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# New Principles for Financial Market Infrastructures

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## INTRODUCTION AND SUMMARY

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Central banks are responsible for oversight of financial infrastructures. The primary purpose is to contribute to a safe and efficient financial infrastructure and hence to financial stability. In Denmark, Danmarks Nationalbank is responsible for oversight of the payment systems Kronos and the Sumclearing and the securities settlement system VP Settlement. These systems are at the core of Denmark's financial infrastructure. Moreover, Danmarks Nationalbank participates in the cooperative oversight of several systems internationally.

The oversight is based on international standards. In April 2012, CPSS-IOSCO<sup>1</sup> published new international standards in the form of principles for financial market infrastructures, i.e. payment systems, securities settlement systems, central securities depositories, central counterparties (CCPs) and trade repositories. In December 2012, the new principles were supplemented by an assessment methodology as guidance to both authorities and financial infrastructures. In addition, a disclosure framework was published, concerning disclosure of information to the general public and to the authorities which are to ensure that the principles are observed. The new principles tighten the requirements regarding *inter alia* governance, integrated risk management and stress testing.

Danmarks Nationalbank is in the process of implementing the new principles into its oversight of the Danish systems. The implementation takes place in dialogue with system owners and system operators who are responsible for the systems' observance of the new principles.

## FINANCIAL MARKET INFRASTRUCTURES

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Financial market infrastructure, FMI, is a broad term denoting a multi-lateral system among participants (financial institutions, etc.) and a sys-

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<sup>1</sup> CPSS, the Committee on Payment and Settlement Systems, is based at the Bank for International Settlements, BIS. IOSCO is the International Organization of Securities Commissions.

KEY SYSTEMS IN THE DANISH PAYMENTS INFRASTRUCTURE	Box 1
<ul style="list-style-type: none"> <li>• <i>Kronos</i> is Denmark's Nationalbank's real-time gross settlement (RTGS) system for primarily large or time-critical payments between banks, etc. Each payment is settled individually in real time.</li> <li>• <i>VP Settlement</i> is VP Securities' multilateral net settlement system for clearing and settlement of securities transactions and periodic payments (interest, repayments and dividend). In a securities transaction, securities are exchanged via custody accounts in VP, while payment is exchanged via the participants' Kronos accounts.</li> <li>• The <i>Sumclearing</i> is the Danish Bankers Association's multilateral net settlement system for settlement of retail payments. Nearly all Danish retail payments are settled via this system, e.g. Dankort transactions, Direct Debit, credit transfers, etc. This system is operated by Nets. Final transfer of money between the Sumclearing participants is effected via Kronos.</li> <li>• <i>TARGET2</i> is the trans-European RTGS system for settlement of large, time-critical payments in euro.</li> <li>• <i>CLS</i> is an international system for settlement primarily of foreign-exchange transactions in 17 currencies, including Danish kroner. CLS is owned by CLS Bank International, which was established in 2002 by some of the world's largest banks. The krone leg in foreign-exchange transactions in Danish kroner is settled via CLS Bank's account at Denmark's Nationalbank.</li> <li>• <i>EMCF</i>, European Multilateral Clearing Facility, is a Dutch CCP undertaking clearing of equity transactions in the Danish C20 index.</li> </ul>	

tem operator. A system consists of a technical infrastructure and a common set of rules and procedures for the participants. The system handles clearing, settlement or registration of payments, securities, derivatives or other financial transactions. The FMI concept thus covers payment and securities settlement systems, central securities depositories, CCPs,<sup>1</sup> and trade repositories. Box 1 describes the systems of the Danish financial infrastructure.

