



SWEDEN

FINANCIAL SECTOR ASSESSMENT PROGRAM

TECHNICAL NOTE ON OVERSIGHT AND SUPERVISION OF FINANCIAL MARKET INFRASTRUCTURES AND SELECTED ISSUES IN PAYMENT SYSTEMS

April 2023

This Technical Note on Oversight and Supervision of Financial Market Infrastructures and Selected Issues in Payment Systems for the Sweden FSAP was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on March 16, 2023.

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Price: \$18.00 per printed copy

International Monetary Fund
Washington, D.C.



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OVERSIGHT AND SUPERVISION OF FINANCIAL MARKET INFRASTRUCTURES AND SELECTED ISSUES IN PAYMENT SYSTEMS

Prepared By
**Monetary and Capital Markets
Department**

This Technical Note was prepared by IMF staff in the context of the Financial Sector Assessment Program in Sweden. It contains technical analysis and detailed information underpinning the FSAP's findings and recommendations. Further information on the FSAP can be found at

<http://www.imf.org/external/np/fsap/fssa.aspx>

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Glossary

CCP	Central Counterparty
CLS	Continuous Linked Settlement
CPMI	Committee on Payments and Market Infrastructures
CPSS	Committee on Payment and Settlement Systems
CSD	Central Securities Depository
CSDR	Central Securities Depositories Regulation
CSP	Critical Service Provider
EMIR	European Market Infrastructure Regulation
ESMA	European Securities and Markets Authority
EU	European Union
FMI	Financial Market Infrastructure
FI	Finansinspektionen
IMF	International Monetary Fund
IOSCO	International Organization of Securities Commissions
ISO	International Organization for Standardization
MIB	Market Infrastructure Board
MIRF	Market Infrastructure Risk Forum
MOU	Memorandum of Understanding
PFMI	CPSS-IOSCO Principles for Financial Market Infrastructures
RTGS	Real Time Gross Settlement
SSS	Securities Settlement System
SWIFT	Society for Worldwide Interbank Financial Telecommunications

EXECUTIVE SUMMARY

Current Situation and Developments

The Swedish financial market infrastructure (FMI) is modern, stable, well-developed, and subject to regulation and to the CPMI-IOSCO Principles for Financial Market Infrastructures (PFMI). Sweden hosts a number of vital FMIs, including a payment system RIX owned and operated by the Riksbank, which has two settlement services: RIX-RTGS for large value payments, and RIX-INST for settlement of instant payments; two payment systems operated by Bankgirocentralen BGC AB (Bankgirot); one domestic CCP, Nasdaq Clearing; one domestic central securities depository and securities settlement system for Swedish shares and fixed income securities (Euroclear Sweden). Several FMIs located outside Sweden are also relevant for the Swedish financial system, namely, Cboe Clear Europe (formerly EuroCCP), LCH.Clearnet Ltd, SIX x-clear, and CLS.

Digitalization of payments has been rising steadily in Sweden. The use of cash in Sweden has been declining over many years and being replaced by electronic means of payment and Swish. Debit cards are dominant among electronic means of payment. Swish is an application-based payment method allowing instant transfer of funds. Swish is closely linked to the usage of BankID, an electronic identification system which is widely used for identification, authorization, signing of documents and various other services provided by public and private sector.

In addition to the continuous digitalization of payments, Sweden is undergoing a major overhaul of its payment infrastructure¹. The payment ecosystem of the financial sector is expected to undergo major developments in the upcoming five years both nationally and as part of the European Union. The Riksbank launched the RIX-INST service in May 2022 to provide settlement of instant payments in central bank money, using the TIPS platform. It is exploring the possibility of replacing the current system for the RTGS by using the platform provided by the Eurosystem, i.e., T2 and TARGET2-Securities (T2S) as an alternative for settling securities transactions in central bank money in SEK. Furthermore, the Riksbank is studying the potential use of the TIPS platform for cross-currency payments (EUR and SEK). In addition, major Nordic banks are developing a joint Nordic infrastructure for payments, P27, which will be real-time and batch processing, cross-border, single clearing platform offering harmonized, standardized, and simplified payment products in Sweden, Denmark and Finland. Moreover, other European and global developments are taking place, stretching the resources of the financial sector and regulators, e.g., migration to ISO20022, regulatory changes etc. Furthermore, a harmonization roadmap for Swedish post-trade securities has been drawn to retain the attractiveness and efficiency of the Swedish market.

Outsourcing of critical services to private companies is widespread and is going to increase in the Swedish financial sector. The maintenance and development of the IT-system for RIX-RTGS are carried out by two private international companies. RIX-INST is operated and maintained by the Eurosystem. Bankgirot has five critical service providers which provide a number of services for the two

¹ While securities market's post trade segment is facing significant changes as well in terms of resources and competences, this note focuses on selected issues and risks in payments segment.

systems operated by Bankgirot. P27 also plans to outsource the operations of its platform to a private international company. If the Riksbank decides to use T2 platform and/or T2S in the future, the IT-services will be operated and maintained by the Eurosystem.

Responsibilities of Central Banks, Market Regulators, and Other Relevant Authorities for FMI

Responsibilities A-E of the PFMI provide guidance for supervisors and regulators. Responsibilities A-E are part of the PFMI providing guidance for consistent and effective regulation, supervision, and oversight of FMIs to central banks, market regulators and other relevant authorities. The responsibilities cover regulation, supervision and oversight of FMIs, regulatory, supervisory, and oversight powers and resources, disclosure of policies with respect to FMIs, application of the PFMI to FMIs, cooperation with other authorities.

The review results of Responsibilities A-E suggest an effective supervision and oversight framework supported by sound legal basis, sufficient resources, and proper domestic and foreign cooperation between the authorities. There are clear and publicly disclosed criteria identifying which FMIs are subject to regulation, supervision and oversight by the Swedish authorities. The Riksbank's oversight responsibilities are based on the Sveriges Riksbank Act and the PFMI are applied. Finansinspektionen (FI) is responsible for authorizing firms to engage in clearing and settlement activities. The scope of FI's supervision is determined by the following laws: the Securities Market Act and the Financial Instruments Accounts Act. CCPs, CSDs and trade repositories (TR) are regulated by the EU legislation: European Market Infrastructure Regulation (EMIR), and Central Securities Depositories Regulation (CSDR). FI also applies PFMI in its supervisory work. FI and the Riksbank currently supervise and oversee: Nasdaq Clearing; Euroclear Sweden; and Bankgirot. The Riksbank also oversees RIX-RTGS and RIX INST. Riksbank and FI engage in cooperative oversight and supervision for three foreign FMIs active in Sweden Cboe Clear Europe (formerly EuroCCP), LCH.Clearnet Ltd, and SIX x-clear. The Riksbank is also engaged in the cooperative oversight of CLS. The scope of the oversight and supervisory responsibilities of FI and the Riksbank is well defined. To clarify the responsibilities of oversight and supervision in areas which overlap, a MoU has been concluded among several agencies, i.e., FI, the Riksbank, the Swedish National Debt Office and the Ministry of Finance to cooperate on financial stability and crisis management. In addition to the MoU, FI and the Riksbank have continuous close dialog to better manage the overlap and avoid any gaps in the responsibilities of supervision and oversight of FMIs.

The authorities should establish cooperative oversight and supervisory arrangements with P27 participating countries. If and when P27 has been granted a clearing institution's license the services will be onboarded gradually. The authorities should consider establishing cooperative arrangements with the Danish and Finnish authorities in a medium term as it may take time to reach an agreement on the MoU, cooperation roles and responsibilities, and on other matters.

Governance

The Riksbank launched RIX-INST service in May 2022 to provide settlement of instant payments in central bank money. RIX-INST is part of the harmonization effort of the Nordic payment markets towards a common European standard and is using a technical solution provided by the Eurosystem, i.e., TARGET Instant Payment Settlement (TIPS) platform which will provide for economies of scale and lower transaction costs. The Riksbank is exploring a possibility to replace the current RTGS system RIX-RTGS with the platform provided by the Eurosystem, i.e., T2 and TARGET2-Securities (T2S) as an alternative for settling securities transactions in central bank money in SEK.

T2, TIPS, and T2S are governed by TARGET2 and T2S Guidelines² respectively. The governance arrangement for TARGET services is complex and consists of several levels. The ECB's Governing Council is the main governance body and has entrusted the Market Infrastructure Board (MIB) with certain technical and operational management tasks in relation to TARGET services. Along with this, the TARGET services are provided by several central banks³ which take decisions on the daily operation of the systems. The MIB is supported by many committees, working groups and fora. The Riksbank is represented in the MIB and some other fora after signing the Currency Participation Agreement with the Eurosystem.

While joining the Eurosystem operated platforms will bring obvious benefits for Swedish financial sector, it may also create challenges related to governance, risk management, representation of Swedish interests and oversight. The governance arrangement for TARGET services is complicated. Moreover, an external independent review was launched by the ECB following incidents in TARGET services in 2020, which identified several weaknesses in documentation, processes, and procedures for TARGET services.

