

# DANMARKS NATIONALBANK

## Assessment of the Danish retail payment systems

- Retail payments in Denmark are effected via the retail payment systems, which are the Danish systems for clearing and settlement of retail payments. The retail payment systems are an important part of Denmark's payments infrastructure.
- Danmarks Nationalbank has assessed the retail payment systems against international standards for payment systems. The retail payment systems extensively observe the security and efficiency requirements. There is room for improvement in some areas.
- Danmarks Nationalbank recommends, inter alia, further strengthening of governance and risk management and intensification of the cyber security effort. Furthermore, it is recommended that in some areas additional tests are carried out.

### Important infrastructure

**Kr. 38.4 billion**

is the total value of retail payments effected on an average banking day.

[Read more](#)

### Safe and efficient

**The retail  
payment systems**

extensively comply with international standards for safe and efficient payment systems

[Read more](#)

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The Sumclearing, Intradagclearing and Straksclearing, also known as the retail payment systems, are the financial sector’s systems for clearing and settlement of retail payments in Danish kroner. The systems are owned by Finance Denmark, managed by e-nettet, which is the financial sector’s project and management company, and provided by Nets. The retail payment systems are the only systems for clearing and settlement of retail payments in Denmark. They play a systemically important role in the Danish financial infrastructure. Danmarks Nationalbank oversees the retail payment systems, cf. Box 1, and has performed an assessment of whether they observe the applicable international standards for safe and efficient financial market infrastructures, FMIs. This report presents the results of the assessment.

**Danmarks Nationalbank’s oversight of systemically important payment systems**

Box 1

Danmarks Nationalbank’s obligation to oversee the retail payment systems as a payment system is stated in section 212(3) of the Danish Capital Markets Act, stipulating that Danmarks Nationalbank shall oversee systemically important payment systems. Danmarks Nationalbank’s role in relation to payment and settlement systems, including oversight, is also 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 this country, and to facilitate and regulate the traffic in money and the extension of credit”. Danmarks Nationalbank’s oversight framework is described in detail in Danmarks Nationalbank’s oversight policy ([link](#)).

**Clearing and settlement of retail payments**

In Denmark, retail payments averaging kr. 38.4 billion are effected per banking day, cf. Table 1. They comprise e.g. payment of salaries and pensions, transfers between private individuals, payment of bills and shopping in physical stores or online. Retail payments are cleared and settled through the Sumclearing, Intradagclearing or Straksclearing. These three systems handle different types of payments with different settlement times. The settlement time is the time it takes to transfer money from the payer’s to the payee’s account.

The Sumclearing settles all card payments once a day on banking days. The Sumclearing is also used for settlement of direct debit in Betalingsservice as well as Nets’ other payment products. Settlement takes place at night. This means that a payment via the Sumclearing reaches the payee’s account on the following banking day.

The Intradagclearing is used for settlement of credit transfers such as online bank transfers, payroll transactions and public sector payments. Settlement takes place at five fixed times every day on banking days. This means that e.g. an online bank transfer can reach the payee on the same day.

In the Straksclearing, credit transfers of up to kr. 500,000 are made within seconds on a 24/7 basis. The Straksclearing is used primarily for online bank transfers and payments via MobilePay.

**Payments in the Sumclearing, Intradagclearing and Straksclearing**

Table 1

| Kr. billion, averages per banking day | 2014 | 2015 | 2016 | 2017 |
|---------------------------------------|------|------|------|------|
| Sumclearing                           | 17.9 | 16.7 | 17.2 | 17.8 |
| Intradagclearing                      | 17.0 | 17.8 | 18.4 | 19.7 |
| Straksclearing                        | 0.5  | 0.6  | 0.8  | 0.9  |
| Total                                 | 35.4 | 35.0 | 36.4 | 38.4 |

Source: Nets.

The Sumclearing and Intradagclearing are multi-lateral net settlement systems. This means that net amounts corresponding to the sum of payments to and from the banks’ customers are exchanged between banks at fixed times during the day/night. The payments are not entered to the customers’ accounts until this exchange between banks has taken place.