FMIs are designed to reduce the participants' risks associated with settlement of payments and securities transactions. For example, the systems may be designed to prevent credit risk between the participants when executing payments and securities transactions. However, FMIs create interdependencies between systems and participants, so that problems in one financial institution or the FMI itself may spread to other institutions and the financial system in general. Systems that can trigger such domino effects and spread problems to the domestic or international financial system are called systemically important systems. The risk of problems spreading – in the worst case ultimately generating

<sup>1</sup> CCP stands for central counterparty, which acts as an intermediary between the buyer and the seller in a securities transaction. In other words, the CCP acts as buyer for the seller and seller for the buyer, thus guaranteeing the settlement of the transaction for both parties.

a systemic crisis that may threaten financial stability – is called *systemic risk*. The probability of a systemic crisis being triggered in an FMI is very low, but the consequences would be substantial. Hence, it is important to ensure the safe and efficient functioning of FMIs.

Central banks are responsible for overseeing that systemically important financial infrastructures observe international standards and are thus assessed to be safe and efficient. The FMIs themselves continuously seek to reduce and manage risks, and there have only been very few cases in practice where an FMI's difficulties have threatened financial stability.

During the financial crisis, the FMIs contributed to financial stability, since they were generally able to complete settlement, which boosted the participants' confidence in the safety of continuing their mutual transactions via the FMIs. A case in point is the collapse of Lehman Brothers, when foreign-exchange transactions concluded by Lehman Brothers were registered in the CLS system for settlement several days after the collapse. They were duly settled according to CLS's rules.

## THE BACKDROP TO THE NEW PRINCIPLES

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In 1974, the insolvency of Bankhaus Herstatt in Germany triggered a domino effect of financial problems among the bank's counterparties in the foreign-exchange market.<sup>1</sup> This event really brought into focus the need for management and containment of risks in connection with settlement of payments. Since then, BIS has undertaken the international coordination of central banks' work in this area<sup>2</sup>. The development of international standards for payment and settlement systems was initiated in the late 1980s, since the payment and transaction flows through the systems had reached considerable proportions by then, as a result of technological advances. In 1990, the Lamfalussy standards<sup>3</sup> became the first international standards for payment systems. In 1989, the Group of Thirty<sup>4</sup> issued nine recommendations for securities settlement systems. The international standards have since been reviewed regularly as a result of advances in payment and settlement systems, and in 2004 the first standards for central counterparties were introduced.

The most recent international standards from 2012, i.e. the principles for FMIs, have been prepared by CPSS-IOSCO, which is a working group

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<sup>1</sup> The insolvency of Bankhaus Herstatt is described in more detail in Danmarks Nationalbank (2005).

<sup>2</sup> The Bank for International Settlement, BIS, is banker to the central banks.

<sup>3</sup> Named after M. A. Lamfalussy, who was in charge of the standard preparation work, cf. BIS (1990).

<sup>4</sup> Also called the Consultative Group on International Economic and Monetary Affairs, Inc.

## STRENGTHENING OF THE DERIVATIVES MARKETS WITH CLEARING VIA CCPs

Box 2

The collapse of Lehman Brothers and the rescue of the Bear Stearns investment bank and the AIG insurance company called attention to weaknesses in the derivatives markets, especially the market for credit derivatives – credit default swaps, CDSs – a kind of insurance against losses in the event of default. CDSs were typically non-standardised "over-the-counter", OTC, transactions that were not traded and registered on e.g. a stock exchange or trading platform.

In the period up to the financial crisis, AIG and Bear Stearns sold very large volumes of CDSs. The CDS market was booming, and it was possible to sell the same CDS numerous times, resulting in a whole web of counterparties. The subprime crisis in the USA and the collapse of Lehman Brothers in 2008 gave rise to large payments from CDS sellers. It turned out to be difficult to identify the counterparties and who was ultimately exposed, since there was no systematic registration of CDS information. On the other hand, it was clear that if a major CDS market participant became distressed, many counterparties would be affected and thus potentially encounter problems.

In Europe, these challenges are addressed in the EMIR Regulation. This regulation requires central clearing of all standardised OTC derivatives and increases the requirements for risk management of OTC derivatives. Moreover, trade repositories must be in place to eliminate any doubt about e.g. the extent of open derivatives contracts and identification of the counterparties. All OTC derivative transactions must be reported to a trade repository.