The Riksbank is encouraged to take into consideration the impact on its resources of the complex governance arrangement for TARGET services. Participation in Eurosystem's governance arrangement may be demanding and Riksbank's current involvement is limited. In order for the Riksbank to have a meaningful contribution to the work of the governance structures of TARGET services when a decision is taken to join T2 and T2S, the Riksbank is encouraged to strengthen its resources with required knowledge and expertise necessary to handle the workload.

Operational Risk

RIX-RTGS and RIX-INST are subject to the PFMI, and oversight is conducted by the Financial Structure Division of the Riksbank. Risk-based approach and moral suasion is applied in oversight activities of RIX-RTGS and RIX-INST, and resources are distributed based on the risk assessment. With the launch of RIX-INST, the Riksbank's oversight function has established a cooperation agreement with the ECB on information exchange and oversight activities. While the ultimate oversight

² The name of the documents could change after the consolidation.

³ For TARGET2 and T2S: Deutsche Bundesbank, Banca d'Italia, Banque de France; For TIPS: Deutsche Bundesbank, Banca d'Italia, Banque de France, Banco de España.

responsibility for RIX-INST lies with the Riksbank, there is a risk that oversight responsibilities and ability to oversee TIPS and potentially T2 and T2S as part of the Riksbank's engagement with the Eurosystem might be weakened and necessary assurances on operational and cyber resilience will be harder to obtain due to limited resources on the Riksbank's side and complex governance arrangement on Eurosystem's side.

A consistent and consolidated view of the interdependencies and concentration arising from outsourced critical services appears to be lacking but is vital. It should include providers of critical services, their sub-outsourcing arrangements and users of critical services provided by third parties. A centralized register with information on critical services, companies providing critical services and existing outsourced third-party arrangements for the critical services may be useful, in particular in case of an incident.

Supervisory responsibility for Bankgirot and P27 lies with FI, while the oversight responsibility is with the Riksbank. FI is able to use the PFMI only as a guideline providing relatively high-level direction for outsourcing contracts, processes and operations. There is no possibility to enforce compliance with the PFMI, Annex F and other guidelines and standards as they are not legally binding. The supervisory responsibility of FI in relation to clearing organizations in line with the Securities Market Act is very broad and does not permit setting specific requirements.

Swish and BankID are widely used and are critical components of payments in Sweden. Getswish AB is the provider of the technical platform for Swish and it is owned by the largest Swedish and some Nordic banks. It is an application-based payment method allowing initiation of instant transfer of funds between individuals and companies. Swish is closely linked to the usage of BankID, an electronic ID which is widely used for many services in Sweden such as onboarding for financial services and identification, authentication and electronic signing of documents, also for government services. Finansiell ID-Teknik BID AB is the provider of the technical solution for BankID. Getswish AB is outside direct regulation, oversight and supervision by FI. In case of BankID, it is currently supervised by the Swedish Post and Telecom Authority.

Active participation in the Eurosystem's oversight arrangement will be important to provide assurance on safety, security and stability of TARGET services the Riksbank is participating in. The ECB is the lead overseer for TIPS, and the Riksbank has established an oversight arrangement to benefit from the oversight activities undertaken by the ECB. It would be critical that the Riksbank's oversight function is able to establish such processes and procedures with the ECB which can provide assurance on the safety, security and stability of RIX-INST and potentially other Eurosystem operated platforms in future to limit operational and reputation risks.

The authorities are encouraged to establish and maintain a central register of critical service providers and outsourced third party arrangements. A comprehensive and searchable database of critical services and material outsourcing arrangements could facilitate identification of concentrations and dependencies, awareness and management of the associated risks.

The Ministry of Finance should strengthen the legal framework for FMIs such as Bankgirot/P27 to enforce compliance with the PFMI and other international standards as well as enhance supervisory and oversight regime for P27. P27 is still in the authorization process and will, if they are granted a license, replace services currently provided by Bankgirot, which processes practically all retail payments in Sweden. In addition, P27 will provide cross-border payment services in Denmark, Finland and potentially Norway. The authorities should strengthen the oversight and supervision of P27 with skilled resources and cooperation arrangements with the authorities of other involved jurisdictions. Furthermore, the Ministry of Finance is encouraged to strengthen the legal framework for FMIs such as Bankgirot/P27 to enforce compliance with the PFMI and other international standards in particular in the areas of operational risk management, including for cyber and outsourcing.

Regulation, supervision and oversight of Getswish AB and Finansiell ID-Teknik BID AB should be strengthened. Given high dependency of society on both services, high concentration of users and very low substitutability, the authorities should consider establishing either a new regulatory framework for both entities or including them in a fitting existing regulatory framework with stringent requirements for operational resilience, contingency requirements, cyber security, data protection and other relevant key risks.

Table 1. Sweden: 2022 FSAP—Main Recommendations

Recommendation	Responsible Authorities	Priority ¹
After granting license for P27, establish cooperative oversight and supervisory arrangement with P27 participating countries.	FI and Riksbank	MT
Consider the impact on own resources of complex governance arrangement for TARGET services. Active participation in Eurosystem's oversight arrangement will be important to provide assurance on the safety, security and stability of TARGET services the Riksbank is participating in.	Riksbank	I
Establish and maintain a central register of critical service providers and outsourced third party arrangements.	FI and Riksbank	ST
After granting license, enhance supervisory and oversight regime for P27	FI and Riksbank	I
Strengthen the legal framework for FMIs such as Bankgirot/P27 to enforce compliance with the PFMI and other international standards	Ministry of Finance	ST
Strengthen regulation, oversight and supervision of Getswish AB and Finansiell ID-Teknik BID AB	Ministry of Finance	I
¹ I Immediate (within 1 year); ST Short term (within 1-2 years); MT Medium Term (within 3–5 years)		

INTRODUCTION

1. The objective of this note is to analyze the safety and stability of FMIs in Sweden. The report contains a review of supervisory and oversight responsibilities of the Riksbank and FI in relation to FMIs in Sweden. Effective supervision and oversight are essential in ensuring that FMIs operate in a safe and sound manner, and in anchoring market confidence that FMIs will continue to provide their critical services. The note also covers focused analyses of ongoing and planned developments in payments ecosystem in Sweden and Europe as well as exploration of relevant risks and implications. The scope of the note is centered on payment issues owing to high digitalization of payments in Sweden, large number of ongoing and upcoming projects, with impact on financial system, and the authorities' interest on the subject.

2. The scope of the note includes analysis of implications and risks of outsourcing in payment systems in the context of changes in payments' ecosystem. Well-functioning FMIs are crucial for the operation of the financial system, they contribute to maintaining and promoting financial stability and economic growth. FMIs facilitate clearing and settlement of monetary and other financial transactions, including payments, securities and derivatives contracts. FMIs may concentrate risk, which if not properly managed can be a source of financial distress or a transmission channel of shocks across domestic and international markets. As in other jurisdictions, FMIs in Sweden are outsourcing or planning to outsource their core operations due to efficiency gains. Outsourcing of critical functions, on one hand, can bring multiple benefits in terms of cost reduction, efficiencies and better service but, on the other hand, can be a source of service disruptions and risk to an FMI and potentially financial stability.

3. Recommendations in this note are based on the CPSS-IOSCO Principles for Financial Market Infrastructures (PFMI). The analysis of the supervision and oversight of FMIs takes as a reference the five authorities' Responsibilities from the PFMI (Box 1). The analysis of outsourcing risks is based on the relevant Principles and Annex F of the PFMI on Oversight expectations applicable to critical service providers (CSPs). This note does not contain a comprehensive assessment of FMIs in Sweden against the PFMI but focusses on selected issues and risks.

4. This note reviews the oversight and supervisory framework for systemically important FMIs in Sweden. Authorities' responsibilities are reviewed against Responsibilities A to E of the PFMIs and are based on the responses provided by the Riksbank and FI as part of the questionnaire. Furthermore, the analysis was based on publicly available information, disclosure reports of FMIs and other background documentation provided by the Swedish authorities, as well as discussions with the authorities, certain Swedish FMIs, supervised financial institutions and payment service providers in Sweden.

Box 1. Responsibilities of Central Banks, Market Regulators, and Other Relevant Authorities for Financial Market Infrastructures

Responsibility A: Regulation, supervision, and oversight of FMIs

FMIs should be subject to appropriate and effective regulation, supervision, and oversight by a central bank, market regulator, or other relevant authority.

Responsibility B: Regulatory, supervisory, and oversight powers and resources

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 FMIs.

Responsibility C: Disclosure of policies with respect to FMIs

Central banks, market regulators, and other relevant authorities should clearly define and disclose their regulatory, supervisory, and oversight policies with respect to FMIs.

Responsibility D: Application of the principles for FMIs

Central banks, market regulators, and other relevant authorities should adopt the CPSS-IOSCO Principles for financial market infrastructures and apply them consistently.

Responsibility E: Cooperation with other authorities

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 FMIs.

Source: CPSS-IOSCO Principles for FMIs (PFMIs), April 2012.