The Straksclearing is a real-time settlement system in which the banks reserve liquidity in advance for their customers’ instant payments, which are settled via the customers’ accounts as they are made. Liquidity is exchanged between the banks six times a day on banking days.

All banks in Denmark are connected to these three systems, and hence retail payments can be exchanged between all bank accounts.

There are no possibilities of substitution of the retail payment systems, which are the only systems for clearing and settlement of Danish retail payments. This gives the retail payment systems a systemically important role in Denmark's financial infrastructure. In the worst case, major errors and operational failure could jeopardise financial stability or weaken confidence in the financial system. Consequently, it is important for the retail payment systems to observe international security and efficiency standards.

## Background and method for the assessment

Danmarks Nationalbank's assessment of the retail payment systems has been based on the CPMI-IOSCO "Principles for financial market infrastructures" from April 2012 ([link](#)). The 24 principles are called the CPMI-IOSCO principles<sup>1</sup>.

The CPMI-IOSCO principles lay down requirements for the general organisation of FMIs, including a well-founded legal basis, a clear and transparent organisational and governance structure and a sound risk management framework. Furthermore, the principles stipulate requirements for the management of all potential risks associated with clearing and settlement of financial transactions. In addition, a number of requirements are aimed at addressing efficiency aspects, including fair and open access, practicality and cost efficiency for all relevant parties. Finally, the principles include transparency requirements. Box 2 presents an overview of the 24 principles.

### The CPMI-IOSCO principles

Box 2

#### Organisation

- Principle 1* – Legal basis
- Principle 2* – Governance
- Principle 3* – Framework for the comprehensive management of risks

#### Credit and liquidity risk management

- Principle 4* – Credit risk
- Principle 5* – Collateral
- Principle 6* – Margin
- Principle 7* – Liquidity risk

#### Settlement

- Principle 8* – Settlement finality
- Principle 9* – Money settlements
- Principle 10* – Physical deliveries

#### Central securities depositories and exchange-of-value settlement systems

- Principle 11* – Central securities depositories
- Principle 12* – Exchange-of-value settlement systems

#### Default management

- Principle 13* – Participant-default rules and procedures
- Principle 14* – Segregation and portability

#### General business risk management

- Principle 15* – General business risk
- Principle 16* – Custody and investment risks

#### Operational risk

- Principle 17* – Operational risk

#### Access

- Principle 18* – Access and participation requirements
- Principle 19* – Tiered participation arrangements
- Principle 20* – FMI links

#### Efficiency

- Principle 21* – Efficiency and effectiveness
- Principle 22* – Communication procedures and standards

#### Transparency

- Principle 23* – Disclosure of rules, key procedures, and market data
- Principle 24* – Disclosure of market data by trade repositories

<sup>1</sup> The CPMI-IOSCO principles have been published by the Bank for International Settlements, BIS, and the International Organization of Securities Commissions, IOSCO. The Committee on Payment and Market Infrastructures, CPMI, is the BIS committee that contributed to formulating the principles. Members of the CPMI include representatives of a large number of central banks such as the ECB, the Federal Reserve and the Bank of England.

In June 2016, CPMI-IOSCO published “Guidance on cyber resilience for financial market infrastructures” ([link](#)) with in-depth guidance to strengthening FMI resilience against cyber risks. New guidelines are regularly incorporated into the methods for assessment of FMIs.

Danmarks Nationalbank’s assessment of the retail payment systems takes into account that special Danish circumstances and system-specific conditions may apply. This practice is in accordance with the CPMI-IOSCO guidance on the principles, which states that authorities’ application of the principles may vary depending on the country and the system.<sup>2</sup> For example, a principle may have been addressed in another satisfactory manner than that envisaged in the principles.

The assessment of the retail payment systems is based on Finance Denmark’s responses to a number of questions related to the CPMI-IOSCO principles. In this connection, Finance Denmark has provided rules and regulations, policies, procedures, risk assessments, etc. as documentation for observance of the principles. Finally, Finance Denmark and Danmarks Nationalbank have discussed Finance Denmark’s observance of the individual principles on an ongoing basis.

The observance of each principle has been assessed on the basis of CPMI-IOSCO criteria, cf. Box 3.