A higher degree of CCP clearing of derivatives enhances the systemic importance of CCPs and thus increases the need for oversight. Consequently, the new principles have special focus on limiting CCP risks and also comprise trade repositories. The new principles incorporate CPSS-IOSCO's previous standards for CCPs<sup>1</sup> as well as the 2010 guidelines for CCPs clearing OTC derivatives.<sup>2</sup>

<sup>1</sup> Cf. CPSS-IOSCO (2004).

<sup>2</sup> Cf. CPSS-IOSCO (2010).

under G20<sup>1</sup>. These principles combine and merge three sets of international standards for payment systems, securities settlement systems and CCPs, respectively.<sup>2</sup> The purpose of introducing one set of principles is to ensure more consistent oversight across various types of FMIs. Moreover, the principles reflect the experience from the financial crisis, so the new principles entail stricter requirements for e.g. risk management and governance in FMIs. In addition, the financial crisis revealed a need for clearing and settlement of more financial products, e.g. derivatives, through CCPs. Consequently, the principles attach special importance to risk management in CCPs, see Box 2.

<sup>1</sup> G20 is a group of finance ministers and central bank governors from 20 major countries.

<sup>2</sup> Cf. BIS (2001), CPSS-IOSCO (2001), and CPSS-IOSCO (2004), respectively.

## PRINCIPLES FOR FINANCIAL MARKET INFRASTRUCTURES

There are 24 principles within nine fields. Some principles are only relevant for certain types of FMIs; for example, several are only relevant for CCPs. The new principles attach importance to general, integrated risk management with suitable governance and use of stress tests. All relevant types of risk should be identified and managed, and there is *inter alia* increased focus on risk related to interdependencies, operational risk and business risk, i.e. risks associated with the FMI's business operations. Box 3 describes the potential risks associated with clearing and settlement of financial transactions. In addition, the new principles increase transparency by requiring disclosure of more information than previously. The principles are described below with focus on enhanced requirements compared with the previous international standards.

### RISKS ASSOCIATED WITH CLEARING AND SETTLEMENT OF FINANCIAL TRANSACTIONS

Box 3

- *Legal risk* is the risk of suffering a loss as a result of contracts and agreements that are invalid or unenforceable, e.g. in the event of uncertainty regarding the legal basis or inability to enforce the contract or agreement as expected.
- *Credit risk* is the risk of loss as a consequence of a counterparty's inability to meet its obligations at the time of settlement or later. Special types of credit risk are *principal risk*, where the whole transaction amount is exposed, and *replacement risk*, i.e. the cost of replacing an asset, e.g. if a security is not received as expected.
- *Liquidity risk* is the risk of incurring a loss because a payment is not received at the expected time. The loss can occur if the liquidity has already been deployed and liquidity therefore has to be raised at short notice. To raise new liquidity at short notice is often associated with extraordinary costs, such as higher interest rates.
- *Operational risk* is defined as the risk of losses resulting from system breakdown, human errors, failed observance of internal procedures or external events, e.g. natural disasters, terrorism, etc. Operational risks entail loss of tangible (hardware) and intangible (software) assets, or unexpected credit and liquidity exposures.
- *Business risk* is the risk of losses that may rise in connection with business operations. Examples are unfavourable market conditions, poor implementation of a business strategy, legal or operational risks entailing that costs would exceed revenue and thus reduce the capital. Hence, business risk is not related to the actual clearing and settlement.
- *Custody risk* is the risk of loss of assets held in safe custody at a CSD or a custodian bank. It can be triggered by insufficient registration, poor administration or fraud at the CSD or the custodian bank. Custody risk may also arise if the CSD or particularly the custodian bank fails or is subject to resolution and there is insufficient registration of ownership of the assets, e.g. securities.
- *Investment risk* is the risk of losses on the FMI's investment of own or the participants' assets.