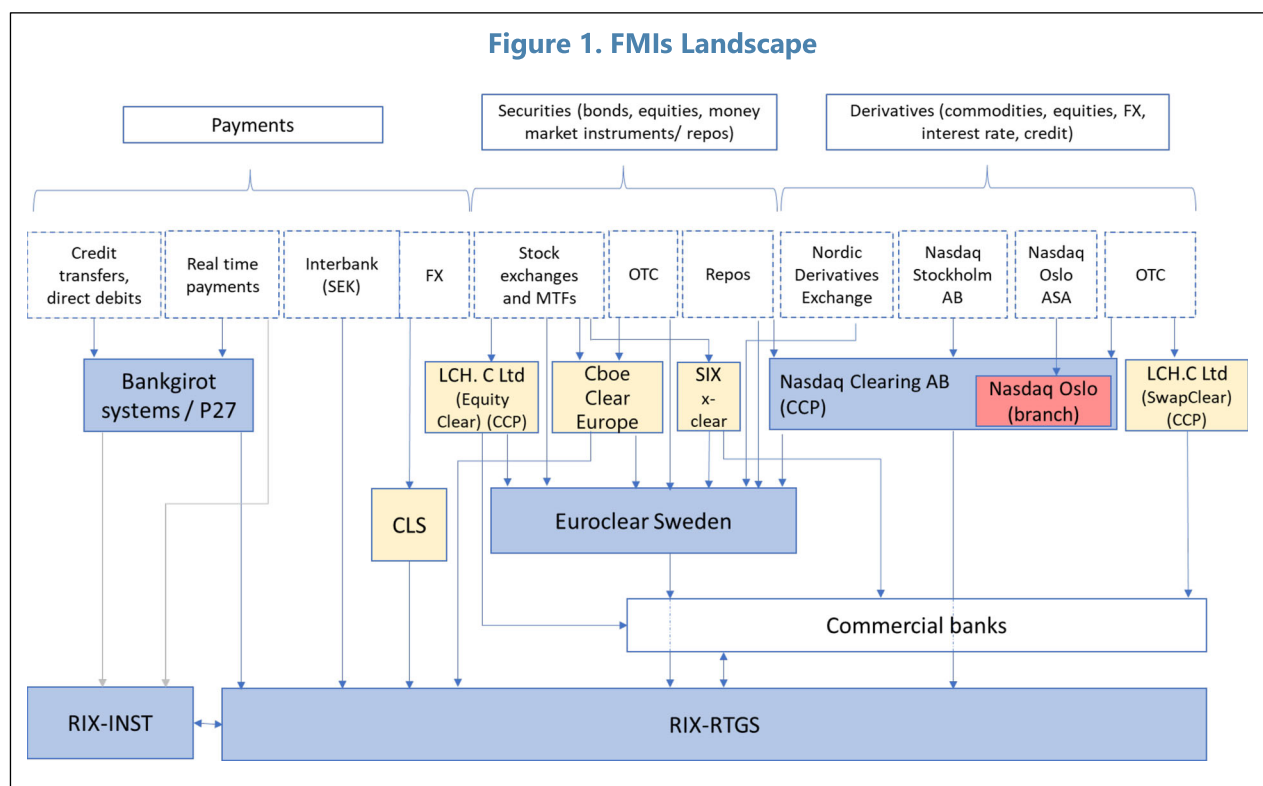
OVERVIEW OF FMI LANDSCAPE AND RECENT DEVELOPMENTS

A. Description of Landscape

5. There are four critical domestic FMIs operating in Sweden. This includes a payment system RIX, the Swedish RTGS payments system owned and operated by the Riksbank (RIX-RTGS) and RIX INST service for settlement of instant payments as well as the two payment systems operated by Bankgirocentralen BGC AB (Bankgirot) (see Table 1). Bankgirot payment system offers wide range of services for incoming and outgoing payments; the system processes mass payments such as giro transfers, deposits to bank accounts, financial transactions between banks for card payments and ATM withdrawals, which are settled in batches in RIX with the central bank. Bankgirot also offers settlement of payment in real time available 24/7, which today settles payments initiated via Swish interface⁴. Bankgirot is a subsidiary of P27, which is owned by OP Financial Group and five Nordic banks.

⁴ Instant payment will settle on RIX-INST as of 2023.

Furthermore, there is one domestic CCP, Nasdaq Clearing, which offers CCP clearing for exchange-traded financial and commodity derivatives, over-the-counter (OTC) interest rate derivatives (IRD) and repos. There is also one domestic central securities depository and securities settlement system for Swedish shares and fixed income securities, Euroclear Sweden. Euroclear Sweden is owned by Belgian group Euroclear SA. There are no trade repositories in Sweden. Several FMIs located outside Sweden are also relevant for the Swedish financial system, namely, Cboe Clear Europe (formerly EuroCCP), a Dutch CCP, clears certain equities and exchange-traded funds; LCH.Clearnet Ltd, a UK-based CCP clears OTC IRD and equities traded on Nasdaq Stockholm; SIX x-clear, a Swiss-based CCP operated by SIX x-clear AG clears equities and multilateral trading facilities; CLS, the U.S. based settlement system for foreign exchange transactions. Please see the Figure 1. FMIs landscape in Sweden.



6. Digitalization of payments has been rising steadily in Sweden. Use of cash in Sweden has been declining over the past years and is being replaced by electronic means of payment such as bank cards and Swish. Debit cards are dominant among electronic means of payment (please see Figure 2. Use of payment instruments in Sweden). Swish is an application-based payment method allowing initiation of instant transfer of funds between Swish app users (individuals, businesses, and e-commerce) by using the mobile phone number. In March 2022, there were 8.6 million users of Swish, 8.3 million⁵ of which were private accounts, and 319 thousand companies were offering payments via Swish. The average number of Swish transactions per customer in March 2022 was 9.7 and the average value of

⁵ There were 10.35 million inhabitants in Sweden in 2020.

transaction in the same period was 481 SEK (around 48 USD) ⁶. Swish is closely linked to the usage of BankID, an electronic identification system which is widely used for various services provided by public and private sector. BankID was used 17 million times a day throughout 2021, which is 200 times a second⁷. Customers are required to have BankID and Swish on the same device in order to send payments via Swish.

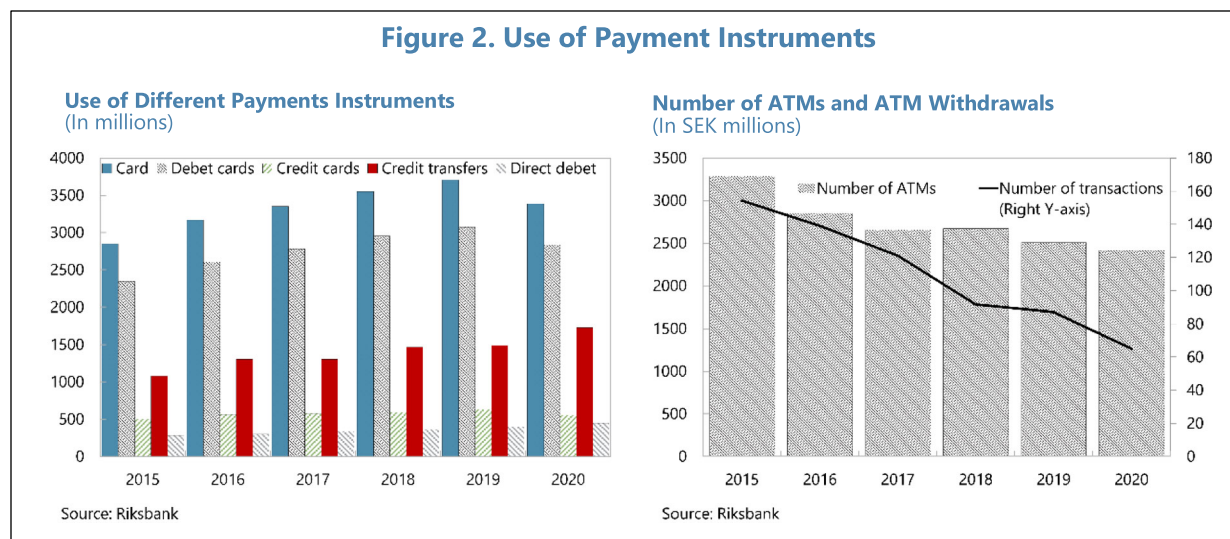


Table 2. Sweden: Payments Traffic in RIX-RTGS and Bankgirot

Data	2018	2019	2020	2021
RIX – volume of transactions (million)	5,4	5,7	5,9	6,5
RIX- value of transactions (billion SEK)	121,2	125,1	128,2	132,4
BGC – volume of transactions (millions)	602,0	602,15	628,03	627,50
BGC – value of transactions (Billions SEK)	17,6	14,5	14,6	15,6
RIX – average daily turnover as a percentage of GDP	10%	9,9%	10,2%	9,7%
BGC- average daily turnover as a percentage of GDP	0,9%	0,7%	0,7%	0,8%

Source: The Riksbank

B. Major Developments in the FMI Ecosystem

7. Sweden is undergoing a major overhaul of its payment infrastructure. In addition to the continuous digitalization of payment services in Sweden, the financial sector is facing major

⁶ Source: www.swish.nu

⁷ Source: www.bankid.com

developments in the upcoming five years in payments' ecosystem nationally and stemming from regulatory and other initiatives in European Union.

