement cycle with final settlement no later than T+3. Shortening of the settlement cycle has been evaluated and the possible risk reduction benefits are deemed not to outweigh the substantial investment and communication costs necessary to accommodate a shorter cycle.</p>   |
| Recommendation 4. | <p>The benefits and costs of a central counterparty should be assessed. Where such a mechanism is introduced, the central counterparty should rigorously control the risks it assumes.</p>  |
| Description       | <p><b>Key questions and answers</b></p> <p><b>1. Has a CCP mechanism (or an indemnification arrangement) been introduced? If so, what types of securities and market participants are covered? If no such mechanism has been introduced, have the benefits and costs of such a mechanism been evaluated? If so, by whom? Has the assessment been documented? What was the conclusion?</b></p> <p>In Denmark no CCP is established, nor has an indemnification scheme been introduced, neither for the trading on SAXESS, the trading platform of the CSE, the trading in the OTC market, nor for MTS, the international interdealer trading platform for government bonds located in Belgium. In all markets, replacement costs risk and liquidity risk have to be borne by the counterparties to the trade. Market participants contend that they manage their credit risk by setting credit lines on each of their counterparties, although this classical risk management tool might be impaired due to the anonymous trading on order driven platforms like SAXESS and MTS.</p>   |

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|            | <p>The introduction of a CCP has been discussed on several occasions in various national working groups and among market participants, stock exchanges and CSDs in the framework of the Nordic Alliance, the cooperation between stock exchanges and CSDs to achieve integration of the financial markets in the Scandinavian countries.</p> <p>The conclusion so far has been that the establishment of a CCP would not be cost-effective for market participants. This applies especially on a national level where the largest part of the transactions is traded in the informal telephone market for bonds and market participants know each other and are able to manage their counterparty risks. The most important consideration is that an additional chain in clearing and settlement in the form of a CCP would lead to extra operational costs and possible overlaps between the CCP and VP. Furthermore, there are no liquidity benefits compared with the very efficient multilateral netting in VP, which is supported by the automatic collateralization scheme.</p> <p>The different assessments were documented but have not been published and were not made available to the assessor.</p> <p><b>2. What are the netting arrangements for a CCP (by notation or otherwise)?</b></p> <p>Not applicable.</p> <p><b>3. Does the CCP impose financial and operational standards for participation? How does the CCP manage its credit risk vis-à-vis participants? Does it require participants to collateralize their exposures? How often are collateral requirements recomputed and collateral collected? How does the CCP manage its liquidity risk? Does the CCP have in place agreements permitting it to borrow against collateral? In assessing its risk, does the CCP evaluate its ability to withstand the default of more than one of its participants?</b></p> <p>Not applicable.</p> <p><b>4. Has a participant ever defaulted? If so, how did the CCP handle the default? What are the financial resources of the CCP? How does the CCP assess the adequacy of the size and liquidity of its financial resources? Does it require participants to contribute to a clearing or guarantee fund? Does the CCP have legally enforceable interest in or claims on the assets of the fund? Does the CCP have transparent and enforceable loss allocation rules?</b></p> <p>Not applicable.</p> |
| Assessment | <b>Broadly observed</b>   |
| Comments   | <p>No CCP is established in Denmark. Although, on different occasions the costs and benefits of a CCP have been assessed, it is difficult to observe whether: (i) the assessments have been carefully carried out; (ii) the conclusion struck a clear balance between the costs and the benefits (reduction of the liquidity and replacement costs risk in the Danish financial markets); (iii) development in financial markets and changing risk profiles, as a result of the introduction of order driven trading platforms and internationalization, have been taken into account; and (iv) alternative measures have been taken into account, such as an indemnification arrangement to reduce market and credit risk in the financial markets.</p>  |

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| Recommendation 5. | 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.   |
| Description       | <p><b>Key questions and answers</b></p> <p><b>1. Are markets or facilities for securities lending (or repurchase agreements and other economically equivalent transactions) clearly supported by legal, regulatory, accounting and tax systems?</b></p> <p>Securities lending in the form of repos and securities swaps are clearly supported by the Danish law and treated as a financial collateral arrangement under Part 18a of the STA. Within the context of securities lending, repos, and other economic equivalent transactions can be conducted between market participants or between a market participant and the system provider. The implementation of the European Collateral Directive in Danish law has expanded the scope and the protection of claims via the provision of collateral under such arrangements and allows, among other things, for margin calls and substitution of collateral. VP is explicitly allowed to arrange a securities lending and borrowing scheme under Section 53 STA.</p> <p>Tax rules form no impediment to the use of repos. According to the accounting and risk management rules for financial institutions, the transactions have to be treated as a collateralized loan. This means that the securities in the repo transactions remain in the transferring undertaking and must therefore be included in the exposure of the lending party to the issuer of the security.</p> <p><b>2. Are there markets or facilities for securities lending (or repurchase agreements and other economically equivalent transactions)? If so, are they used as a method to expedite securities settlement? How wide is the range of securities and participants involved in the markets?</b></p> <p>Yes, a number of major banks, domestic as well as foreign, are offering securities lending services. All major listed equities, as well as a number of bonds, are offered on a repo basis. Also the Danish government offers a securities lending scheme for government bonds on a market rate basis (20 basis points). Market participants are using these facilities rather intensively to ensure timely settlement. Participants can also borrow a large range of government bonds and mortgage bonds from Danmarks Nationalbank. However, this facility has to be seen as a lender-of-last-resort function, if, for whatever reason, participants are not able to borrow the securities in the market (the rate set is above market rates).</p> <p>Due to the already existing securities lending services provided by major market participants/custodians, the government and the central bank, the development of an automatic lending and borrowing scheme by VP was not deemed cost effective, taking into account the already low failure rates in the clearing and settlement process.</p> <p><b>3. Do supervisors and overseers review risk management procedures for securities lending? Do they have policies with respect to these activities?</b></p> <p>The DFSA has stated in regulations how repos and reverse repos have to be taken into account when calculating exposures to a counterparty and allow for netting (see Executive order no 1487 of December 13, 2004). Regular on-site inspection of risk management procedures have also been laid down.</p> |

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| Assessment        | <b>Observed</b>  |
| Comments          | Securities lending is well established in Denmark as a method for expediting the settlement of securities transactions and fully supported by the legal and tax framework.   |
| Recommendation 6. | Securities should be immobilized or dematerialized and transferred by book entry in CSDs to the greatest extent possible.  |
| Description       | <p><b>Key questions and answers</b></p> <p><b>1. Are securities issued on a dematerialized basis or as a physical certificate? If the latter, are they immobilized in a CSD to facilitate settlement? What percentage of securities issued domestically is either immobilized or dematerialized, and what is the trend? Is the transfer of securities carried out by book entry or does it require any form of physical delivery?</b></p> <p>All Danish securities issued in VP are dematerialized. These encompass all securities listed on the Stock Exchange and a large number of unlisted investment funds. The issue of dematerialized or electronic securities is regulated in Part 19 of the STA.<sup>9</sup> Electronic securities have to be issued through a CSD that is approved by the DFSA. Transfer of ownership of electronic securities is only possible via book-entry. However, physical securities, such as mortgage deeds and unlisted shares are still in circulation in Denmark. These securities cannot be traded in the regulated markets or in the informal telephone market (OTC), nor cleared and settled in VP.</p> <hr/> <p><b>2. Is there a lag between settlement and registration and what are the implications of the time lag for finality? If the CSD is not the official registrar, does the transfer of securities in the CSD result in the transfer of securities in the official register?</b></p> <p>There is no legal time lag between settlement and registration. Registration in the book-entry system of VP alone is valid as proof of ownership and transfer of ownership is final as soon as the book-entry of the settlement has taken place (crediting of the account of the buyer). A shareholder can register his shares also with the company in which he participates. The board of governors of this company acts as registrar for this purpose. However, registration is not mandatory. If a shareholder wishes to register his possessions or purchases, VP shall, after the book-entry is completed in VP, forward the shareholder's request for registration and provide the board of the company with the necessary data. Depending on the requirements in the articles of association, registration might be necessary to be able to join shareholders' meetings and to vote in these meetings.</p> |
| Assessment        | <b>Observed</b>  |
| Comments          | Denmark introduced in 1983 the electronic registration of securities. It has since then been very active in promoting dematerialization of all outstanding securities. At the moment, all shares and bonds traded in regulated markets and in the OTC market are dematerialized, as well as a large amount of unlisted unit trusts. Although shareholders can register their participation with the companies in which they participate, registration of their holdings in VP is the only proof of their ownership rights, and the transfer of ownership rights has to take place in VP, with the transfer being final as soon as the securities account of the purchaser in VP is credited.   |

<sup>9</sup> The STA allows other institutions that fulfill certain conditions stated in the law, to enter the market and provide registration and clearing and settlement services as a CSD and hence to compete with VP. At the moment no other institutions has requested approval of the DFSA to operate a CSD in Denmark.