## Overall assessment

Danmarks Nationalbank has assessed the Danish retail payment systems to be safe and efficient. All the same, there is room for improvement in some areas. Table 2 shows the assessment of observance of the individual principles.

The retail payment systems observe eight of the principles, while seven principles are “broadly observed” in the assessment of Danmarks Nationalbank. This means that one or more deficiencies have been identified which should be addressed within a given deadline. For each of these principles, specific recommendations have been made regarding the measures to be taken to address the deficiencies.

### Categories of FMIs’ observance of the CPMI-IOSCO principles

Box 3

The CPMI-IOSCO principles set out five categories for FMIs’ observance of a principle. Observance is assessed according to the number of deficiencies identified, how serious they are and how quickly they must be addressed.

- *Observed* is used when any identified gaps and shortcomings are not issues of concern and are minor, manageable and of a nature that the FMI could consider taking them up in the normal course of its business.
- *Broadly observed* is used when one or more issues of concern have been identified which should be addressed within a given deadline.
- *Partly observed* is used when one or more issues of concern has been identified that could become serious if not addressed promptly.
- *Not observed* is used when one or more serious deficiencies has been identified which require immediate action.
- *Not applicable* is used when the principle does not apply due to structural, legal or institutional circumstances.

### The retail payment systems’ observance of the CPMI-IOSCO principles

Table 2

| Category         | Principles                       |
|------------------|----------------------------------|
| Observed         | 1, 4, 8, 9, 15, 18, 21, 22       |
| Broadly observed | 2, 3, 7, 13, 17, 19, 23          |
| Partly observed  | -                                |
| Not observed     | -                                |
| Not applicable   | 5, 6, 10, 11, 12, 14, 16, 20, 24 |

Note: Principles 5 and 16 are not relevant to the Danish retail payment systems as they do not provide collateral or invest in assets and hold assets in custody. Principles 6, 10, 11, 12, 14, 20 and 24 are not relevant to payment systems in general.

<sup>2</sup> Cf. Responsibility D in Principles for Market Infrastructures, CPMI-IOSCO, April 2012 ([link](#)).

No deficiencies have been identified which could be serious if not immediately addressed. Consequently, in Danmarks Nationalbank's assessment, no principles are "partly observed" or "not observed".

Some of the CPMI-IOSCO principles are not applicable to the Danish retail payment systems, while others are not applicable to payment systems in general. The principles that are not applicable are stated at the bottom of Table 2.

Danmarks Nationalbank's assessment and recommendations are described in the following sections. The descriptions are grouped according to categories so that e.g. principles 1-3, which relate to FMI's legal basis, governance structure and risk management framework, are grouped under the heading of "organisation". The categories are also listed in Box 2.

An overview of the recommendations can be found at the end of the report, including a schedule for when Finance Denmark should ensure compliance with them.

## Organisation

Principles 1-3 concern the organisation of the retail payment systems. The retail payment systems observe principle 1, while recommendations have been made regarding principles 2 and 3.

|   |
|---|
| Principle 1 – Legal basis; observed   |
| Principle 2 – Governance; broadly observed  |
| Principle 3 – Framework for the comprehensive management of risks; broadly observed |

The retail payment systems have a clear legal basis which is enforceable in relevant jurisdictions, and all activities are subject to Danish law. The basis of agreement consists of agreements between Finance Denmark and the participants, Danmarks Nationalbank as the settlement bank, Nets as the provider and e-nettet as the management company, respectively. The agreements are available on Finance Denmark's website for members.

The retail payment systems are owned by Finance Denmark, which is a business association for the financial

sector. The distribution of roles and responsibilities between the board of directors, the executive board and the various committees and working groups is specified in internal guidelines. The participants are represented in the governance structure via the board of directors and the various committees and working groups in Finance Denmark and e-nettet. As the advisory and appointing committee for the board of directors, the Digitisation and Infrastructure Committee has the overall responsibility for acting in the sector's interests in relation to the retail payment systems.