8. The Riksbank launched RIX-INST service in May to provide settlement of instant payments in central bank money. RIX-INST is part of harmonization effort of the Nordic payment markets towards a common European standard and is using a technical solution provided by the Eurosystem, i.e., TARGET Instant Payment Settlement (TIPS) platform which will provide for economies of scale and lower costs for society. TIPS provides Pan-European reachability for real-time payments in euro without the need for corresponding banking. RIX-INST enables instant settlement of individual payments in SEK in central bank money 24/7/365. Swish instant payments, currently settled via system owned by Bankgirot, are scheduled to migrate settlement of all instant payments to RIX-INST in 2023. Other instant payments compliant with the Nordic Payments Council instant credit transfer rulebook will be processed at a later stage. RIX-INST does not offer cross-currency payments at this stage.

9. The Riksbank is exploring the possibility to replace the current system for RTGS by using the platform provided by the Eurosystem, i.e., T2. Joining the T2 platform would offer access to a platform with major resources, expertise and competences for security, operational continuity, and economies of scale. Furthermore, the Riksbank is investigating also the Eurosystem's technical platform TARGET2-Securities (T2S) as an alternative for settling securities transactions in central bank money in SEK. Such solution is considered to provide access to central bank money in SEK for securities settlement to more than one CSD in comparison to today in light of evolving securities settlement landscape in Europe. The migration to T2 platform and/or T2S is not expected to take place earlier than 2028.

10. The Riksbank is studying the potential use of TIPS for cross-currency payments (EUR and SEK). The setting up of such a service is subject to further analysis as regard to operational, legal, and policy issues. Providing settlement of cross-currency payments in central bank money instead of commercial bank money could reduce credit risk and costs for participating banks, increase speed and transparency of transactions, enhance competition among payment service providers and offer new opportunities for cross-currency payment services.

11. Major Nordic banks are working on a joint Nordic infrastructure for payments P27. It will be real-time and batch processing, cross-border single clearing platform offering harmonized, standardized and simplified payments products in Sweden, Denmark, Finland (and potentially Norway). P27 will offer its participants access to RIX-INST and through enriched services will allow banks to build, integrate and customize their services specifically to their own needs and the country needs across the Nordic region. P27 will replace Bankgirot, its infrastructure and services once the transformation process is planned to be completed by the end of 2024. Some of the services will be taken over by the P27, and some others – handed over to banks. The first milestone will be reached by launching processing of Swish payments as of 2023. Other services will go live gradually.

12. Other European and global developments are stretching the resources of the financial sector and regulators. There are many other projects in payments' ecosystem which will affect operations and resources of financial sector in Sweden. For example, migration to ISO20022

messaging standard needs to be completed by 2025, which is a major change; Eurosystem will be consolidating TARGET2 and T2S in terms of technical and functional aspects in March 2023, which is a significant project for banks active in other European countries; there are many regulatory developments such as review of Payment Services Directive (PSD2), Settlement Finality Directive (SFD), regulation on crypto assets (MiCA), Digital operational resilience act (DORA), which require attention of both banks and regulators potentially adding transition risks to the environment.

13. A harmonization roadmap for the Swedish post-trade securities market has been drawn to retain the attractiveness and efficiency of the Swedish market. To facilitate harmonization to European standards and to ensure that Swedish securities market remains efficient and attractive for domestic and foreign investors, the Riksbank published a harmonization roadmap for Swedish post-trade securities in January 2021 prepared by the Coordination Forum for Swedish Post-Trade Harmonization⁸. The harmonization road map lays out: (i) necessary activities for achieving harmonization of the Swedish post-trade securities market to European standards; (ii) parties which are responsible for driving the harmonization work, (iii) a high-level timeline for the activities. The roadmap is organized in three blocks: Block 1 focuses on analysis of CSD participant structure and account structure to be completed by the end of Q4 2022; Block 2 will examine corporate action harmonization to be finalized by Q2 2024; Block 3 will be an implementation phase which has two options: one with the use of T2S platform and another - without, with indicative completion time – Q1 2028. A National Stakeholder Group (NSG) for the Swedish securities market was established to monitor the implementation of standards and act as a forum to support stakeholders in the work of harmonization.

14. Several improvements have been undertaken by Nasdaq Clearing after the 2018 default incident. As a follow up to the incident in 2018, FI initiated three different investigations during 2018 and 2019, which focused on Nasdaq Clearing's participation requirements, risk management and default management. The investigation resulted in a sanction and a penalty⁹ for Nasdaq. FI have also closely analyzed all significant model changes made by Nasdaq Clearing in accordance with Article 49 procedure of EMIR. Furthermore, Nasdaq Clearing initiated a Risk Management Enhancement Program (RMEP) to correct several identified deficiencies in relation to risk models, margin requirements, default fund setup and membership requirements, which has been closely monitored by FI. FI also conducted two in-depth analyses during 2020 and 2021 focusing on improved membership requirements of Nasdaq Clearing, which facilitated additional improvements.

⁸ The Forum consisted of financial market participants, financial market infrastructures and other stakeholders such as public authorities and indirectly affected parties. The Riksbank chaired the forum and provided secretariat.

⁹ The process is still ongoing as the court decision has been appealed by Nasdaq.

EFFECTIVENESS OF THE OVERSIGHT AND SUPERVISORY FRAMEWORK

A. Regulation, Supervision, and Oversight of FMIs (Responsibility A)

15. Criteria identifying which FMIs are subject to regulation, supervision, and oversight by the Swedish authorities are well-spelled out and publicly disclosed. The Riksbank's oversight responsibilities are based on the Sveriges Riksbank Act (1988). To identify FMIs subject to the Riksbank's oversight, six criteria are applied based on the importance of the FMI to the Swedish financial system and economy and in line with the PFMI, for example, volume and value of transactions, market share, interlinkages with other FMIs etc. The criteria are published on the Riksbank's website. FI is responsible for authorizing firms to engage in clearing and settlement activities. The scope of FI's supervision is determined by the following laws: the Securities Market Act (2007:528) and the Financial Instruments Accounts Act (1998:1479) which include securities settlement and payment systems and central securities depositories. CCPs, CSDs and trade repositories (TR) are regulated by the EU legislation: European Market Infrastructure Regulation (EMIR), and Central Securities Depositories Regulation (CSDR), which are directly applicable in Sweden. There is no TR in Sweden. The underlying legislation is publicly disclosed. FI also applies the PFMI in its supervisory work. Nonetheless, FI can apply the PFMI only as guidance and cannot impose requirements and penalties based on the PFMI. FI and the Riksbank currently supervise and oversee: Nasdaq Clearing; Euroclear Sweden; and Bankgirot. The Riksbank also oversees RIX-RTGS and RIX-INST.

16. Riksbank and FI engage in cooperative oversight and supervision for several foreign FMIs active in Sweden. Additional three foreign FMIs, which are active in Sweden and/or settle in SEK, and one critical service provider (CSP)¹⁰ are subject to cooperative oversight and/or supervision arrangement, which is governed by Memorandums of Understanding (MoUs). Primary responsibility for supervision and oversight lies with the authorities of home jurisdiction.

17. The scope of the oversight and supervisory responsibilities of FI and the Riksbank is clearly defined. The roles and tasks of both institutions with respect to FMIs are defined in legislation or can be interpreted from law. Oversight objective of the Riksbank is to safeguard the stability of the financial system while FI's supervision aims at promoting stable functioning of the financial system and ensuring consumer protection. To clarify the responsibilities of oversight and supervision in areas which overlap, a MoU has been concluded among several authorities, i.e., FI, the Riksbank, National Debt Office and the Ministry of Finance to cooperate on financial stability and crisis management.

18. In addition to the MoU, FI and the Riksbank have continuous close dialog to better manage the overlap and avoid any gaps in the responsibilities of supervision and oversight of FMIs. The Riksbank and FI have established a forum which meets four times a year to share relevant

¹⁰ FMIs: CLS, Cboe Clear Europe (formerly EuroCCP), LCH Limited, SIX x-clear; CSP: SWIFT.

areas for supervision and oversight of FMIs, exchange operational plans and projects and other relevant information.

B. Regulatory, Supervisory, and Oversight Powers and Resources (Responsibility B)

19. The Riksbank applies moral suasion in case deficiencies are identified in the overseen FMI. The Riksbank has no formal enforcement powers, it relies on moral suasion to induce change, which it conducts through a dialogue and meetings with the FMI, as well as via public statements, speeches and publications to encourage the FMI to take necessary action. Identified deficiencies in an FMI are described in Financial Stability Report, and they may also be discussed in the Financial Stability Council.