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| Recommendation 7. | Securities settlement systems should eliminate principal risk by linking securities transfers to funds transfers in a way that achieves delivery versus payment.  |
| Description       | <p><b>Key questions and answers</b></p> <p><b>1. Does the technical, legal and contractual framework ensure that delivery of securities takes place if, and only if, payment is received? If so, how?</b></p> <p>VP settles on a multilateral netting basis as well as on a gross settlement basis. The choice is up to the participants.</p> <p><i>DVP in the netting cycles</i></p> <p>Netting is the primary way of clearing and settlement with multilateral netting as well as on the cash and securities side (BIS DVP model 3). On the securities side, the position in the clearing is calculated on a security by security basis (ISIN by ISIN).</p> <p>Settlement takes place during so called “blocks.” There are at present six daily net settlement cycles or blocks during the 24 hour settlement day of VP; three so-called night blocks and three daytime blocks. Participants can agree among each other in which block the settlement will take place and then indicate in their reporting of trade information the agreed cycle. According to market convention, settlement takes place in the first block at 6:00 p.m. at T+2 with value date T+3, if no other settlement time is agreed. The settlement of around 95 percent of all transactions takes place in this block.</p> <p>VP ensures that the participants have sufficient securities in their account and sufficient cash cover. Before the clearing cycles start, participants have to transfer cash from their current account to their VP settlement account in KRONOS, the large value settlement system of Danmarks Nationalbank. Danmarks Nationalbank notifies VP of the actual balances in the VP settlement accounts of the participants before the start of every settlement cycle. VP adds to these balances the amount of intraday credit that can be raised with Danmarks Nationalbank under the automatic collateral agreement and that is not reserved for the clearing and settlement of obligations in the Sumclearing (the clearing system for retail payments) or for the clearing of obligations in CLS, the international clearing system for foreign exchange transactions.<sup>10</sup></p> <p>The sum of balances in the VP settlement accounts and the potential intraday credit that can be raised for the clearing and settlement of securities under the automatic collateralization agreement forms the cash cover or the so-called “settlement lines” in the cycle. These lines are recalculated for each cycle. If the net debit positions on the cash side of all participants in the clearing stay within their settlement lines, and if all participants have sufficient securities, VP notifies the net position on the cash side to Danmarks Nationalbank and books subsequently the net debit positions in the automatic collateral accounts that are administered by VP on behalf of Danmarks Nationalbank. If there is insufficient cover in these accounts, it sends orders to Danmarks Nationalbank to settle the remaining amount on the VP settlement accounts. The participants that</p> |

<sup>10</sup> As indicated under rec. 3, under the automatic collateralization agreement participants can use all eligible securities in their trading account, as well as eligible securities to be delivered in the clearing (self-collateralization). VP, as administrator on behalf of Danmarks Nationalbank calculates automatically the potential amount that can be raised, taking into account the applicable haircuts set by Danmarks Nationalbank. Loans granted under the agreement have to be redeemed before 1.30 p.m. the same day.

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|                   | <p>have a net credit position on the cash side will receive these amounts in their VP settlement account. Simultaneously the transfer of the securities takes place from the account of the seller to the account of the buyer. During the execution of a settlement cycle, no FOP or real-time gross transaction are executed.</p> <p>According to VP's rules, a securities transaction is final when the settlement cycle in which the transaction is settled is completed. The securities and cash received can be used without any risks for delivery in the following cycles or in the RTGS facility (intraday finality).</p> <p>In case of lack of securities and/or cash, VP is allowed to remove transactions in accordance with fixed criteria, known as "elimination rules," until the remaining transactions are covered both on the securities side and the cash side. Transactions for which there is insufficient cash or securities are automatically shifted to the next block. Deferred transactions can be scheduled for settlement for up to five settlement days.</p> <p><i>DVP in the RTGS facility</i></p> <p>In the RTGS facility (BIS model 1 DVP), transactions can be reported for settlement between 8:00 a.m. and 3:00 p.m. Only clearing members that are primary cash providers (participants who have opened a settlement account with Danmarks Nationalbank) can execute real-time transactions and only on their own behalf. After the instructions are matched and confirmed, settlement takes place immediately. VP blocks the securities in the account of the seller and submits a payment order on behalf of the buyer to Danmarks Nationalbank. If there is sufficient liquidity in the current account of the buyer, the cash leg is settled on line in real time and confirmed to VP, which transfers immediately the securities to the account of the buyer with intraday finality. If there is insufficient liquidity in the account of the buyer, the transaction is cancelled and the securities are de-blocked. Thus, payment orders for securities transactions are not placed in a waiting queue as in KRONOS. This prevents any legal challenging of the status of the blocked securities by a third party, so no legal risk occurs in this DVP settlement procedure.</p> <p><b>2. What proportion of trades between direct participants of the CSD (by value) is settled on a DVP basis?</b></p> <p>Except the two percent FOP transfers, all transactions in VP are settled on a DVP basis. The FOP transfers include transfers of collateral.</p> |
| Assessment        | <b>Observed</b>   |
| Comments          | The technical, legal, and contractual framework guarantees DVP, both in the multilateral netting cycles and in the real-time gross settlement. All trades in the Danish financial markets are settled on a DVP basis.   |
| Recommendation 8. | Final settlement on a DVP basis should occur no later than the end of the settlement day. Intra-day or real-time finality should be provided where necessary to reduce risks.   |
| Description       | <p><b>Key questions and answers</b></p> <p><b>1. Does the CSD permit final settlement of securities transfers by the end of the settlement day? Is the timing of settlement finality clearly defined for transactions within the CSD and for transactions over a link to another CSD?</b></p>   |

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|  | <p>VP runs six multilateral netting cycles during the operating day and allows participants with an account in KRONOS, to settle continuous on a real-time gross basis from 8:00 a.m. to 3:00 p.m. The timing of the settlement is clearly defined in VP's rules and takes place as soon as a settlement cycle is completed or, in case of RTGS, at the moment the securities account of the buyer is credited. For free of payment transfers, finality occurs at the moment the securities are credited in the account of the beneficiary. FOP orders can be sent in and will be executed from 5:00 a.m. till 1:45 a.m. the following night with value date changing at 6:00 p.m. in accordance with the 24-hour settlement period of VP.</p> <p>Cross border transactions over the links with other CSDs are treated as all other transactions and obtain finality according to the same rules. No provisional transfers are allowed.</p> <p><b>2. Does the CSD permit final settlement of DVP transfers on a continuous basis throughout the day or at certain designated times during the day? If the latter, at what times do transfers become final? Is there a need for intraday finality or real-time finality to reduce risks? Do central banks use the SSS in monetary policy operations or to collateralize intraday credit extensions in a payment system? Do active trading parties or CCPs have a need for intraday finality to facilitate the smooth functioning of some markets (for example, repurchase agreement markets)?</b></p> <p>VP permits transfers on a continuous basis throughout the largest part of the 24-hour settlement day (7 hours for RTGS transactions and almost 21 hours for FOP transactions) and during six settlement cycles per day. Transfers in the multilateral netting cycles become final once the settlement cycle or block has been completed (6:00 p.m., 11:45 p.m., 6:00 a.m., 10:15 a.m., 12:00 noon, and 1:35 p.m.). All aforementioned cycles, as well the RTGS transactions, settle with value date S, both with respect to the securities and cash leg. All securities and cash received can be used, without any risk, for the settlement of other transactions or other purposes during the rest of the day (intraday finality).</p> <p>In Denmark there exists a need for intraday finality, namely: (i) for the timely settlement of cross border transactions; (ii) for the execution of monetary transactions; (iii) for money market transactions between participants; and (iv) for the delivery of collateral during the day to secure intraday and monetary policy loans.</p> <p>Considerable effort has been made to provide participants with the opportunity to settle cross border transactions in a timely manner. VP's settlement cycles, which settle all transactions with intraday finality, are scheduled in such a way that they correspond with the settlement blocks in Euroclear during the night and make the execution of back-to-back transactions with participants in Euroclear possible with same day value.</p> <p>Since the central bank does not provide overnight loans, banks are forced to go into the interbank money market to cover their overdrafts in the current accounts in KRONOS at the end of the monetary policy day. Although, interbank loans are often uncollateralized, some of the transactions are conducted in the form of a repo. The repos for these purposes have to be settled with intraday finality to ensure timely delivery.</p> <p>Last but not least, Danmarks Nationalbank offers its participants very flexible collateral arrangements. Banks are allowed to transfer securities to their pooling pledge account during the day, if they need additional intraday credit or to cover monetary policy loans.</p> |
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|                   | <p>Securities can be withdrawn from this pledge account at any time provided that there is excess collateral. Participants in KRONOS may also substitute collateral during the day, if they need the securities in the collateral account for other purposes.</p> <p>The flexible and broad range of facilities offered by VP in the form of multiple batch processing and continuous settlement accommodates all these needs for intraday finality—all the more since VP is open for settlement on an almost 24 hour basis.</p> <p><b>3. Does the CSD prohibit the unilateral revocation of unsettled transfer instructions late in the settlement day? Does the CSD receive provisional transfers of securities from any other CSDs? If so, does it prohibit retransfer of these securities until they become final? If not, what would be the consequences of an unwind of such provisional transfers for the CSD’s participants?</b></p> <p>VP does not allow unilateral revocation of unsettled transactions. Transactions are irrevocable as soon as they are confirmed by the participants and ready for settlement. After the confirmation has been submitted, the transaction cannot be unilaterally cancelled or revoked by either of the counterparties or by any third party.</p> <p>VP does not receive provisional transfers from any other CSD. All securities are delivered with finality and can be used without any risk in latter cycles.</p> |
| Assessment        | <b>Observed</b>  |
| Comments          | <p>The timing of finality of settlements is defined clearly. During its long opening hours, VP offers a broad range of facilities that provides settlement with intraday finality to fulfill the different needs of its participants in the domestic markets and to settle cross border trades in a timely manner. No unilateral revocation of unsettled transactions are allowed.</p>   |
| Recommendation 9. | <p>Deferred net settlement systems should institute risk controls that, at a minimum, ensure timely settlement in the event that the participant with the largest obligation is unable to settle. In any system in which a CSD extends credit or arranges securities loans to facilitate settlement, best practice is for the resulting credit exposures to be fully collateralized.</p>   |
| Description       | <p><b>Key questions and answers</b></p> <p><b>1. Does the CSD ensure that timely settlement can be completed in the event of an inability to settle by the participant with the largest obligations? If so, how? Are the credit exposures of the CSD fully collateralized? If not, what measures are in place to address risks stemming from granting uncollateralized credit? Are limits imposed on credit extensions by the CSD? Does the CSD have sufficient liquidity resources to ensure timely settlement?</b></p> <p><i>Measures to ensure timely settlement when the failed participant is the counterparty.</i><br/> No measures are in place to ensure timely settlement in the event of the bankruptcy of the largest participant by replacing the failed transactions via buy in or sell outs, made possible either by requiring sufficient margins in the form of collateral and an appropriate liquidity arrangement, or by a guarantee fund or other indemnification arrangement. Nor are there other specific risk control measures in the Danish markets, which limit potential losses and liquidity pressure, for instance, by setting limits on trading or clearing positions.</p>  |