Finance Denmark has established risk management policies and procedures. The responsibility rests with Finance Denmark and e-nettet, respectively. Risks are continually identified, and semi-annual workshops are held with the sector and Nets to identify and discuss risks. Finance Denmark and e-nettet prepare quarterly risk reports for the Digitisation and Infrastructure Committee in Finance Denmark. Such reports provide an overview of the general risk outlook, describing the risk level, actions to address it and opinions on remaining risks. The risk policy itself is approved by Finance Denmark's board of directors and subject to annual review.

Responsibility for managing risk in Finance Denmark is not based on three lines of defence – 1st, 2nd and 3rd, i.e. operative units, compliance functions and system audit, like it is in Nets. Accordingly, there are no internal or external controls and audit in place regarding Finance Denmark's tasks related to the retail payment systems, including risk management.

### Recommendations

#### *Roles and responsibilities*

The overview of roles and responsibilities in Finance Denmark and e-nettet should be strengthened to clarify the distribution of roles and responsibilities between the board of directors, the executive board and committees and working groups.

#### *Risk management overview*

Finance Denmark should perform a comprehensive review of risk management rules and procedures to ensure that they are up-to-date and consistent across documents with a view to avoiding doubts about the distribution of responsibilities for reporting and addressing risks.

#### *Further reporting by Nets*

More systematic reporting from Nets to Finance Denmark about risks related to the retail payment systems should be established.

#### *Control and audit*

Finance Denmark should ensure that the absence of internal or external controls and audit is compensated for, which would enable the management to assess whether Finance Denmark performs its tasks related to the retail payment systems, including risk management, in an efficient manner and in accordance with applicable policies and procedures.

#### **Comment**

##### *Independent assessments*

A requirement under the CPMI-IOSCO principles is that an FMI's board of directors must include members who can perform objective and independent assessments. In accordance with its charter, Finance Denmark's board of directors consists of representatives of the financial sector, so other ways to accommodate objective and independent views should be considered.

## Credit and liquidity risk management

Principles 4 and 7 concern credit and liquidity risk, respectively, including the risks that may arise among the participants. The retail payment systems observe principle 4, while a recommendation has been made regarding principle 7.

Principle 4 – Credit risk; observed  
Principle 7 – Liquidity risk; broadly observed

Since the retail payment systems do not grant credit to the participants, they have no credit exposure to the participants. Credit risks do not occur among the participants either. The reason is that the settlement is executed only if all participants have reserved sufficient liquidity for it, and that payments are not entered to the customers' ac-

counts until completion of the settlement between the banks.

The use of multilateral netting<sup>3</sup> means that liquidity risk among participants could arise. If a participant does not reserve sufficient liquidity, its settlement is postponed, and new net positions are calculated for the other participants, who risk not receiving the expected liquidity for the settlement. The risk of postponement therefore involves a liquidity risk for the participants.

The participants' liquidity is distributed efficiently via the Nets Liquidity Module. The module supports a reduction of the participants' liquidity requirement by applying e.g. total netting, i.e. comparing the net positions for the Sumclearing and Intradagclearing when calculating the liquidity requirement before a settlement.

The Liquidity Module sends forecasts before each settlement, enabling the participants to reserve the liquidity required for the settlement. In addition, participants have free access, via Kronos, to collateralised intraday credit. In general, the participants reserve ample liquidity, thereby reducing the liquidity risk among the participants and ensuring that payments are rarely delayed.

The Straksclearing does not entail liquidity risks among the participants. This is because the Straksclearing is a real-time settlement system in which the participants reserve liquidity in advance for payments that are settled on the customers' accounts as they are made.

#### **Recommendation**

##### *Performance of stress tests*

Finance Denmark should regularly perform stress tests to assess the liquidity risks that may arise among the participants. Among other factors, the possible consequences of postponement of one or more critical participants in the settlement should be considered.

<sup>3</sup> In connection with multilateral netting, one overall net position for each participant in relation to the other system participants is calculated on the basis of all transactions in a settlement cycle. In the retail payment systems, this takes place at various times during the day or night.

## Settlement

Principles 8 and 9 concern settlement finality and money settlements, respectively. The retail payment systems observe both principles.