20. FI has the authority and tools to induce change and enforce corrective actions at the supervised FMIs. FI is obliged in line with the legislation to intervene and sanction an FMI in case of infringements. It has the power to issue a remark, warning, or revoke a license. Remarks or public warnings may be accompanied by a penalty fine. In case of payment systems such as Bankgirot and P27, FI apply the PFMI but only as a guidance. FI cannot enforce compliance with the PFMI and penalize for non-compliance.

21. Both FI and the Riksbank have powers to obtain information from the FMIs that are subject to their supervision and oversight. The power to obtain necessary information to conduct oversight and supervisory responsibilities is based in relevant laws. FI studies qualitative and quantitative information as part of supervisory meetings and conducts investigatory activities to gain insights if an FMI complies with relevant regulations and requirements. EMIR and CSDR requires regulated entities to notify the competent authority on any material change. Similarly, all FMIs are required to provide FI and the Riksbank with information regarding planned changes to their systems or operations, and other significant matters, as well as certain statistical information. In line with the PFMI, the FMIs are required to publish a disclosure report every two years.

22. Resources for FMI supervision and oversight functions within FI and the Riksbank appear sufficient to cope with the responsibilities. The Riksbank's oversight of FMIs is conducted by its Financial Structure Division (FSE), which is staffed by 11 employees. Out of the 11 employees at the FSE five are dedicated to oversight and policy analysis of FMIs. Employees at the FSE have different academic backgrounds and various professional experiences and expertise. There are various competence development programs available for staff. The number of employees at FSE is determined on the basis of operational plans and the budget allocated to the FSE. FI currently employs 15 full-time employees at the department responsible for infrastructure supervision. The department is expected to grow in 2022 by an additional 1 to 2 FTEs. The collective competence at the department is broad and include various expertise, i.e., operational risk experts, lawyers and risk model experts. Staff is offered in-house and external training opportunities. The work is supported by other departments at FI. FI established specialized competence in the areas of IT-risk and market model risk in special "competence centers" as of 2021. The competence centers can provide cutting-edge expertise to the

infrastructure department. Both FI and the Riksbank develop a supervisory or oversight plan each year using risk-based approach and prioritization of risk areas due to limited resources; the resources can be reprioritized throughout the year if required. If necessary, both institutions have the ability to commission external consultants for special areas of work.

C. Disclosure of Policies with Respect to FMIs (Responsibility C)

23. The oversight and supervision of FMIs by both the Riksbank and FI are described in policy documents and laws. Both authorities have published policy statements that they will apply the PFMI in their supervision and oversight. The PFMI form the basis for the Riksbank's oversight. The Riksbank oversees the FMIs to execute its statutory task of promoting a safe and efficient payments system. More specifically, its oversight is designed to identify and analyze sources of systemic risks and inefficiency. FI's supervision of FMIs is governed by existing financial legislation, and it has certain rights to issue regulations. The appropriation directive, ordinance, legislation and regulations are public. The Riksbank is also the operator of RIX-RTGS and RIX-INST which provides safe and efficient settlement in central bank money as well as is lender of last resort in crisis situations; the objectives and roles are clearly described in Sveriges Riksbank Act.

24. FI and the Riksbank publicly disclose their policies with respect to FMIs. The laws underlying each authority's oversight and supervision are publicly available. The Riksbank has published an oversight policy that describes its role, objective, and approach to overseeing FMIs. FI publishes information and documents, which describe its approach across all its supervisory responsibilities, including FMIs. Both FI and the Riksbank also publish, to different degrees of detail, information on their ongoing supervisory and oversight work, including their current priorities.

D. Application of the Principles for FMIs (Responsibility D)

25. The Riksbank and FI apply the PFMI to the oversight and supervision of all critical FMIs. The PFMI are minimum requirements and the Riksbank may impose more stringent requirements than those imposed by the PFMI as well as takes into consideration prevailing legislation and best practice on the market. The Riksbank applies risk-based oversight for routine oversight activities. There are procedures in place how identified shortcoming in an FMI are addressed, processed, and communicated. FI also applies risk-based supervision and incorporates the PFMI in its activities of the FMIs in combination with applicable legislation. The PFMI are used only as guiding principles since they are not legally binding. The FMIs are expected to publish a disclosure report at a minimum every two years. For CCPs and CSDs the PFMI have been implemented via EMIR and CSDR.

26. Information on overseen and supervised FMIs is publicly available. When the Riksbank takes a decision to oversee an FMI, it is published. Similarly, information on applicable principles and which FMIs are supervised is published on FI's website. National or EU legislation is applied to all FMIs (except for RIX-RTGS) thus all FMIs receive equal treatment. To ensure equal treatment in application of the PFMI for all FMIs, the Riksbank conducts comprehensive assessments against the PFMI for all or at least some of the FMIs at the same time to ensure consistency. All FMIs under oversight are held

to the same requirements and the oversight practice is the same for all overseen FMIs, including RIX-RTGS. There are procedures in place if a deficiency is identified in FMIs' compliance with the PFMI in terms of classification of deficiency, escalation procedures and mitigation actions.

27. The Riksbank and FI are members of several cooperative arrangements. Since Euroclear Sweden is a subsidiary of Euroclear SA/NV (ESA), the Riksbank and FI are included in an oversight collaboration and supervision led by the National Bank of Belgium. Furthermore, a college has been established for the CCP NASDAQ Clearing AB in accordance with the EU Regulation EMIR, which imposes requirements consistent with the PFMI. FI also participates in the European Securities and Markets Authority (ESMA) CCP Supervisory Committee, where certain supervisory matters related to Nasdaq Clearing and other EU CCPs are discussed.

28. Since the Riksbank is overseer, owner, operator, and participant in RIX-RTGS there are measures in place to address potential conflict of interest. Conflict of interest is managed by the Riksbank through separation of oversight and operations functions in two different departments. There are procedures and instructions established in case a conflict of interest arises between the departments. To further strengthen the ability to manage a conflict of interest the Riksbank has special policy document concerning treatment a conflict of interest regarding RIX-RTGS between oversight and operations.

E. Cooperation with Other Authorities (Responsibility E)

29. Cooperation between FI and the Riksbank regarding the supervision and oversight of FMIs is effective. The Riksbank and FI have a joint agreement on cooperation and information sharing that enables efficient handling of the FMIs that the two authorities oversee/supervise. This applies to Euroclear Sweden, NASDAQ Clearing AB, Bankgirot. A cooperation forum on FMIs has been established to facilitate cooperation. Cooperation is also formalized as part of the MoU among the Riksbank, FI, National Debt Office and the Ministry of Finance.

30. FI and the Riksbank monitor cross-border services and clearing in foreign currency at Bankgirot. The authorities receive information about cross-border and cross-currency services at supervisory/oversight meetings or informal conversations. The authorities also hold joint supervisory/oversight meetings regularly and cooperate through assessments.

31. For NASDAQ Clearing AB, a college has been established within the framework of EMIR. The college members include supervisory authorities and central banks from the relevant countries, ESMA, and the ECB. The college coordinates opinions on the authorization procedure for NASDAQ Clearing AB and conducts continuous supervisory duties such as information sharing, coordination of supervisory examinations and establishing contingency plans for crisis situations. FI has a legal mandate to coordinate and take responsibility for the college.

32. FI and the Riksbank participate in cross-border cooperation for the oversight and supervision of the Euroclear group, in which Euroclear Sweden is a member. It is an oversight and supervision collaboration between central banks and supervisory authorities in those countries where

the Euroclear group has an established (I)CSD. The collaboration is defined in a MoU between the involved authorities. The collaboration facilitates effective supervision/oversight and benefits from the collective expertise. Euroclear Sweden is subject to CSDR requirements concerning the provision of cross-border services, which includes that FI shall be informed of the intention to start providing services in another member state and in the event of changes to the provision of such services. The Riksbank and FI hold joint supervisory/oversight meetings on a regular basis.

33. The Riksbank and FI cooperate with foreign authorities with respect to several other foreign FMIs based on MoUs and protocols. The oversight and supervision of foreign FMIs is led by relevant home jurisdiction authority. Central banks which currencies participate in CLS are engaged in oversight cooperation. The Riksbank participates in the oversight arrangement since SEK is settled in CLS. For Cboe Clear Europe (formerly EuroCCP), a college has been established under EMIR, which is led by the Dutch Central Bank. The Riksbank and FI are members of the college. For LCH Limited the Riksbank and FI are members of the oversight cooperation led by the Bank of England. SWIFT is a critical service provider which is overseen by National Bank of Belgium and by cooperative arrangement of G10 central banks, where the Riksbank is participating. FI participates in various ESMA committees related to FMI supervision and regulation.

34. Effective management during crisis situations is ensured via MoUs and guidelines for foreign FMIs. MoU concluded among Swedish authorities ensures effective management and coordination regarding financial stability and crisis situations. The oversight cooperation in respect of the foreign FMIs includes crisis communications contact lists and guidelines for communication during crisis.

F. Recommendations

35. Overall, the authorities ensure consistent and effective regulation, supervision, and oversight of FMIs. There are clear and publicly disclosed criteria identifying which FMIs are subject to regulation, supervision and oversight by the Swedish authorities. The scope of the oversight and supervisory responsibilities of FI and the Riksbank is clearly defined. Resources of the FMI supervision and oversight functions within FI and the Riksbank seem sufficient to cope with the tasks. Authorities cooperate with each other both domestically and internationally to strengthen oversight and supervision and to minimize the potential duplication of effort and reduce the burden on the FMI and the authorities.