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|  | <p><i>Institutional effects of a bankruptcy.</i><br/> In case of a bankruptcy, Danmarks Nationalbank, on receiving the notification of the bankruptcy event, will close the accounts of the participant that has gone into liquidation in KRONOS and block access to the automatic collateralization scheme. VP will remove the transactions for which there is no longer sufficient cover from the clearing according to the elimination rules (see rec.7). The liquidator will most certainly immediately freeze the securities accounts of the bankrupt participant in VP.</p> <p><i>Liquidity stress and replacement cost losses in case of a default.</i><br/> However, the liquidity pressure of an unwind on the surviving participants will be reduced and possibly limited owing to the following:</p> <ul style="list-style-type: none"> <li>• settlement of the largest part of the transactions normally takes place at the beginning of the settlement day, almost certainly before VP and Danmarks Nationalbank have received notification of a bankruptcy;</li> <li>• notwithstanding the closing of the accounts in KRONOS, upon receiving the notification Danmarks Nationalbank will respect the settlement line as calculated by VP for the bankrupt participant (see rec. 7) before the notification of the bankruptcy was received and will settle the clearing result staying within this line, even after having received the notification of the bankruptcy event;</li> <li>• surviving participants are required to have a liquidity buffer available in excess of their own payment obligations for these events (see rec. 3);</li> <li>• the automatic collateralization scheme reduces liquidity stress. Owing to this facility, most of the securities that have to be delivered to the bankrupt participant, but could not be settled as a result of the illiquidity of this participant, stay in the securities account of the surviving participants and can be used to obtain automatically intraday liquidity from Danmarks Nationalbank;</li> <li>• the long opening hours of VP and the different settlement facilities give survivors ample time to take action and also provide several possibilities for replacing failed settlements in the market with same day settlements or to borrow securities that have not been received but has to be delivered in the market.</li> </ul> <p><i>Stress testing of the effects of a bankruptcy of the participant with the largest obligation to pay<sup>11</sup></i><br/> The robustness of the VP system has been analyzed by measuring the impact on the settlement ratio by testing what would have happened had the participant with the largest obligation to pay been removed on January 2, 2004, when the amount of transactions to be settled were huge due to redemption and refinancing of outstanding mortgage loans. Danmarks Nationalbank has performed also a stress test for a randomly chosen settlement day. The effects were in both situations relatively small and the amount of failed settlements in the first settlement block would have risen with about 10 percentage points. The main cause of fails was the lack of liquidity on the securities side, i.e., securities that had to be delivered were not received. Owing to: (i) the automatic collateralization scheme; and (ii) the liquidity buffer surviving participants have to hold, the liquidity effects on the cash side were limited. Although not</p> |
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<sup>11</sup> See page 97–105 “Assessment of Settlement Risk in VP Securities Services,” in the *Financial Stability Report 2005* (Copenhagen: Danmarks Nationalbank). Available on <http://www.nationalbanken.dk/dnuk/specialdocuments.nsf>.

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|            | <p>investigated in this stress test, the lack of liquidity on the securities side probably might have been reduced in case of bankruptcy by the possibilities available to surviving participants to borrow the securities under the securities lending programs offered by the private sector, the Ministry of Finance, or from Danmarks Nationalbank (see rec. 5).</p> <p>Furthermore, the replacement cost losses have been calculated and would have had only minor effects on the available capital of the survivors (in the worst-case scenario 8 percent of the excess capital of the largest counterparty would have been at stake). The limited scale of replacement losses in relation to the market turnover is due to the large share of bonds traded in the Danish financial markets.</p> <p><i>Exposures of VP in case of a bankruptcy.</i><br/> VP does not grant credit to its participants. It operates the automatic collateralization accounts on behalf of Danmarks Nationalbank, but is not itself exposed to credit risks. The intraday credit in these accounts is granted by Danmarks Nationalbank. VP assures the central bank that the intraday credit granted is always fully collateralized by eligible securities, taking into account the applicable haircuts. No limits are imposed by the central bank on intraday credit extensions.</p> <p><b>2. Does the CSD permit overdrafts or debit balances in securities?</b></p> <p>VP does not allow overdrafts or debit balances in securities.</p> <p><b>3. Does the CSD evaluate the probability of multiple failures? Can settlement be completed in that event? If not, has the CSD evaluated the cost of ensuring settlement in the event of multiple failures?</b></p> <p>In the aforementioned stress tests, the effects of multiple failures were not studied.</p> |
| Assessment | <b>Broadly observed</b>  |
| Comments   | <p>Although no rigorous risk control measures are in place, because of: (i) the requirement for participants to have a liquidity buffer available for such events; and (ii) the liquidity stress reducing effects of the automatic collateralization arrangement, the effects would possibly be small and do not lead to systemic risks, at least not on the day of the bankruptcy. However, the effects of multiple failures were not analyzed.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> <li>- It is recommended that the effects of a bankruptcy be analyzed in more depth, taking into account the effects of multiple failures, the losses over three settlement days instead of one, and to evaluate thoroughly the costs of ensuring settlement in such events. From the answers in the self-assessment by VP, it seems that the issue was discussed in 1996 and that within this framework a survivor's pay scheme was discussed. However, in the opinion of participants such a loss sharing arrangement could incur moral hazard and thus, might hamper competition. However, other solutions that might prevent excessive risk taking at someone else's expenses, for instance a defaulter's pay scheme or a set of limits on positions, may not have been considered. The study has not been published.</li> <li>- Although this is not required under the recommendations, within the context of ensuring financial stability it could be studied how liquidity pressure developed during the next two days after the bankruptcy is declared and how the still outstanding transactions conducted on the two preceding days influence the liquidity pressure.</li> </ul>   |