### **General organisation**

Principles 1-3 cover the general organisation of an FMI. According to Principle 1, an FMI should have a well-founded legal basis enforceable in all relevant jurisdictions. Principle 2 states that an FMI should have governance arrangements that are clear and transparent and specify the roles and responsibilities of management at different levels. Moreover, financial stability should be an explicit objective for the FMI. Principle 3 tightens the requirements for a comprehensive framework for management of potential risks to the FMI, including risks which the FMI may pose to other entities. It is emphasised that there should be focus on risks resulting from interdependencies between the FMI and other entities.

### **Credit and liquidity risk management**

Principle 4 on credit risk and Principle 7 on liquidity risk play a key role, as both the FMI itself and its participants may be exposed to credit and liquidity risks. An FMI should thus measure and manage these risks. The new principles tighten the approach to risk management by way of requirements for regular stress testing, *inter alia*. The FMI should have rules for managing any liquidity shortfalls and credit losses if the value of the collateral pledged proves to be insufficient.

Principle 5 on collateral is new and tightens requirements of collateral systems and use of collateral. FMIs using collateral for credit-risk management purposes should only accept collateral with low credit, liquidity and market risks.

Principle 6 describes margin requirements of CCPs, i.e. requirements for the participants to collateralise their positions. This supplements Principle 4 on credit risk specifically as regards CCPs, since they have special credit-related challenges.

### **Settlement finality in central bank money**

Principles 8-10 aim to ensure settlement finality. An FMI should provide clear and certain final settlement, as a minimum by the end of the value date. Where practical and available, money settlement should be in central bank money in order to eliminate credit risk. Risks associated with physical deliveries, e.g. securities, should be monitored and managed.

### **Central securities depositories and settlement systems**

Principles 11-12 relate to central securities depositories and exchange-of-value settlement systems for e.g. exchange of securities and currency transactions. A central securities depository, CSD, should have appropriate rules and procedures to help ensure the integrity of securities issues

and minimise and manage the risks associated with the safekeeping and transfer of securities. CSDs are subject to stricter reconciliation requirements, and Principle 11 recommends daily reconciliation. According to Principle 12, the principal risk should be eliminated by simultaneous exchange of two linked obligations, e.g. by using delivery versus payment, DvP, in the settlement of securities transactions and payment versus payment, PvP, for foreign-exchange transactions.

### **Management of a participant's financial or operational default**

According to Principle 13, an FMI should have effective rules and procedures to manage a participant default. The new aspect is that this also applies to a participant's operational default.

Principle 14 concerns only CCPs. This principle aims to protect indirect participants and customers in the event of default/insolvency of a direct participant. This is ensured through requirements for segregation of customers' and indirect participants' positions and collateral from those of the direct participant.

### **General business and operational risk management**

As a new feature, Principle 15 introduces requirements for management of business risk. An FMI should identify scenarios, e.g. falling turnover or loss of customers, which may potentially prevent the FMI from continuing as a going concern. The FMI should hold sufficient liquidity to cover operational expenses for at least six months and sufficient capital to continue as a going concern if it incurs business losses. Moreover, an FMI should maintain a recovery or orderly wind-down plan. The rationale behind the new requirements is that FMIs often have monopoly-like status, so they are not quickly replaceable.

Principle 16 concerns custody and investment risks. As previously, safe custody of and prompt access to assets should be ensured, and an FMI's investments should be in instruments with minimal risks.

Principle 17 enhances the requirements of operational risk management through, *inter alia*, anchoring risk management with the board of directors. It should be ensured that critical IT systems can resume operations within two hours – previously four – following a disruptive event. There is increased focus on external risks posed by e.g. service providers and outsourcing. An FMI may impose operational requirements on critical participants, and authorities may impose requirements concerning the FMI's agreements with critical service providers<sup>1</sup>. An FMI which has

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<sup>1</sup> This is discussed in more detail in CPSS-IOSCO (2012a), Annex F. The requirements are consistent with the Danish Executive Order on Outsourcing.

outsourced parts of its operations to a service provider should ensure that the operations meet the same requirements as they would need to meet if they were provided internally. This means that the new principles may also be relevant for service providers.