36. Legal framework for FMIs such as Bankgirot and P27 should be strengthened. Present supervisory responsibilities of FI for clearing organizations are broad in line with the Securities Market Act. P27 is currently going through the authorization process for part of its services as clearing organization. FI applies the PFMI for its supervisory activities but cannot enforce compliance with the PFMI. Given the importance of Bankgirot and P27, the Ministry of Finance should strengthen the legal framework for payment systems. More detailed discussion on this recommendation is included in Section C on operational risk.

37. The authorities should establish cooperative oversight and supervisory arrangement with P27 participating countries. When P27 has been granted a clearing institution's license, the authorities should consider establishing the cooperative arrangement with the Danish and Finish authorities in a medium term as it may take long time to agree on the MoU, cooperation roles and responsibilities and other matters.

SELECTED ISSUES IN PAYMENT SYSTEMS

A. Background on Outsourcing

38. Outsourcing has increased notably over recent years across financial sectors. Regulatory reforms, technology developments, increased connectivity among market participants and growing level of process automation have increased the complexity of markets and financial infrastructure and directed the focus on operational efficiency. Financial institutions, payment service providers, FMIs and other entities are increasingly outsourcing their activities to reduce costs and improve flexibility and efficiency. Outsourcing is a way to get relatively easy access to new technologies and to achieve economies of scale. Digitalization and importance of information technology (IT) and financial technologies have facilitated this process. IT is one of the most outsourced activities followed by rapid increase of cloud outsourcing arrangements. Operational support, regulatory reporting, maintenance of IT systems and customer support are also often outsourced.

39. Responsibility, liability, and accountability cannot be outsourced. Outsourcing typically is defined as an arrangement of any form between an entity and a service provider by which that service provider performs a process, a service or an activity, whether directly or by sub-outsourcing, which would otherwise be undertaken by the entity itself. Sub-outsourcing means a situation where the service provider under an outsourcing arrangement further transfers an outsourced function to another service provider. Services such as purchase of hardware, software, building of an IT platform, market information services, correspondent banking service and alike are not considered outsourcing but third-party relationships excluding outsourcing. In the context of FMIs a term "critical service provider" (CSP) is used. CSP is defined as a service provider that has a direct contractual arrangement with an FMI to provide, on a continuous basis, services to that FMI which are critical¹¹ for ensuring information confidentiality and integrity and service availability, as well as the smooth functioning of its core operations¹². An FMI retains full responsibility, legal liability, and accountability for all tasks that it may outsource to a service provider to the same extent as if the service were provided in-house. The regulatory responsibilities of the FMI and its management cannot be outsourced unless permitted under the regulatory requirements of the relevant jurisdiction.

40. The operational resilience and stability of an FMI may depend on continuous and stable functioning of third-party service providers that are critical to the FMI's operations. An FMI may

¹¹ Critical services could be data centers, messaging/network services, payment processing services, settlement functionality, or other services for payment/clearing/settlement.

¹² Source: [Eurosystem Oversight report 2020](#).

have a contractual agreement with a third-party service provider that performs, on a continuous basis, activities that might be critical to the operations of the FMI (e.g., off-shelf payment/settlement systems, messaging, network connectivity, system maintenance services, data center etc.). Activities are considered critical when a defect or failure in its performance would materially impair its financial performance or the soundness or the continuity of its services and activities. If outsourcing of an FMI is not properly supervised and overseen, it may serve as transmission channel for operational and cyber risks. To support FMI's safety and efficiency, Annex F of the PFMI provides five oversight expectations for critical service providers which can be used by regulators, supervisors, and overseers to establish expectations for FMI's critical service providers and obtain assurance on the quality of service an FMI should receive from its critical service provider to comply with the PFMI.

41. Regulatory and supervisory frameworks and industry practices for outsourcing and third-party relationships are fragmented.¹³ Regulatory and supervisory frameworks on outsourcing have been developed by various national/regional authorities and standard setting bodies. They are often prescriptive, and inconsistent across jurisdictions and sectors, leading to fragmented industry practices and increased compliance costs for internationally active financial institutions. For example, in the EU, the European Banking Authority (EBA) issued guidelines for the EU banking sector on outsourcing arrangements and on ICT and security risk management¹⁴. At the international level, the International Organization of Securities Commission (IOSCO) updated its Principles on Outsourcing¹⁵ applicable to regulated entities such as trading venues, market intermediaries and market participants acting on a proprietary basis, and relevant credit rating agencies. The outsourcing principles are not addressed to FMIs but nonetheless are encouraged to apply them.

42. The Eurosystem developed a policy for the identification and oversight of CSPs of FMIs (CSP policy) due to high dependency of FMIs on CSPs. The policy outlines a three-step approach: (1) identify the CSPs of FMIs; (2) determine the eligibility of the CSPs for oversight; and, if necessary, (3) apply direct or indirect oversight. The policy also sets out how indirect oversight could be conducted.¹⁶ The policy covers CSPs of payment systems, card payment schemes, SSSs as well as, on a voluntary basis, CSDs and CCPs. The policy requires FMIs to disclose their list of CSPs every two years, which helps overseers to better understand the ecosystem and the operational interdependencies between FMIs and CSPs and decide on type of oversight. The Eurosystem has launched two surveys so far to classify CSPs of euro area FMIs, which allowed identification and classification of CSPs in terms of their importance, concentration and geographical location, and subsequently to draw the focus of overseers.

43. The Digital operational resilience act (DORA) is highly anticipated by the financial sector in Europe. DORA regulation will set harmonized requirements across all EU member states for the

¹³ Responses to FSB Public Consultation on Regulatory and Supervisory Issues Relating to Outsourcing and Third-Party Relationship: <https://www.fsb.org/wp-content/uploads/P140621.pdf>.

¹⁴ [EBA/GL/2019/02 EBA Guidelines on outsourcing arrangements.](#)

¹⁵ [FR07/2021 IOSCO Principles on Outsourcing.](#)

¹⁶ Eurosystem oversight report 2016.

security of network and information systems of organizations operating in the financial sector as well as critical third parties which provide information technologies related services to them. DORA will create a regulatory framework on digital operational resilience whereby all firms need to make sure they can withstand, respond to and recover from all types of ICT-related disruptions and threats. DORA currently is in the approval process in European institutions.

B. Governance

Current Arrangements

44. The Executive Board of the Riksbank is responsible for the operations of the payment system. The Riksbank is the operator of RIX-RTGS and RIX-INST, which as an FMI has its own policy for governance and control. The Board is responsible for ensuring that operations are efficient, reliable and fair, and governance and control is sound and efficient. The Board has delegated the responsibility of RIX-RTGS and RIX-INST operations to the Head of Payments Department who is accountable for running the system, adequate collateral, resources, rules of the system. The Head of Payments is also responsible for identifying, analyzing and mitigating any risks associated with RIX-RTGS and RIX-INST. The responsibility for oversight of the payment system is assigned to the Head of the Financial Stability Department.

45. Riksbank has started to use TIPS platform and is also exploring the possibility to join Eurosystem operated payment and settlement platforms, i.e., T2 and T2S.¹⁷ The Riksbank just launched RIX-INST service which will be used for the settlement of instant payment system as of 2023, which is based on the technical solution provided by the Eurosystem, i.e., TIPS. The Riksbank is currently conducting in-depth analysis to understand the implications of outsourcing of its critical function outside Sweden. It is motivated by potential benefits of harmonization, efficiency gains through economies of scale, as well as expertise and substantial investments by the Eurosystem in operational and cyber resilience of its payment and settlement platforms.

46. TARGET2 (T2 as from March 2023), TIPS and T2S is governed by TARGET2 and T2S Guidelines respectively. The governance arrangement for TARGET services is complex with many committees, working groups and forums. The ECB's Governing Council (Level 1) is the main governance body responsible for the direction, management and control of TARGET services. The Governing Council has entrusted the Market Infrastructure Board (MIB) with certain technical and operational management tasks in relation to TARGET services (Level 2). Furthermore, the TARGET services are provided by several central banks¹⁸ which take decisions on the daily running of the TARGET services based on the requirements in the service level agreement (Level 3). There are 13 members in the MIB.

¹⁷ T2, T2S and TIPS will be consolidated under one new common platform in March 2023.

¹⁸ For TARGET2 and T2S: Deutsche Bundesbank, Banca d'Italia, Banque de France; For TIPS: Deutsche Bundesbank, Banca d'Italia, Banque de France, Banco de España.