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|                    | <p>- A bankruptcy will seldom influence only one financial system or only one market. Within this context, it could also be analyzed whether there are possible systemic risks, if the participant also fails in the Sumclearing and will not be able to pay back its uncollateralized loans in the money market. Consideration could also be given to the effects of concentration in the financial system as a result of the use of settlement agents by smaller banks in VP and in the Sumclearing.</p>  |
| Recommendation 10. | <p>Assets used to settle the cash leg of securities transactions between CSD members should carry little or no credit risk. If central bank money is not used, steps must be taken to protect CSD members from potential losses and liquidity pressures arising from the failure of a settlement bank.</p>  |
| Description        | <p><b>Key questions and answers</b></p> <p><b>1. Is the settlement agent the central bank that issues the currency? If the central bank is settling in foreign currency, what steps have to be taken as settlement agent to ensure that the settlement assets pose little or no credit risks? If the central bank is not used, what steps are taken to protect CSD members from failure of the cash settlement agent? Is the CSD itself organized as a limited purpose bank? Does it strictly limit any risk associated with non-settlement activities?</b></p> <p><i>Settlement in Danish kroner.</i></p> <p>In VP's clearing and settlement system cash settlement in kroner takes place in central bank money via an account in Danmarks Nationalbank payment system KRONOS. Access to KRONOS is open to all Danish credit institutions and investment firms. Also branches of foreign financial institutions can open an account, while foreign financial institutions domiciled in another EU country can participate in KRONOS on a remote basis, provided that they are supervised in their member state or by the DFSA.</p> <p>Of the VP's 131 clearing members, 87 have a VP settlement account in KRONOS. The other 44 VP's clearing members have entered into an agreement with a so-called "primary cash provider," which settles the cash obligation on their behalf. Especially foreign banks and smaller Danish financial institutions make use of the services of such primary cash providers. A primary cash provider guarantees the payment of a client "settlement member" up to a specified amount, the so-called credit line, which is reported to VP. If the payment obligations of a clearing member that uses a cash provider surpass this limit, VP removes transactions of this clearing member till the member will be within the limit set by the cash provider.</p> <p><i>Settlement in euros.</i></p> <p>Danmarks Nationalbank offers also settlement facilities in euros. A number of bonds, primarily government bonds and mortgage bonds, registered in VP are denominated in euros. The central bank has taken steps to ensure that the settlement in euros pose little or no credit risk. Most of the settlements in euro denominated bonds take place in the settlement cycles during the night when TARGET, the pan European payment system for euros to which KRONOS is linked, is not open for settlement. Accordingly, participants have no access to euro liquidity. In practice, the amounts due are calculated in DKr. The involved participants are obliged to exchange the paid kroner into euro at 9:20 a.m., when a special PVP cycle is executed, using the same exchange rate that was applicable during the night for the exchange of euros in kroner. This ensures that parties are paid in euros. During the day direct settlement in euros takes place at 1:35 p.m. Participants can obtain intraday credit in euros against collateral in this settlement cycle, but the amounts granted are limited and the participants cannot make use of the automatic collateral arrangements. Thus, for larger transactions, the participants have to</p> |

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|            | <p>fund themselves in advance via a currency swap or via a loan in the euro interbank market to avoid non-settlement due to lack of sufficient cash. Intraday loans obtained from Denmark National Bank have to be repaid before closing time, since Danmarks Nationalbank does not grant overnight loans in euros. If not repaid timely, a fine is levied and the collateral can be executed to redeem the loan.</p> <p>As stated under rec. 9, VP is not a financial institution and does not grant any credit to its participants.</p> <p><b>2. Are settlement banks subject to prudential supervision by government authorities? Who determines which institution can be used as settlement institutions? What are the criteria? If multiple settlement institutions can be used in principle, how many are used in practice? How concentrated are payment flows? On an average day, what percentage of total payments is credited to accounts at the institution that accounts for the largest share of payment flows? What is the financial condition of that institution (for example, its capital ratios and its credit ratings)? Are the concentration of exposures and the financial conditions of the settlement banks monitored and evaluated? If so, by whom?</b></p> <p>The primary cash providers are all supervised by the DFSA. Clearing members are free to choose their own cash provider. Normally one of the larger banks is chosen by foreign participants, while the smaller banks often use the nearest regional bank to settle their obligations for transactions in securities. There is some concentration risk due to the fact that a relatively large number of clearing members use the same cash provider. However, the net payment obligations of this cash provider on behalf of its clients seem to be modest relative to its own obligations and to the total payments in the clearing. However, the exposures are not monitored systematically, neither by VP, nor by the overseers. The cash providers in question have a high credit standing and excess capital.</p> <p><b>3. How quickly can recipients use the proceeds of securities settlements? On the same day? Intraday?</b></p> <p>It is not precisely known, how quickly recipients that use the services of a cash provider can use the proceeds of securities settlements, but there is no reason to believe that unnecessary long credit exposures exist vis-à-vis their settlement bank. The proceeds can be used anyway in the following settlement cycles and, possibly, can be withdrawn the same day.</p> <p><b>4. Does the payment system used for interbank transfers among settlement banks observe CPSIPS?</b></p> <p>KRONOS observes most of the CPSS Core Principles in full.</p> |
| Assessment | <b>Observed</b>   |
| Comments   | <p>VP settles in central bank money. The settlement system used observes most of the CPSS core principles in full. Although a large number of settlement agents use the same primary cash provider, the resulting concentration risk seems to be modest.</p> <p>Recommendations:</p> <ul style="list-style-type: none"> <li>- Danmarks Nationalbank and DFSA, as overseers, should monitor and analyze the concentration risks in the system in more depth. If deemed necessary, appropriate action should be taken.</li> </ul>   |

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| Recommendation 11. | Sources of operational risk arising in the clearing and settlement process should be identified and minimized 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.  |
| Description        | <p><b>Key questions and answers</b></p> <p><b>1. Does the operator have a process for identifying and managing its operational risks?</b></p> <p><i>Proactive security policy</i><br/> VP has developed a security policy with clear goals with respect to level of security and written procedures/guidelines for achieving and maintaining the targeted level. The security policy is approved by the Board of VP. Based on this policy, VPs management team has worked out regulations and written procedures and has conducted a comprehensive assessment of possible risks in the organization and systems (identification of risks) and has proposed measures to manage these risks. Once a year the threats and the protection measures in place are reassessed.</p> <p>When the system is changed, it is evaluated whether the change implies new risks or threats for VP. If this is the case, a risk assessment is carried out using the SPRINT model, developed by the Information Security Forum, and the risk is categorized according to the impact of a realized threat and the probability thereof. If the risk is categorized as high, an action plan is prepared.</p> <p><i>Data management and protection of data</i><br/> VP has adequate data management facilities ensuring data protection via access control (electronic keys) and encryption of external communication of data. The system is protected by firewalls against intruders and attacks. The strength of the protection measures, including the protection of data communication channels and messages, is tested twice a year by a specialized internationally reputable IT securities firm.</p> <p><i>Audit trails</i><br/> VP employs audit trails, including logging of access to production data and changes of production programs.</p> <p><i>Descriptions of organization and systems</i><br/> Function descriptions are in place for each department outlining each department and sub-department's responsibilities. Furthermore, security related responsibilities are documented for each department. Written procedures as well as automated processes are in place to provide and ensure a proper level of segregation of duties. Comprehensive system documentation is available.</p> <p><i>Development and change management</i><br/> Development, testing, and production take place in separate environments. When new systems or important/big changes to existing systems are underway, participants are always involved in the final testing before the systems are moved to the production environment. Formal change management is in place, including change-requests. Change management is carried out using a server-based system, and the procedures are well documented. Changes have to be approved by VP's Change Management Forum (CMF) before they can be applied. The change management covers all types of changes to the production environment. Stress tests are performed before new applications are put into "live" production.</p> |