Principle 8 – Settlement finality; observed  
Principle 9 – Money settlements; observed

The timing of settlement finality and irrevocability is defined in the basis of agreement for the retail payment systems, and finality is acknowledged in Danish law.

In the Sumclearing and Intradagclearing, a payment is irrevocable when it has been registered in the systems and the cut-off time for submission of transactions – i.e. 35 minutes before the settlement – has passed. A settlement is final when Danmarks Nationalbank has entered the net positions to the participants' settlement accounts. In the Straksclearing, settlement irrevocability and finality exist as soon as the payment has been made, since payments are prefunded and take place in real time.

Payments are settled via the participants' accounts at Danmarks Nationalbank. The deposits in the accounts are claims on Danmarks Nationalbank, and consequently settlement takes place in central bank money.

## Default management

Principle 13 concerns management of a participant's default, resolution or operational failure. Two recommendations have been made regarding the retail payment systems' observance of principle 13.

Principle 13 – Participant-default rules and procedures; broadly observed

The retail payment systems have clear rules, formalised in procedures, for handling a participant's default. Objective criteria are in place for when to remove a defaulting participant from the settlement.

A participant concluding an agreement on a resolution mechanism with Finansielt Stabilitet A/S will continue in the retail payment systems without changes.

Procedures are in place for managing operational failures of participants to ensure that payments can be completed via alternative communication channels between the data centres and Nets. Emergency procedures for payment execution are tested at least once a year.

The emergency procedures for the retail payment systems are activated if broad coordination is needed in the event of a participant's default, resolution or operational failure.

Rules on default and procedures for management of failing participants are available to relevant stakeholders at Finance Denmark's website for members.

### Recommendation

*Test of management of participant default/resolution*  
The procedures for management of participant default and resolution should be tested regularly. Tests ensure awareness of procedures and identification of errors and deficiencies.

## General business risk management

Principle 15 relates to general business risk, i.e. risk that may jeopardise the retail payment systems' ability to continue their core tasks. The retail payment systems observe principle 15.

Principle 15 – General business risk; observed

Business risks are identified and monitored on an ongoing basis within the framework of the risk management concept implemented for the retail payment systems.

The development and operation of the retail payment systems are financed by the participants, who are also liable for any business losses. Consequently,



there is no need to reserve liquidity specifically to cover business risks and support recovery and resolution plans.

## Operational risk

Principle 17 concerns the retail payment systems' operational risk management, including risks related to the use of external service providers. Recommendations have been made as regards principle 17.

Principle 17 – Operational risk; broadly observed

Finance Denmark manages operational risk within the framework of the risk management concept implemented for the retail payment systems. The operational management is undertaken by Nets, which continually prepares risk assessments of IT systems and the operation of critical systems.

Formalised supplier management is in place for Nets, containing, inter alia, annual reviews of services and contracts as well as operational meetings where incidents, service targets, etc. are discussed. Finance Denmark must approve Nets' use of suppliers, and Nets must ensure that the suppliers meet statutory requirements as well as requirements pertaining to the operational agreement between Finance Denmark and Nets.

Measurable service targets for operations have been agreed for Nets' services. Nets monitors compliance with the targets and sends quarterly SLA reports to Finance Denmark. With a view to compliance with the service targets, Nets reserves extra capacity in its systems to provide for periods of extraordinarily high volumes.

Formalised procedures for incident and change management have been established. Change management is undertaken by e-nettet, which is responsible for coordinating and prioritising requests for change in close collaboration with Nets. Incident management procedures are described in the manuals of the retail payment systems, including procedures for registration, reporting, root cause analysis and error correction, if necessary.

The retail payment systems have a business continuation plan aimed at timely restoration of the systems in the event of extensive operational failure. The retail payment systems are duplicated at two different sites. The agreed restoration time is four hours, but in practice it is possible to restore operation at the second site within two hours. This has been demonstrated in the emergency tests performed by Nets on an ongoing basis.

A risk assessment of interdependencies between the retail payment systems, VP settlement and Kronos has been initiated. Finance Denmark and e-nettet collaborate on this with Danmarks Nationalbank and VP Securities A/S in order to identify and manage risks arising from interdependencies across systems.