### **Access for a wide range of participants**

Principles 18-20 relate to general access to FMIs. According to Principle 18, MFIs should provide fair and open access for a wide range of participants.

Principle 19, which is new, concerns risks arising from tiered participation in the systems. Consequently, FMIs should as a minimum gather information about indirect participants. Principle 20 concerns links between CSDs and management of associated risks.

### **Efficiency and effectiveness**

Principles 21 and 22 cover efficiency and effectiveness in business operations. In Principle 21, there is increased focus on an FMI's efficiency and effectiveness in meeting the requirements of its participants and the markets it serves. The FMI should also consider the practicalities and costs not only for the system participants, but also for the participants' customers and other relevant parties. Authorities are now explicitly responsible for assessing the costs of FMIs with market dominance. According to Principle 22, an FMI should use, or as a minimum accommodate, internationally accepted communication procedures and standards.

### **Transparency by enhanced disclosure**

The purpose of Principle 23 is to enhance transparency e.g. through requirements that an FMI should publicly disclose rules and procedures as well as quantitative data on the full range of activities and operation. A new requirement is that the FMI should perform and publicly disclose its own assessment of observance of the new principles. In addition to the principles, CPSS-IOSCO has prepared a disclosure framework for FMIs<sup>1</sup> and is currently preparing a report on regular disclosure of quantitative data. Principle 24 is new and covers trade repositories, TRs, for OTC derivatives. The TRs should collect market data for authorities and the public, among others.

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<sup>1</sup> Cf. BIS (2012b).



## RESPONSIBILITIES OF AUTHORITIES

In addition to the 24 principles for FMI, CPSS-IOSCO has also prepared five responsibilities of authorities regarding regulation, supervision and oversight of FMI and implementation of the principles. While the principles are targeted at FMI, the five responsibilities are targeted at the relevant authorities, including central banks and supervisory authorities. The five responsibilities are described in Box 4.

Central banks' oversight responsibilities have not been changed materially<sup>1</sup>. However, a new requirement is that an overseer, cf. Responsibility A, should publicly disclose criteria identifying the FMI subject to oversight. Moreover, responsibility D specifies that the authorities should, as a *minimum*, ensure that the new principles are applied to all systemically important FMI. This allows for oversight of other infrastructures as well, as appropriate, according to the new principles. Responsibility E provides for cooperation between authorities to a higher degree than previously. It is specified that at least one authority should accept responsibility for establishing efficient cooperation and exchange of information so as to avoid duplication of tasks in the authorities' oversight of all relevant areas.

### Assessment methodology

The oversight should include regular assessment of the relevant FMI's observance of the principles. As a supplement to the principles, CPSS-IOSCO has prepared an assessment methodology<sup>2</sup> for the authorities

FIVE RESPONSIBILITIES OF AUTHORITIES	Box 4
<p>A. <i>Regulation, supervision and oversight</i>: FMI should be subject to appropriate and effective regulation, supervision, and oversight by a central bank, market regulator, or other relevant authority.</p> <p>B. <i>Powers and resources</i>: Central banks, market regulators, and other relevant authorities should have the powers and resources to carry out effectively their responsibilities in regulating, supervising, and overseeing FMI.</p> <p>C. <i>Disclosure of policies</i>: Central banks, market regulators, and other relevant authorities should clearly define and disclose their regulatory, supervisory, and oversight policies with respect to FMI.</p> <p>D. <i>Application of the principles</i>: Central banks, market regulators, and other relevant authorities should adopt the CPSS-IOSCO Principles for financial market infrastructures and apply them consistently.</p> <p>E. <i>Cooperation with other authorities</i>: Central banks, market regulators, and other relevant authorities should cooperate with each other, both domestically and internationally, as appropriate, in promoting the safety and efficiency of FMI.</p>	

that are to perform the assessment. Moreover, the methodology provides guidance for assessment of an authority's observance of the five responsibilities. The assessment methodology should contribute to consistent implementation and application of the principles, while promoting objectivity and comparability in assessments of different FMIs.