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|  | <p><b>2. Does the system operator have contingency plans and backup facilities for the failure of key systems, and are these tested and reviewed regularly with participants taking part? Do contingency plans ensure as a minimum that the status of all transactions at the time of the disruption can be identified with certainty in a timely manner? How long does it take to recover operations through backup systems? Do the procedures provide for preservation of all transaction data? How does the system operator ensure the integrity of messages?</b></p> <p><i>Contingency plans</i><br/> VP has comprehensive contingency plans that are tested annually. They provide for reallocation of the production within one hour to a second site at a suitable distance from the primary site. Since all data in the system are mirrored in real-time to the remote site, a switch can be performed without loss of data (hot stand-by mode). Furthermore, VP has stored data at several locations enabling relocation to a third or dark site within a few days with only limited data losses. Other office facilities are available from which the systems can be operated.</p> <p><i>Protection of data communication</i><br/> Confidentiality, integrity authentication, non reputability of the communication via the dedicated proprietary network VP CRYPTONET or via a virtual private network on the internet are ensured through the existence of appropriate measures. Participants can also use the protected SWIFT network.</p> <p><b>3. Are operational reliability issues reviewed regularly by senior management, including review by persons not responsible for the relevant operations? Are periodic external audits of the IT (Information Technology) system conducted? Is there an independent internal audit function and does it review operational risk controls?</b></p> <p><i>Reviews of the operational reliability by the Board</i><br/> Operational reliability is reviewed annually by the management board. A report is sent to the Board and there is an annual statement by the chief executive officer (CEO) to the Board of Directors about the state of the systems regarding security and reliability.</p> <p><i>Internal and external audits</i><br/> Audits of the IT-systems are performed continuously by VP internal auditors and by the external auditor Deloitte Touche Tohmatsu International. The auditors assess the adequacy of the security policy and procedures as well as compliance with the external and internal rules and procedures. Also VP's contingency plans are audited and the testing of these plans is monitored by the auditors.</p> <p><i>Independent audit function</i><br/> The Internal Systems Auditor is independent from the operational department. It sends its annual audit plans as well as the results from the audit work performed (including the material findings) to VP's Audit Committee. VP's Audit Committee consists of Chief Auditors and Audit Directors from the financial sector in Denmark as well as VP's external auditor. The committee discusses the internal and external audit reports and sends them with their remarks to the Board of VP. The Committee gives also advice to VP's management as well as to the Chief of the System Audit Department regarding security, audit, and controls.</p> <p><b>4. How many times during the last year has a key system failed? What is the most common cause of failure? How long does it take to resume processing? How much transaction data, if any, was lost? Does the system operator have capacity plans for</b></p> |
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|              | <p><b>key systems and are key systems tested periodically to determine if they can handle stress volume?</b></p> <p><i>Targets for operational reliability of systems and incidents</i><br/> VP has set targets and tolerance limits regarding: (i) uptime of the overall system (99.7 percent); (ii) average delays per year (not more than on two-days a year); and (iii) delays in cross border transmissions (no delays should occur).</p> <p><i>Availability and incidents</i><br/> The VP system has a high degree of operational reliability. The availability in the system was:</p> <table border="1" data-bbox="516 625 1263 783"> <thead> <tr> <th></th> <th>Availability</th> <th>Incidents</th> </tr> </thead> <tbody> <tr> <td>2002</td> <td>99.9 %</td> <td>2</td> </tr> <tr> <td>2003</td> <td>99.9 %</td> <td>0</td> </tr> <tr> <td>2004</td> <td>99.9 %</td> <td>2</td> </tr> <tr> <td>Jan-Oct 2005</td> <td>99.9 %</td> <td>1</td> </tr> </tbody> </table> <p>No key process has failed during the last four years. However, VP experienced a delay in processing caused by a failure in a batch management subsystem in 2004. The processing was delayed for some hours, but no transaction data or messages were lost. All transactions were properly registered.</p> <p><i>Capacity plans and stress tests of the available capacity</i><br/> In 2002, VP outsourced its central data processing operations to DMdata A/S (IBM), whereby VP operates its own systems, but leases hardware and operation of hardware from DMdata. The agreement between VP and DMdata sets out the requirements of quality of delivery as well as security issues and ensures that VP is informed about all issues pertaining to VP's systems at DMdata, including audit information. The agreement provides VP with IT capacity for five times VP's average consumption. In addition, VP may obtain extra capacity within a few hours.</p> <p>Prior to changes of activity a test is conducted, including the required capacity. System performance is monitored on an ongoing basis.</p> <p>The Service Level Agreements (SLA) with DMdata also deal with possible disasters and business contingency issues.</p> |           | Availability | Incidents | 2002 | 99.9 % | 2 | 2003 | 99.9 % | 0 | 2004 | 99.9 % | 2 | Jan-Oct 2005 | 99.9 % | 1 |
|--------------|--|-----------|--------------|-----------|------|--------|---|------|--------|---|------|--------|---|--------------|--------|---|
|              | Availability   | Incidents |              |           |      |        |   |      |        |   |      |        |   |              |        |   |
| 2002         | 99.9 %   | 2         |              |           |      |        |   |      |        |   |      |        |   |              |        |   |
| 2003         | 99.9 %   | 0         |              |           |      |        |   |      |        |   |      |        |   |              |        |   |
| 2004         | 99.9 %   | 2         |              |           |      |        |   |      |        |   |      |        |   |              |        |   |
| Jan-Oct 2005 | 99.9 %   | 1         |              |           |      |        |   |      |        |   |      |        |   |              |        |   |
| Assessment   | <b>Observed</b>  |           |              |           |      |        |   |      |        |   |      |        |   |              |        |   |
| Comments     | <p>VP has developed an appropriate IT security policy and has pro-actively assessed possible threats to the system and the organization. The risk and the adequacy of the risk control measures are reviewed annually. Adequate contingency plans and back-up facilities are available and tested each year. Adequate management controls are in place and internal and external audits are conducted continuously. Operational reliability is high and sufficient capacity is available to handle stress volumes.</p> <p>Recommendation;</p> <ul style="list-style-type: none"> <li>- Taking into account VP's central role as administrator of collateral accounts that play a crucial role in the granting of intraday credit by Danmarks Nationalbank for the settlement of large value payments, CLS payments, securities, and retail payments, the emergency procedures of VP, Danmarks Nationalbank as system-owner of KRONOS, BEC as system operator of KRONOS, and the Danish Bankers association</li> </ul>  |           |              |           |      |        |   |      |        |   |      |        |   |              |        |   |

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|                    | and PBS as system-owner and system provider, respectively, of the Sumclearing, should be coordinated and tested simultaneously with the participants involved (see also the assessments of KRONOS and the Sumclearing).   |
| Recommendation 12. | 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.   |
| Description        | <p><b>Key questions and answers</b></p> <p><b>1. What arrangements are used to protect customers' securities from theft, loss, or misuse and to ensure that they will not become subject to claims of the custodian's creditors (for example, are segregation, insurance, or compensation schemes used)? Are those arrangements based upon specific laws and regulations? In the event of the custodian's insolvency, do those arrangements enable a customer's position to be moved by a receiver to a solvent intermediary?</b></p> <p>Due to dematerialization, loss and theft of securities have been significantly reduced. In Denmark the investment of clients of a direct participant or account holder are kept in a single investor account in the name of the investor. At the moment, 3.0 million investors accounts have been opened in VP. These accounts only contain an investor's own securities, and the investor's securities are thus effectively segregated from assets belonging to other investors and from the assets belonging to the account controllers. Where customers' securities are held in omnibus accounts, Section 72 of the Danish Financial Business Act states that, unless an exception is made by the DFSA in special cases, the securities shall be segregated from the account controller/custodian's own securities. If securities are held in an omnibus account, the customer should be informed of this and of the legal consequences.</p> <p>In the event of compulsory liquidation, etc., of an account controller, holdings in the said investor accounts will not be included in the estate. The same applies to omnibus accounts, as stated in Section 72 of the Danish Financial Business Act. Neither the account controller's, nor VP's creditors can claim the securities of the investor. In any case, if such a loss should arise, the investor will be compensated by the compensation scheme given by law.</p> <p>In pursuance of Section 64 of the Danish STA, an account controller in compulsory liquidation loses the right to undertake reporting to VP for book entry on these accounts with immediate effect. Subsequently, all VP accounts involved are moved to another account controller.</p> <p>A special liability exists for any loss resulting from errors in connection with registration, alteration, or cancellation of rights on account or payments related to accounts by VP, even if these errors are accidental. Liabilities up to DKr 1 billion are covered under this scheme that is backed by VP's capital and guarantees of the direct participants.</p> <p>For wrongful book-keeping, errors, misuse, and theft of securities by the account operator, a liability scheme exists up to DKr 500 million per event. If the damage cannot be claimed in full from the account operator itself, the other direct participants shall be liable for the outstanding amount. These later liabilities are not applicable on securities in a nominee account.</p> |