### Recommendations

#### *Specific supplier requirements*

Finance Denmark should supplement the existing requirements for Nets' operational management with additional specific and measurable requirements for IT and cyber security. Moreover, it should be ensured that Nets reports on compliance with the requirements and that Finance Denmark and e-nettet have the necessary resources to follow up.

Finance Denmark should formally require that the operations of the retail payment systems can be restored within two hours.

#### *Testing of emergency plans*

The emergency plans for the retail payment systems should be tested, including testing of consistency between the emergency plans of Finance Denmark, e-nettet and Nets, respectively. Tests ensure that the parties are aware of the procedures and that the need for e.g. discretionary decisions is clarified.

#### *Cyber strategy for the retail payment systems*

Finance Denmark should prepare a strategy for cyber security in the retail payment systems, approved at top management level. In this connection, the key elements of the CPMI-IOSCO Guidance on cyber resilience should be implemented to ensure a robust cyber security framework.



## Access

Principles 18 and 19 relate to access to the retail payment systems. The retail payment systems observe principle 18, while a recommendation has been made regarding principle 19.

Principle 18 – Access and participation requirements; observed  
Principle 19 – Tiered participation arrangements; broadly observed

There is fair and open access to the retail payment systems for banks subject to supervision and foreign banks subject to supervision in another EU member state or in a country with which the EU has concluded a cooperation agreement on home country supervision. Direct participation in the retail payment systems is also conditional on the participant meeting Danmarks Nationalbank's conditions for Kronos participation.

Finance Denmark has set access criteria that support the requirement for stability and security. For example, it is a requirement that the banks participate via a data centre, which undertakes entry of payment transactions to customer accounts and exchange of information about customer payments. Data centres must also fulfil the technical conditions applicable to the retail payment systems.

Indirect participation in the retail payment systems is possible via agreements concluded with a direct participant. This helps to ensure that smaller banks can participate in the retail payment systems without any major costs.

Participants' compliance with the access requirements is continually followed up, and Finance Denmark may exclude a participant without prior notice if it defaults on its obligations.

The access rules are publicly accessible at Finance Denmark's website.

Finance Denmark receives data from Nets on an ongoing basis, including data about indirect participants' use of the retail payment systems. In 2015, Finance Denmark conducted a survey which showed that indirect participants accounted for a limited share of the transaction volume of direct participants.

### Recommendation

*Assess the risks of indirect participation*

Finance Denmark should regularly process information about indirect participants' use of the retail payment systems in order to identify and assess any risks associated with indirect participation.

## Efficiency

Principle 21 concerns the efficiency and effectiveness<sup>4</sup> of the retail payment systems, while principle 22 is about data communication standards. The retail payment systems observe principles 21 and 22.

Principle 21 – Efficiency and effectiveness; observed  
Principle 22 – Communication procedures and standards; observed

The retail payment systems have been developed by the financial sector, and hence accommodate the participants' requirements. Other relevant stakeholders, including business and consumer organisations, were involved in the modernisation of the payments infrastructure which reduced settlement times.

The retail payment systems are the financial sector's common systems for clearing and settlement of retail payments. An advantage of having a common payments infrastructure is that fixed operating costs can be distributed on all participants. This also provides for uniform processing of retail payments,

<sup>4</sup> *Effectiveness* means the resources that the FMI needs to provide its services, while *efficiency* means the FMI's ability to meet specified targets.

irrespective of the sender's and recipient's choice of bank.

In 2017, the management of the retail payment systems was transferred to e-nettet, which undertakes supplier management, operational problem management, etc. The transfer reflects the wish for a professional and structured approach to securing a well-functioning infrastructure.

The retail payment systems observe internationally accepted communication procedures and standards. Data is exchanged between the banks' data centres and Nets in the ISO 20022 format, which is also the format used internationally for exchange of SEPA transactions. The Sumclearing is not based on ISO 20022, as it is an older system.

## Transparency

Principle 23 relates to disclosure of information. One recommendation has been made regarding this principle.

Principle 23 – Disclosure of rules, key procedures, and market data; broadly observed

Participants in the retail payment systems have access to clear and adequate descriptions of rules and procedures. The rules are specified in the participants' participation agreements laying down the terms for participation in the retail payment systems, including rules on netting, resolution and default.