47. The Riksbank is represented at the MIB and several other working groups and forums.

For RIX-INST, the Riksbank signed a Currency Participation Agreement with the Eurosystem in 2020 providing Sweden access to TIPS platform. As a result, the Riksbank can participate in TIPS governance arrangement and have a seat in the MIB¹⁹. In addition, the Riksbank is represented in several other working groups and forums which support the decision making for TIPS, deal with evolution of service, risk management and other issues. The Riksbank is not a member of the Governing Council, which is the main governance body for TARGET services. For the oversight function, the ultimate oversight responsibility of RIX-INST lies with the Riksbank and it has signed a cooperation agreement with the lead overseer of TIPS, i.e., the ECB on information exchange and oversight responsibilities. Furthermore, the Riksbank has created a secretariat to coordinate the work of all RIX-INST related groups and exchange of information. Once the Riksbank decides to join T2 and T2S, it will have access to expanded governance arrangement.

Assessment

48. Joining Eurosystem operated platforms will bring benefits for Swedish financial sector but may also create challenges related to governance, risk management, representation of Swedish interests and oversight.

In terms of benefits for Swedish financial sector, Eurosystem's operated payment and settlement platforms offer uniform services, prices, terms and conditions as well as optimized liquidity management, which is particularly important for larger banks active in several European countries and familiar with the platforms. Moreover, a large number of financial institutions are reachable via T2 and T2S. In addition, Eurosystem invests significant resources in operational and cyber resilience of the platforms. While the Riksbank is represented at the MIB and other relevant working groups and fora, and escalation and resolution procedures are in place for any potential disagreements, the Riksbank may face challenges in making the voice of Swedish financial sector heard, which may result in reputational risk and indirectly in operational risk. Following several incidents in TARGET services in 2020, the ECB launched an independent review. The results²⁰ of the review pointed to a number of weaknesses in relation to change management, business continuity, governance and few other areas. One of the findings related to the heavy and overly complex governance arrangement, with heavy reliance on many committees and working groups. Moreover, for several of reviewed areas, the documentation, policies, process description and procedures were found either incomplete or inefficient.

Recommendation

49. The Riksbank is encouraged, in its in-depth analysis of joining the Eurosystem's payment and settlement platforms, to take into consideration the impact on its resources of complex governance arrangement for TARGET services. The MIB is responsible for technical and operational management of TARGET services (TARGET2/T2, TIPS, T2S) which include large number of discussions on documents, policies and procedures. There are also numerous committees and working groups

¹⁹ The MIB has two seats for non-euro area countries participating in the Eurosystem's provided payment and settlement platforms, which are allocated on a rotating schedule once there are more than two such countries.

²⁰ [Report external review TARGET Services incidents 2020](#)

which handle certain operational and technical matters. In order for the Riksbank to have a meaningful participation and be able to contribute to the work of the governance structures within the Eurosystem, the Riksbank is recommended to take into account in its assessment the need for resources with relevant knowledge and understanding of the matters.

C. Operational Risk (Including Cyber)

Current Arrangements—RIX-RTGS

50. Operational risk is one of the most important risks which should be properly identified, measured, monitored, and managed by the FMI and its CSPs as it can have material impact on the operations of FMI. Operational risks are multifaceted and their management challenging. The key goal of the CSP is to provide continuous, stable, and safe services to the FMI which can be ensured through proper processes and procedures for information security, contingency, and business continuity, change management, incident management and protection of sensitive information and data. To ensure continuity of the services, a CSP should have a disaster recovery plan in place with regular testing of backup facilities as well as contingency arrangements in place for crisis situations. Furthermore, a CSP should provide IT and cyber security measures and protocols which would protect the CSP and FMI from cyber incidents as well as well-designed change and incident management procedures, including for security breaches. Similarly, measures and procedures to protect confidential information should be established and agreed with an FMI.

51. Critical services of RIX-RTGS are outsourced to third parties. The application development and maintenance as well as actual operations of RIX-RTGS' IT-system are carried out by two private international companies, i.e., the system application is supplied by Italian SIA S.p.A. and the operation of the system is provided by CGI Sverige AB. Both services need to be re-procured after a certain time interval in line with the national regulation. RIX-INST IT-system is outsourced to the Eurosystem. RIX is a critical payment infrastructure in Sweden therefore it falls under the Act on Protective Security (Säkl-Riks). The protective security regulatory framework protects operations and information that is significant to Sweden's security or covered by international commitments regarding protective security. Therefore, the Riksbank imposes high demands on security and continuity of the payment services provided by the third parties to RIX-RTGS.

52. The policies for internal control and operational risk management are well established and implemented. The Executive Board is responsible for establishing the policy for internal control and monitoring the management of operational risk. The Riksbank's operational risk framework consists of a policy for internal control and an operational risk management rule which establish the level of operational risk which can be accepted. To identify all material operational risks, the Riksbank carries out a Risk Control Self-Assessment to identify and determine the seriousness of sources of operational risk associated with operating RIX-RTGS. The Riksbank has defined the operational reliability objectives for the RTGS system, namely, a technical availability of 99.85 percent, the resumption of operations within two hours following a disruptive event and completed settlement of payments by the end of the day of the disruption.

53. Three lines of defense ensure that operational procedures are implemented appropriately and that policies and plans for managing operational risk, including cyber security risk are followed. The first line is the Head of the Payment Department who is responsible for managing these risks, monitors the risks and sees that policies are implemented correctly; it is supported by IT-security and Security functions. The second line of defense is the Risk Division, which provides advice in implementing procedures. The third line of defense is the internal and external auditors on risk management at the Riksbank. Furthermore, the Riksbank applies Information Security Framework based on the ISO 27000 standard, which covers intrusion detection, logging, anti-virus protection, strict access controls and strong authentication. The IT department at the Riksbank are carrying out a detailed self-assessment of the RTGS control environment based on ISO 27000. In the context of RIX-INST and potentially T2 and T2S, the Riksbank will place primary responsibility to monitor the outsourced services on the operator.

Assessment—RIX-RTGS

54. RIX-RTGS is subject to the PFMI, and the oversight conducted by the Financial Structure Division of the Riksbank. Risk-based approach and moral suasion is applied in oversight activities of RIX-RTGS, and resources are distributed based on the risk assessment. With the launch of RIX-INST, the Riksbank's oversight function has established a cooperation agreement with the ECB on information exchange and oversight activities, which would be expanded once the Riksbank decides to join T2 and T2S. While there are clear benefits of using TIPS platform and ultimate oversight responsibility for RIX-INST lies with the Riksbank, there is a risk that oversight responsibilities and ability to oversee RIX-INST and potentially T2 and T2S as part of the Riksbank's engagement with the Eurosystem might be weakened and necessary assurances on the operational and cyber resilience will be harder to obtain due to limited resources on the Riksbank's side and complex governance arrangement on Eurosystem's side.

55. The authorities do not have a consolidated view of the dependencies and concentrations arising from outsourced critical services. The information that both the Riksbank and FI receive on outsourcing arrangements is not stored in consistent way to be used for dependencies and concentrations of third-party providers of critical services, sub-outsourcing arrangements and users of those outsourcing arrangements. A centralized register with information on critical services, companies providing critical services and existing outsourced third-party arrangements for the critical services could be useful, in particular to identify interdependencies in case of an incident. The information required by DORA about outsourcing arrangements could be used as an example for data to be collected.

Recommendation—RIX-RTGS

56. Active participation in Eurosystem's oversight arrangement will be important to provide assurance on the safety, security and stability of TARGET services the Riksbank is participating in. The ECB is the lead overseer for TIPS, and the Riksbank has established an oversight arrangement to benefit from the oversight activities undertaken by the ECB. The IMF in its Detailed assessment of

implementation of the ECB observance of the CPSS-IOSCO Responsibilities of authorities for FMIs²¹ in 2014 recommended that further clarity on the separation between its service provider and oversight roles is necessary to further reduce any potential conflict of interests and to ensure the clear division of responsibility and accountability, the separation between the oversight function and the operational function at all levels of the decision making. Furthermore, the external independent review launched by the ECB in the context of incidents in 2020 found that closing time of oversight infringements is long. Also, the 2nd line of defense, responsible for risk management and internal control, its roles and responsibilities are incomplete, also regarding the information exchange. Against this background, it would be critical that the Riksbank's oversight function is able to establish such processes and procedures with the ECB which can provide assurance on the safety, security and stability of RIX-INST and potentially other Eurosystem operated platforms in future to limit operational and reputation risk. This could be done, for example, through regular monitoring of operational data, participation in oversight assessments, secondment of experts to the ECB as far it is permitted by the oversight agreement. It would also support maintaining operational and risks management skills and expertise at the Riksbank once all payment systems are outsourced outside the Riksbank.

57. The authorities are encouraged to establish and maintain a central register of critical service providers and outsourced third party arrangements. The authorities could follow the approach used by the ECB in identifying CSPs as part of CSP policy as mentioned earlier. A comprehensive and searchable database of critical services and material outsourcing arrangements could facilitate identification of concentrations and dependencies, awareness and management of the associated risks, and could help directing the resources to most vulnerable areas.