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|                    | <p><b>2. How often do the entities holding securities in custody reconcile their records? Are the entities holding securities in custody subject to mandatory internal and external audit, or both, to determine if there are sufficient securities to satisfy customers' claims?</b></p> <p>VP checks regularly, at least once a week that the volume in circulation corresponds with obligations of the issuers. Accountholders receive information on the transactions performed and are able to control the bookings in the accounts of their clients. According to Article 86 of the STA, the DFSA shall supervise the business activities of account controllers and ensure that their rules, procedures, and safeguard arrangements, in general and in respect of electronic data processing are adequate and in conformity with this Act and the provisions laid down in pursuance hereof.</p> <p>All Danish account controllers are required by law to employ one or more external auditors. Major account controllers are also obliged to have an internal audit regime. Pursuant to the Executive Order on audits based on the STA, in case account controllers hold their customer's securities in an omnibus account, the internal and external auditors shall check in particular whether the account controller's own register clearly specifies each investor's ownership of securities and the procedures to update the register are adequate.</p> <p><b>3. Are the entities holding securities in custody subject to prudential supervision or regulations? Do regulatory reviews examine the procedures and internal controls used in safe keeping of securities?</b></p> <p>Direct participants are supervised by the DFSA or by a supervisory authority in their home country. Account controllers can be subject to onsite inspection by the DFSA.</p> |
| Assessment         | <b>Observed</b>  |
| Comments           | <p>In Denmark investors are protected by law against claims of creditors of an account controller/custodian or of VP. Normally, securities are registered directly in the name of the investor in VP. Liability of account controllers and VP are clearly defined and ample compensation schemes are in place in case of theft, misuse, or errors. Reconciliation, if necessary, takes place regularly and all direct participants are supervised.</p>   |
| Recommendation 13. | Governance arrangements for CSDs and central counterparties should be designed to fulfill public interest requirements and to promote the objectives of owners and users.  |
| Description        | <p><b>Key questions and answers</b></p> <p><b>1. What are the governance arrangements of the CSD? What information is publicly available regarding the system, its ownership and its board and management structure and the process by which major decisions are taken and management made accountable.</b></p> <p>VP is a limited company, whose shareholders represent agents in the securities market. As in other limited companies, the shareholders exert their influence through the general meeting, which is VP's supreme authority. In this capacity the general meeting appoints VP's Board. The management of VP is shared between the Board, which is responsible for the general governance of VP, and the management, which is responsible for day-to-day operations and shall, in that capacity, follow the directions of the Board. Decisions regarding transactions which are unusual or of great significance in consideration of the company may, as a general rule, only be taken by the Board.</p>   |

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|  | <p>By virtue of a shareholders' agreement, all shareholder groups are guaranteed representation on VP's Board and, owing to this arrangement, have influence on VP's general governance. VP's Board consists of 15 members, 10 of whom are appointed by the general meeting and the remaining 5 by the employees. According to the shareholders' agreement, the right to appoint board members are distributed as follows between five shareholder groups: banks and investment companies appoint four members, bond-issuing companies appoint three members, and Danmarks Nationalbank, share issuers, and institutional investors each appoint one member. Danmarks Nationalbank is represented on VP's board in order to work for a stable and efficient VP system, including observance of international standards and related requirements of fair and open access, etc., and to safeguard the interests of the central government as issuer of government bonds.</p> <p>The government arrangements are all available on VP's website and published in the annual report.<sup>12</sup> The vision and mission of VP and its set of basic values are also made available to the public.</p> <p><b>2. Are the system's public interest, financial and other objectives articulated and public? What are they? Do the system's objectives reflect the needs of users as well as of owners? How is the public interest taken into account? Can the system's participants or the public influence the system's decision making process? How are major decisions communicated to owners and users?</b></p> <p>VP's objectives are to a large degree regulated by the Danish STA, the objective of which is to ensure safe, sound, and transparent financial markets and to protect the rights of the investor.</p> <p>According to VP's articles of association, the general objectives are:</p> <ul style="list-style-type: none"> <li>- to carry out registration, clearing, and settlement business according to the Danish STA;</li> <li>- to ensure that the organization and functionality of VP are guaranteed for the future and meet international standards;</li> <li>- to ensure that VP through reasonable conditions for registration of securities supports a broad participation in the Danish securities market, including a broad cross-section of shareholders.</li> </ul> <p>The objectives are set by the shareholders, who represent the users, as well as the owners, and do take into account the public interest.</p> <p>Users are, to a large extent, represented by shareholders and by the board members. Furthermore a committee of customers is consulted four times a year. The public interest is looked after by among others the DFSA, whose consent is required for management decisions in a variety of specific areas.</p> <p>The statutes that contain the objectives are published on the website.</p> |
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<sup>12</sup> For details, see the website of VP: <http://www.uk.vp.dk/>.

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|                    | <p><b>3. What steps are taken to ensure that management has the incentives and skills needed to achieve the system’s objectives and is accountable for its performance?</b></p> <p>The management is appointed by the board of directors. The appointed members are all professionals in the financial markets. Furthermore, a fit-and-proper test is conducted by the DFSA, which has to approve the appointments, both in regard to the necessary level of suitable expertise, but also with regard to criminal history.</p> <p><b>4. How is the composition of the Board determined? What steps are taken to ensure that board members have the necessary skills and represent or take into account in their deliberations the full range of shareholder and user interests as well as the public interest?</b></p> <p>VP is governed by a Board of Directors elected by the shareholders at the yearly general assembly. The Board consists of representatives from the shareholders, who also represent the players in the Danish securities market. All Board members are highly positioned in financial institutions and are in possession of detailed knowledge of the securities markets. The appointment of the Board members must be approved by the DFSA.</p>   |
| Assessment         | <b>Observed</b>   |
| Comments           | The governance structure of VP is clearly specified and transparent. It is designed to fulfill public interest requirements and promotes the objectives of the owners and users.  |
| Recommendation 14. | CSDs and central counterparties should have objective and publicly disclosed criteria for participation that permit fair and open access.   |
| Description        | <p><b>Key questions and answers</b></p> <p><b>1 Are access rules/criteria, clearly stated and publicly disclosed?</b></p> <p>The rules and criteria for access/participation are regulated in parts 16 and 21 of the STA. Participation is open to securities dealers, including credit institutions and investment companies, i.e., both Danish and foreign companies under financial supervision entitled to clear and settle on behalf of third parties. Other companies that only undertake clearing on their own behalf, such as institutional investors, may also conclude a participation agreement with VP. Pursuant to Section 54 of the STA, the detailed conditions for participation are stipulated by the clearing center in the agreement.</p> <p>The access rules are published on VP’s website and accessible in both Danish and English together with a special guide for foreign participants.</p> <p><b>2. Are the same rules applied regardless of the identity and location of the applicant? If not, what variations apply and why? Can different restrictions on access to the system be justified in terms of the need to limit the risks to the system operator or to other users?</b></p> <p>Access to, or participation in VP differs depending on which function the applicant wishes to obtain, but it is the same for all participants applying to these functions. The only exception is that participants from countries outside the EEA are obliged to submit a legal opinion that VP’s rules are enforceable under the laws of their country. This restriction is made to ensure that the VP’s rules and settlement procedures are enforceable.</p> |

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|                    | <p><b>3. Under what conditions can participants terminate their membership? What arrangements does the system have in place to facilitate the exit of members who no longer meet the participation requirements? Are these arrangements publicly disclosed?</b></p> <p>A clearing member may terminate its participation in relation to VP or one or more of individual clearing functions with three months' notice to expire on the last day of a month, provided that all obligations have been discharged before the expiry of the notice of termination.</p> <p>An account controller in compulsory liquidation loses the right to undertake reporting to VP with immediate effect. In addition, it follows from the breach provision of the Participation Agreement that where an account controller commits a material or repeated breach of the Agreement, VP will report this to the DFSA, which will then decide whether the Agreement can be terminated. In case of termination, the securities of the account holders are transferred to other account controllers. If a clearing member, which is not an account controller, grossly or repeatedly disregards the conditions for participation, VP may terminate the Participation Agreement. The same applies if the clearing member becomes subject to compulsory liquidation, suspension of payments, etc.</p> <p>The termination and breach provisions of the Participation Agreement are also accessible from VP's website.</p> |
| Assessment         | <b>Observed</b>   |
| Comments           | VP have objective, clearly stated, and publicly disclosed criteria for participation. The criteria do not limit access other than on the ground of legal risk to the finality of the settlement. Orderly exit procedures are in place.  |
| Recommendation 15. | While maintaining safe and secure operations, securities settlement systems should be cost-effective in meeting the requirements of users.  |
| Description        | <p><b>Key questions and answers</b></p> <p><b>1. Does the system operator have in place procedures to control costs (for example by benchmarking its costs and charges against other systems that provide a similar service and to analyze the reasons for significant differences)? Does the system provider have in place procedures to regularly review its price levels against the costs of operation?</b></p> <p>VP tries to compare its own prices and costs with those of other comparable systems. As a limited company, VP has a market and business-oriented approach and strives to achieve more than full cover of costs in its activities in combination with low charges to its customers.</p> <p><b>2. Does the system operator regularly review its service levels, including by regularly surveying its users? Does the system operator have in place procedures to regularly review operational reliability, including its capacity levels against projected demand?</b></p> <p>VP regularly reviews its service levels and new initiatives in dialogue with the participants, including in a formalized form through regular meetings in VP's customer forum, which is a standing VP committee comprising representatives of VP users.</p>  |