Moreover, the participants have access to manuals describing the structure and functionality of the retail payment systems, and to operational agreements describing the settlement procedures between Nets and Kronos.

The agreements are easily accessible to the participants and may be requested by banks wishing to participate in the retail payment systems. A general introduction to the retail payment systems is publicly available on Finance Denmark's website.

The costs of participation in the retail payment systems can be found in the publicly available part

of Finance Denmark's network for members. Fees for the various services are not publicly available, but can be obtained by contacting Finance Denmark.

Finance Denmark informs the participants and stakeholders about changes and also provides other information via its website for members and via the committees and working groups structure.

### Recommendation

#### *Description of the retail payment systems*

Finance Denmark should publish a description of the retail payment systems' observance of the principles, cf. the requirements set out in the CPMI-IOSCO disclosure framework.

Finance Denmark is currently preparing this description.

## Recommendations and follow-up plan

Table 3 contains a list of Danmarks Nationalbank's recommendations. The table also includes a schedule for when Finance Denmark should observe the recommendations. The recommendations will be followed up at regular meetings between Finance Denmark and Danmarks Nationalbank.

**Recommendations made by Danmarks Nationalbank to Finance Denmark**

Table 3

| Principle | Recommendation   | Time frame          |
|-----------|--|---------------------|
| 2         | The overview of roles and responsibilities in Finance Denmark and e-nettet should be strengthened to clarify the distribution of roles and responsibilities between the board of directors, the executive board and committees and working groups.   | 4th quarter of 2018 |
| 2         | Finance Denmark should ensure that the absence of internal or external controls and audit is compensated for, which would enable the management to assess whether Finance Denmark performs its tasks related to the retail payment systems, including risk management, in an efficient manner and in accordance with applicable policies and procedures. | 4th quarter of 2018 |
| 3         | Finance Denmark should perform a comprehensive review of risk management rules and procedures to ensure that they are up-to-date and consistent across documents with a view to avoiding doubts about the distribution of responsibilities for reporting and addressing risks.   | 4th quarter of 2018 |
| 3         | More systematic reporting from Nets to Finance Denmark about risks related to the retail payment systems should be established.  | 4th quarter of 2018 |
| 7         | Finance Denmark should regularly perform stress tests to assess the liquidity risks that may arise among the participants. Among other factors, the possible consequences of postponement of one or more critical participants in the settlement should be considered.   | 4th quarter of 2018 |
| 13        | The procedures for management of participant default and resolution should be tested regularly. Tests ensure awareness of procedures and identification of errors and deficiencies.  | 3rd quarter of 2018 |
| 17        | Finance Denmark should supplement the existing requirements for Nets' operational management with additional specific and measurable requirements for IT and cyber security. Moreover, it should be ensured that Nets reports on compliance with the requirements and that Finance Denmark and e-nettet have the necessary resources to follow up.       | 1st quarter of 2019 |
| 17        | The emergency plans for the retail payment systems should be tested, including testing of consistency between the emergency plans of Finance Denmark, e-nettet and Nets, respectively. Tests ensure that the parties are aware of the procedures and that the need for e.g. discretionary decisions is clarified.  | 3rd quarter of 2018 |
| 17        | Finance Denmark should prepare a strategy for cyber security in the retail payment systems, approved at top management level. In this connection, the key elements of the CPMI-IOSCO Guidance on cyber resilience should be implemented to ensure a robust cyber security framework.   | 1th quarter of 2019 |
| 19        | Finance Denmark should regularly process information about indirect participants' use of the retail payment systems in order to identify and assess any risks associated with indirect participation.  | 4st quarter of 2018 |
| 23        | Finance Denmark should publish a description of the retail payment systems' observance of the principles, cf. the requirements set out in the CPMI-IOSCO disclosure framework.   | 3rd quarter of 2018 |

## ABOUT REPORT



Reports are periodical reports and accounts describing the activities and tasks of Danmarks Nationalbank.

Reports include e.g. Danmarks Nationalbank's annual report and the semi-annual report on monetary and financial trends.

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