## **IMPLEMENTATION INTO DANMARKS NATIONALBANK'S OVERSIGHT**

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Danmarks Nationalbank is the primary authority responsible for oversight of FMIs in Denmark. Danmarks Nationalbank's role in relation to oversight of financial infrastructures is defined in section 1 of the Danmarks Nationalbank Act, which states that the objective of Danmarks Nationalbank is to "maintain a safe and secure currency system in Denmark, and to facilitate and regulate the traffic in money and the extension of credit". In addition, Danmarks Nationalbank's powers in relation to systemically important payment systems are defined in the Danish Securities Trading Act. As mentioned previously, Danmarks Nationalbank is responsible for oversight of Kronos, VP Settlement and the Sumclearing. Danmarks Nationalbank also participates in the cooperative oversight of the international systems TARGET2, CLS and EMCF, cf. Box 1.

Danmarks Nationalbank's oversight is planned according to international principles for the responsibilities of oversight authorities, cf. above, and assessments of the systems subject to oversight are performed according to the international principles. In dialogue with the system owners and operators, Danmarks Nationalbank is thus in the process of implementing the new principles and responsibilities for authorities into its oversight of the Danish systems. As required under responsibility C, Danmarks Nationalbank has disclosed its oversight policy "Danmarks Nationalbank's Policy for Oversight of the Financial Infrastructure in Denmark"<sup>1</sup>, describing the oversight framework and methodology. The oversight policy will be updated, taking into account the new principles and responsibilities.

The Danish Financial Supervisory Authority also has powers as regards FMIs. The Danish Financial Supervisory Authority is responsible for supervision of VP Securities and the jointly owned data centres, including Nets, which is the operator of the Sumclearing system, and BEC, which is IT service provider to Danmarks Nationalbank. Consequently, Danmarks Nationalbank and the Danish Financial Supervisory Authority cooperate on overseeing operational risk in systemically important financial infra-

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<sup>1</sup> Danmarks Nationalbank (2007).

structures in Denmark. As recommended in responsibility E, this cooperation is regulated by a memorandum of understanding from 2001, which will be reviewed to reflect that the new principles will, in future, be applied to the oversight of FMIs.

### **The Danish systems' observance of the new principles**

Danmarks Nationalbank is currently discussing the contents of the principles with the Danish system owners. The objective is to obtain a common understanding of the contents of the principles and the new requirements that will apply to the Danish infrastructure. In some areas, the principles are formulated in such general terms that they are not immediately applicable to the Danish systems. In other areas, the principles are worded primarily for FMIs organised as private firms. It is up to the relevant authority to interpret and translate the principles into specific requirements for the system in question. The implementation of the new principles in Denmark will take into account the special features of the Danish infrastructure, including the organisation of the Danish FMIs.

In 2011-12, Danmarks Nationalbank assessed Kronos, the Sumclearing and VP Settlement against the previous standards for payment and securities settlement systems, respectively. The assessments showed that in the majority of the areas the systems observed the international standards in force at the time. Minor issues were identified in a few areas only. Consequently, no new complete assessments of the systems against the new principles will be performed in the first instance. Instead, oversight will focus on the areas in which the new principles differ markedly from the standards applying to the most recent assessment.

Under Principle 23, system owners are expected to prepare and disclose a detailed description of the system's observance of the principles. The description should be reviewed at least every two years and after important system changes or other material changes. Danmarks Nationalbank will determine the conditions for such publications in dialogue with the Danish system owners. Moreover, Danmarks Nationalbank will discuss the exchange of information for oversight purposes with the system owners, including publication of quantitative data, when the CPSS-IOSCO report on this subject is available, cf. above.

The implementation of the new CPSS-IOSCO principles will entail new system requirements, which the systems do not necessarily observe yet. It is important to point out that the system itself is ultimately responsible for ensuring the safety and efficiency of an FMI and ensuring that the FMI observes the principles.

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