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|                    | <p>In 2004, VP carried out a customer satisfaction analysis, using a questionnaire. This provided a wide cross-section of VP's clients in different sectors and at different organizational levels the opportunity to express their opinion on reliability and performance as a satisfactory business partner and, its service level. The survey showed that there is considerable satisfaction with VP's services overall and that VP is a reliable and satisfactory business partner.</p> <p>VP reviews the operational reliability of the system, both on a regular basis and prior to activity changes, including the need for system capacity (see rec.11). Due to the outsourcing of its central data processing operation to DMdata A/S, sufficient capacity is available and, if necessary, extra capacity can be obtained in line with the development of demand and at short notice.</p> |
| Assessment         | <b>Observed</b>  |
| Comments           | While maintaining safe and secure operations, VP is cost-effective and recovers its costs in full in combination with reasonable charges to its participants.  |
| Recommendation 16. | Securities settlement systems should use or accommodate the relevant international communication procedures and standards in order to facilitate efficient settlement of cross-border transactions.  |
| Description        | <p><b>Key questions and answers</b></p> <p><b>1. Does the securities settlement system use international communication procedures or standards or is it able to easily convert domestic procedures and standards into the relevant international communication procedures and standards for cross-border securities transactions?</b></p> <p>Although VP uses its own message formats in its proprietary network, it offers its participants also the possibility to communicate via SWIFT and VP supports the most recent SWIFT standards ISO 15022. Securities are identified in accordance with ISO 6166 (ISIN codes). SWIFT is especially used by remote members and for cross border communication.</p>   |
| Assessment         | <b>Observed</b>  |
| Comments           | VP uses international standard procedures and supports international standard message types to facilitate efficient settlement of cross border transactions.   |
| Recommendation 17. | CSDs and central counterparties should provide market participants with sufficient information for them to accurately identify the risks and costs associated with using the CSD or central counterparty services.   |
| Description        | <p><b>Key questions and answers</b></p> <p><b>1. Does the CSD or CCP make clear disclosures to market participants about its rules, regulations, relevant laws, governance procedures, risks, steps taken to mitigate risks, the rights and obligations of participants and the costs of participating in the system?</b></p> <p>VP discloses detailed information on its website. At the website there is a section called "About VP." Among other things, this section contains subsections on regulation and supervision, statutes and rule sets, as well as participation. The subsection on statutes and rule sets comprises VP's clearing rules, which are part of the Participation Agreement and provide information on the functionality of the VP system and on the risks involved. For instance, the Clearing Rules contain provisions on how settlement is</p>                         |

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|                    | <p>influenced by a participant's inadequate securities or cash cover, by a participant's compulsory liquidation, and in case of force majeure situations. Finally, the Clearing Rules contain provisions on settlement practices in the VP system, including the mutual agreement between participants on settlement practices to ensure the necessary securities cover, as well as rules on liquidity buffers to stabilise settlement.</p> <p>In connection with the description of the legislation at VP's website, there is a link to the legislation database at the DFSA's website mentioned under recommendation 1. This database also contains English versions of the essential documents.</p> <p>Furthermore, VP offers comprehensive customer service at its website. This customer service section is reserved for VP's participants, who use a password to access it. This database also contains English versions of the essential documents. It contains a variety of information, from business guides, price lists, registration and clearing guides, and an actual systems guide.</p> <p><b>2. Has the system completed and disclosed the questionnaire set out by the CPSS/IOSCO disclosure framework or the answers to the key questions set out in this assessment methodology? Have the authorities responsible for regulation and oversight publicly disclosed their answers to the key questions regarding implementation of the recommendations?</b></p> <p>In 2002, VP completed and disclosed the questionnaire on its website. Also, the answers to the key questions were published. Both the DFSA and Danmarks Nationalbank have published on their websites the self assessment of observance of VP of the CPSS/IOSCO recommendations for SSS, which they conducted in 2004.</p> <p><b>3. How is this information made available? In what language or languages? In what form?</b></p> <p>The disclosure framework and the answers to the key questions are published on the internet in Danish and English.</p> <p><b>4. What steps are taken by the CSD or CCP to ensure that the disclosures are complete and accurate? Are there regular reviews to ensure they remain current?</b></p> <p>The answers are reviewed at regular intervals by VP. In September 2005, VP completed the questionnaire of the European Central Securities Depositories Association (ESCDA) and, after having discussed the answers with the overseers, it will publish the questionnaire on its website. The ESCDA questionnaire is based on the Disclosure framework for Securities Settlement Systems by the CPSS/IOSCO, the Depository Questionnaire 2000 by the association of Global Custodians and the ISSA 2000 recommendations. It contains also relevant answers under the CPSS/IOSCO assessment methodology for the recommendations for Securities Settlement Systems.</p> |
| Assessment         | <b>Observed</b>   |
| Comments           | VP provides market participants with sufficient information to identify the risks and costs associated with using the system.   |
| Recommendation 18. | Securities settlement systems should be subject to regulation and oversight. The responsibilities and objectives of the securities regulator and the central bank with respect to SSSs should be clearly defined, and their roles and major policies should be publicly disclosed. They should have the ability and resources to perform their responsibilities, including assessing and promoting implementation of these  |

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|             | recommendations. They should cooperate with each other and with other relevant authorities.   |
| Description | <p><b>Key questions and answers</b></p> <p><b>1. How is the system regulated /overseen? Describe the laws that authorize and govern the system’s operation, the applicable regulatory bodies and their respective authority concerning the system’s operation.</b></p> <p>VP is supervised by the DFSA and overseen by Danmarks Nationalbank. The system’s operation is authorized and regulated in the STA. In accordance with the STA, the DFSA shall monitor the business activities of VP and their rules, procedures, controls, and safeguard arrangements to ensure that they are adequate and in conformity with the STA and executive orders issued on the basis of this Act.</p> <p>Danmarks Nationalbank’s oversight power on payment and securities settlement systems was until recently of a more general nature. The central bank, established pursuant to the Denmark Nationalbank Act, is entrusted with the task of maintaining a safe and secure currency system and to facilitate and regulate the traffic in money. In the opinion of Danmarks Nationalbank, this includes the stability and efficiency of payment and securities settlement systems. For Danmarks Nationalbank, safe and sound securities settlement systems are not only important for its role as settlement bank of the system, but also to ensure reliable channels for the execution of monetary policy transactions and the collateralization of intraday credit. Within this framework, the oversight of VP is made effective via the Settlement Agreement between VP and Danmarks Nationalbank as settlement bank of the system. In this agreement it is stated that VP will fulfill the general requirements for clearing and settlement of securities made by Danmarks Nationalbank. Danmarks Nationalbank and the DFSA have entered into a formal MoU concerning the cooperation on the oversight of payment and securities settlement systems.</p> <p>In February 2006, effective March 1, 2006, the Danish Parliament approved an amendment on the STA in which the oversight task of the central bank with respect to payments and clearing and settlement systems is explicitly set out. In the explanatory memorandum of the bill, it is stated that Danmarks Nationalbank also maintains the oversight of clearing and settlement systems.</p> <p><b>2. Are the responsibilities of the securities regulator, central bank and, where relevant, banking supervisor clearly defined with respect to securities settlement systems? Are their roles and major policies disclosed publicly? Are they written in plain language so that they can be fully understood by designers, operators and participants of securities settlement systems, and other relevant parties?</b></p> <p>The supervisory function of the DFSA is clearly defined in the STA. The MoU stipulates that the joint oversight task on VP shall be based on relevant international standards, i.e., the observance of CPSS/IOSCO recommendation for Securities Settlement Systems. Within this context, Danmarks Nationalbank and DFSA will coordinate their joint task concerning verification of VP’s compliance and will consult each other prior to any ruling or decision of vital importance to VP as well as exchange information.</p> |

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|            | <p>The MoU is published on the website of both parties involved. Danmarks Nationalbank has published an article on its oversight of payments and securities settlement systems.<sup>13</sup></p> <p><b>3. What is the regulatory and oversight framework based on? Is it a statute based approach where specific tasks, responsibilities and powers are assigned to specific public authorities? Do the securities regulators and the central bank have experienced staff, proper resources and funding to carry out regulatory and oversight functions effectively?</b></p> <p>For the DFSA, and to some extent also for Danmarks Nationalbank, the legal framework for oversight is based on a statute. The two overseers have experienced staff as well as proper resources and funding to carry out regulatory and oversight functions.</p> <p><b>4. Is there a framework for cooperation between the securities regulator and the central bank such as for the exchange of information and views on securities settlement systems? Is there such a framework for cooperation with authorities both within and outside the country?</b></p> <p>The aforementioned MoU forms the basis for the cooperation between the DFSA and Danmarks Nationalbank.</p> <p>The links with Euroclear and Clearstream have been assessed in cooperation with de Nationale Bank van Belgie and the Banque Centrale du Luxembourg.</p> <p>In June 2003, the governors of the central banks of the Nordic countries (Denmark, Finland, Iceland, Norway, and Sweden) signed a MoU on the management of financial crises in Nordic banks with activities in two or more Nordic countries. The agreement is based on the standard MoU developed within the E.U. It contains principles for crisis management, the required flows of information and the practical aspects of supplying information. In a potential crisis, the central banks establish a crisis group responsible for providing joint and rapid access to and management of information. The crisis group contacts relevant authorities in the different countries, including the relevant supervisory authorities. If a bank's solvency is in doubt, the countries' ministries of finance should be consulted.</p> <p>Further on, a MoU on high level principles of co-operation between the banking supervisors and central banks of the EU in crisis management situations has been signed.</p> |
| Assessment | <b>Observed</b>  |
| Comments   | VP is subject to transparent and effective regulation and oversight. This framework has to comply with international standards. Danmarks Nationalbank and DFSA cooperate effectively with each other and have signed an MoU with other relevant authorities.   |

<sup>13</sup> See *Monetary Review*, 2nd quarter, 2001, page 89–90 (Copenhagen: Danmarks Nationalbank), which is available on: n <http://www.nationalbanken.dk/dnuk/specialdocuments.nsf> .

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|                    | <p>Recommendation:</p> <ul style="list-style-type: none"> <li>- The overseers should be allowed to oversee activities and systems in case of outsourcing and should have the right to conduct onsite inspections, if deemed necessary.</li> </ul>  |
| Recommendation 19. | CSDs that establish links to settle cross-border trades should design and operate such links to reduce effectively the risks associated with cross-border settlement.  |
| Description        | <p><b>Key questions and answers</b></p> <p><b>1. What kind of links are in operation? Has the CSD done a risk analysis of the design of the link and the financial and operation integrity of the linked CSD?</b></p> <p>The two international European single-purpose banks acting as ICSDs, Euroclear, and Clearstream International, both have direct links with VP that allow for DVP. Securities issued at VP can be registered at the respective ICSDs and be transferred and retransferred with concurrent cash settlement. The Euroclear link is the most frequently used link. It is also the most efficient link, with Euroclear holding a securities account at VP and a cash settlement account at Danmarks Nationalbank. The timing of the finality in the different settlement cycles/blocks are set in such a way that they correspond with settlement cycles in Euroclear, allowing the settlement of back to back transactions with same day value. For instance securities finally settled in VP in the first settlement cycle at 6:00 p.m. can be delivered via the link to Euroclear for the delivery to a counterparty in that system during the first night batch in that system. Securities could be transferred during the opening hours of both systems five to six times via the link, giving participants ample time to arrange their cross-border settlements.</p> <p>The Clearstream link is also a direct link in the sense that Clearstream holds a securities account at VP in its own name, but this VP account is serviced by Danske Bank as account controller, just as Danske Bank undertakes cash settlement via its account at Danmarks Nationalbank. This link allows also for delivery to a participant in Clearstream and receiving the securities back in an account in VP during the opening time of both systems.</p> <p>In addition, VP has bilateral direct FOP links with the Swedish CSD, VPC, and the Icelandic CSD, VS. Thus, these CSDs register securities issued at VP, and VP registers Icelandic and Swedish securities. However, the use of these links is limited.</p> <p>Risk analyses have been undertaken in respect of the VP system, including the said links.</p> <p><b>2. How is DVP achieved? Does the link permit provisional transfers of securities across the link? If so, is the retransfer of these securities prohibited until the first transfer is final?</b></p> <p>Settlement of transactions via the link is final and no provisional deliveries take place. Securities received via all the links can be re-used for the settlement of other transactions during the day in the other system. DVP procedures in VP are exactly the same as for other transactions, with Euroclear and Clearstream as counterparty of the local participant who has a settlement obligation vis-à-vis a participant in the ICSDs.</p> <p><b>3. If the CSD extends credit to a linked CSD, are credit extensions to the linked CSD fully secured and subject to limits? Are risk controls and liquidity resources adequate to address liquidity risks posed by the link?</b></p> |

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|            | <p>VP does not extend credit to Euroclear or Clearstream. Although Euroclear, as a participant of VP, can participate in the automatic collateralization scheme, it has decided not to do so in order to prevent the Danish securities that Euroclear keeps in its VP omnibus account for its clients, from being pledged as collateral for the settlement of trades via the link. Euroclear has an agreement with a Danish bank for the providing of liquidity. Clearstream can obtain credit via its local agent in Denmark. Danmarks Nationalbank will always collateralize in full its credit extensions.</p> |
| Assessment | <b>Observed</b>   |
| Comments   | VP has established links with other CSDs for the settlement of cross border transactions that reduce effectively the risks associated with cross border settlements.  |

**Table 4. Recommended Actions to Improve Observance of CPSS-IOSCO Recommendations for Securities Settlement Systems— Værdipapircentralen**

| <i>Reference Principle</i>                         | <i>Recommended Action</i>   |
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| <b>Legal risk</b><br><i>i.e. Rec I</i>             | None  |
| <b>Pre-settlement risk</b><br><i>i.e. Rec II-V</i> | None  |
| <b>Settlement risk</b><br><i>i.e. Rec IV – X</i>   | <ul style="list-style-type: none"> <li>- The effects of the failure of the largest participant and the effects of multiple failures should be analyzed in more depth, as should the costs of guaranteeing the settlements or preventing losses from such events, for instance by collateralization of market risks.</li> <li>- Within the framework of ensuring financial stability, an analysis should be undertaken of the effects of spillovers to other systems in case of failure of the largest participant and the losses related to this as well as to outstanding uncollateralized loans in the money market and the tiered structure of VP and the Sumclearing.</li> <li>- The overseers should monitor the effects of concentration risk related to the use of the same primary cash provider and assess this risk and, if deemed necessary, take appropriate action.</li> </ul> |
| <b>Operational risk</b><br><i>i.e. Rec XI</i>      | <ul style="list-style-type: none"> <li>- VP should coordinate and test its contingency plans and emergency procedures (including communication with participants) with the system owners and operators of KRONOS and the Sumclearing.</li> </ul>  |
| <b>Custody risk</b><br><i>i.e. Rec XII-XIII</i>    | None  |
| <b>Other issues</b><br><i>i.e. Rec XIV – XVIII</i> | <ul style="list-style-type: none"> <li>- The overseers should be allowed to oversee activities and systems in case of outsourcing and should have the right to conduct onsite inspection, if deemed necessary.</li> </ul>   |

### **Authorities' response**

Danmarks Nationalbank and the DFSA found that the IMF has made a very thorough and comprehensive assessment of the Danish securities settlement system (VP-afviklingen) and essentially agreed with the IMF's recommendations. Although the need for a pool of collateral and a loss-sharing agreement historically have not been deemed necessary in Denmark, Danmarks Nationalbank will review the benefits and costs in introducing

additional measures to reduce the settlement risks in Danish securities trading. In this context benefits and costs of a central counterparty will also be evaluated. Furthermore, we will address the potential effects of an increase in foreign participation in the system. However, we would like to emphasize that the participants generally have far more eligible collateral than needed for their daily net payments not only in VP settlement, but also in the Sumclearing and CLS.<sup>14</sup>

Supervision of concentration risks that may stem from indirect participation with regard to payments in the VP-system is already part of the supervision of the “indirect participants” and the payment providers by the DFSA. However, based on the recommendations of the IMF, steps will be taken to further formalize supervision in this area.

### **Central bank responsibilities**

The recommendations to further strengthen the oversight of the Danish payment and settlement systems are consistent with the self-assessment done by Danmarks Nationalbank. It should be noted though that important steps towards full observance of the international standards on central bank oversight have already been taken. The legal basis, for instance, has been strengthened by an amendment to the Securities Trading Act, which has become effective from March 1, 2006. Following this amendment, the “Memorandum of Understanding between Danmarks Nationalbank and the Danish Financial Supervisory Authority concerning Payment Systems and Clearing Centres” will be revised with a view to further enhancing the cooperation between the two authorities. In addition, Danmarks Nationalbank will take the necessary steps to broaden the oversight of the retail payment system (Sumclearingen) with a view to cover all major components of the system, including different payment instruments and sub-clearings. High priority will be assigned to formalize the oversight task through written procedures and guidelines. Thus, full observance is expected to be achieved in 2006.

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<sup>14</sup> In a study triggered by this assessment, it was demonstrated that in 2005, all larger banks’ eligible collateral significantly exceeded their total net payment obligations in all systems—even when the participant with the largest net payment obligation was withdrawn from the settlement on every day during 2005 and all the remaining participant's net positions were recalculated. Among the minor banks, however, only a handful of banks had recalculated net positions, which on very few days surpassed the value of their eligible collateral. However, this reflects flaws in the methodology used in the study that tends to exaggerate the effects on small banks and does not include the fact that banks can pledge securities for intraday credit already in the settlement cycle in which the securities are received. The study “Protection of Settlement in Danish Payment Systems” can be found in *Financial Stability 2006* published by Danmarks Nationalbank (Copenhagen). It is available on: <http://www.nationalbanken.dk/>.