Current Arrangements—Bankgirot and P27

58. Bankgirot and P27 rely substantially on outsourcing of its core services. Bankgirot and future P27 services are systemically important for Swedish society as they process the majority of retail payments in Sweden. Bankgirot has five critical service providers which provide number of services for both systems operated by Bankgirot and the network. Bankgirot was acquired by P27, and its services will gradually be replaced by P27 (when licensed). On the one hand, P27 is in the process of receiving authorization from FI as a clearing organization in line with Securities Market Act, on the other hand, it plans to start settling Swish payments in P27 platform as of 2023, which does not require an authorization. P27 is envisioning to outsource the maintenance and operations of its platform to a private international company.

Assessment—Bankgirot and P27

59. Supervisory responsibility for Bankgirot and P27 lies with FI, while oversight responsibility is with the Riksbank. The focus of FI has increased notably on the outsourcing activities of FMIs in the last few years. FI is applying in its supervisory activities risk-based approach to its supervision and following the PFMI, Annex F of the PFMI as well as EBA Guidelines on outsourcing arrangements, which are not legally binding. P27 is a new company and is currently in the process of

²¹ [The assessment of the ECB's observance of the Principles for Financial Market.](#)

building internal rules, processes and procedures which will have to ensure that the platform is safe, sound and efficient for processing of payments. FI currently is closely involved in this process, but it is critical to monitor how the rules, processes and procedures will be operationalized once the platform is live and running, and to ensure continuous comprehensive supervision of P27. It will be especially important when Denmark and Finland start using the platform for their payment settlement.

60. FI is able to apply the PFMI only as guideline providing relatively high-level requirements for outsourcing contracts, processes, and operations. Enforcing compliance with the PFMI's Annex F and other guidelines and standards appears not possible. The supervisory responsibility of FI in relation to clearing organizations in line with the Securities Market Act is very broad and does not permit setting specific requirements, for example, for operational resilience and risk management and forcing the compliance with the PFMI and other international standards. Without a sound legal framework, it may be difficult also for FMIs to be aware of all the risks and considerations when establishing outsourcing arrangement, and the scope of regulatory requirements and guidance applicable to outsourcing, information security, third party and operational risk.

Recommendation—Bankgirot and P27

61. Given the importance of P27, the authorities are recommended to enhance supervisory and oversight regime for P27. Once authorized, P27 will replace services currently provided by Bankgirot, which processes practically all retail payments in Sweden. In addition, P27 will provide cross-border payment services in Denmark, Finland and potentially Norway. Against this backdrop, the authorities should strengthen the oversight and supervision of P27 with skilled resources and cooperation arrangements with the authorities of other involved jurisdictions in comparison with how it is done currently for Bankgirot. The particular focus of oversight and supervision should be on risk management framework and relevant procedures, roles and responsibilities of three lines of defense, skills and expertise of staff and management as well as other issues crucial for proper operational risk management such as business continuity, contingency planning and testing, change management process and incident management procedures.

62. The Ministry of Finance is urged to strengthen the legal framework for FMIs such as Bankgirot/P27 to enforce compliance with the PFMI and other international standards. There are examples of regulatory initiatives applicable to systemically important payment systems, payment systems operator or FMIs more broadly which could be used as an example. For instance, Eurosystem's Regulation on oversight requirements for systemically important payment systems (the SIPS Regulation) sets out the requirements for large-value and retail payment systems of systematic importance. The Regulation covers all aspects of the organizational set-up and operation of a SIPS, including legal basis, governance, liquidity and credit risk, operational risk, access and more. Moreover, the SIPS Regulation allows competent authority to request corrective measures for noncompliance and may impose sanctions. DORA Regulation while not applicable to payment systems will contain requirements for the security of network and information systems and critical third parties. Bank of England considers issuing a guidance for FMIs on the supervisory approach to outsourcing and third-party risk management, and the BoE's expectations on how firms should comply with these regulatory requirements.

Current Arrangements—Swish and BankID

63. **Swish and BankID are widely used and are critical components of payments in Sweden.**

Swish has more than 8 million users and the service is widely used by individuals and companies. Getswish AB is the provider of the technical platform for Swish and it is owned and operated by largest Swedish banks. It is accessible via banks and each bank is responsible for offers, terms and eventual charges for the service provided to their customers. Swish is outside of direct regulation, supervision and oversight by FI as originally Swish was positioned as a service provided by banks. Similarly, BankID was created by major Swedish banks. It is an electronic ID which is widely used for many services in Sweden such as onboarding for financial services and identification, authentication and electronic signing of documents, also for government services. 90 percent of the population aged 20–40 have at least one BankID, with mobile BankID as the dominant carrier and there were 8.2 million users in 2021. In terms of use, BankID is mostly used for internet and mobile banking services (45 percent), followed by payment services (17.6 percent) and other private services (17.2 percent)²². Finansiell ID-Teknik BID AB is the provider of the technical solution for BankID and is under the supervision of Swedish Post and Telecom Authority, which is relatively limited. Both Getswish AB and Finansiell ID-Teknik BID AB are owned by banks and banks have outsourced the relevant services to both companies.

Assessment—Swish and BankID

64. **Swish and BankID may be considered a single point of failure.** Due to high dependency on both services, high concentration of users and very low substitutability, Swish and BankID might be considered a single point of failure²³. While other payment methods such as card payments would remain available, if one of the services: either Swish or/and BankID is not available, for example, due to operational disruption or a cyber-attack, it can lead to unavailability of instant payments or other services in case of BankID.

Recommendation—Swish and BankID

65. **Regulation, supervision and oversight of Getswish AB and Finansiell ID-Teknik BID AB should be strengthened.** Given the importance for the Swedish society of Swish application and BankID, the authorities should consider creating either a new regulatory framework for both entities or including them in a fitting existing regulatory framework with stringent requirements for operational resilience, contingency requirements, cyber security, data protection and other relevant key risks. Furthermore, it should be evaluated if the Swedish Post and Telecom Authority has sufficient skills, resource and experience to strengthen the supervisory responsibilities and activities of Finansiell ID-Teknik BID AB or this task should be assigned to other more experienced authority. In addition, the authorities should analyze the risks and implications from single point of failure perspective, i.e., whether such approach is acceptable, also in terms of competition, whether any alternatives are

²² Source: www.bankid.com

²³ There are other electronic ID solutions available approved by the Digital Administration Authority, but BankID is most widely used.

needed, for example in the form of government issued electronic ID²⁴ as well as proper business continuity and contingency arrangements in line with international standards should be established.

²⁴ Swedish government has assigned the Digital Administration Authority to investigate and submit a proposal for development and operation of state issued electronic ID.

Appendix I. Responses to Recommendations of 2016 FSAP

Recommendation	Response
Supervision and oversight of FMIs	
<p>1. Resourcing of the FMI supervision function at FI should be strengthened and resourcing of the FMI oversight function at Riksbank should be kept under review.</p>	<p>Since the last FSAP, the resources at the infrastructure department at FI has nearly doubled (from 8 to 15 FTEs). Further strengthening with 1-2 FTE:s is planned for 2022. In addition, as of 2021 FI has coordinated specialized competence in the areas of IT-risk and market model risk in special “competence centers”. These competence centers work very closely with the infrastructure department and provide the department with cutting-edge expertise in their respective fields of expertise. See further elaboration in Annex 2, Responsibility E, Q.B.2.1.</p> <p>The resources of the Riksbank are unchanged since the latest FSAP.</p>
<p>2. FI and Riksbank should clarify how they would coordinate during a crisis, possibly by establishing a joint crisis management plan.</p>	<p>In 2018, FI and the Riksbank formalized cooperation on Swedish financial market infrastructure issues with the aim to establish more effective forms of contact and collaboration during a crisis and as well as during business as usual. This was complemented with a specific crisis management plan between the authorities in 2020.</p>
<p>3. Riksbank should consider extending its offering of central bank services to FMIs, in particular CCPs, to include access to collateralized overnight liquidity.</p>	<p>The Riksbank has not extended its services to CCPs regarding collateralized overnight liquidity. However, the Riksbank has extended its overnight services regarding deposits. CCPs have the possibility to apply for an overnight deposit account at the Riksbank. Today it is only Nasdaq Clearing that has such an account.</p>

Risk management of NASDAQ Clearing (response provided by Nasdaq Clearing)	
<p>1. Nasdaq Clearing should make significant enhancements to its Recovery Plan. This should include ensuring that that its recovery tools are either supported in the Rules and Regulation or backed by formal agreements, as appropriate.</p>	<p>Nasdaq Clearing is reviewing and updating its Recovery Plan on an annual basis and has enhanced the Recovery Plan significantly since the IMF review. The review activities and enhancements include relevant updates on possible recovery scenarios and available recovery tools. The set of tools listed in the Recovery plan are designed to ensure continuation of its critical services in recovery situations and minimize the negative impact on all relevant stakeholders. Nasdaq Clearing has relevant support in its Rulebook for Default Loss recovery tools as well as agreements and procedures for tools designed to address Non-Default losses.</p> <p>Nasdaq Clearing updated its Recovery plan in December 2019 and in December 2020. The current plan adopted by the Board in January 2022 has been drawn up in accordance with the requirements in the new EU regulation on CCP Recovery and resolution and has been submitted for approval to Finansinspektionen. In line with the EU-regulation the plan shall be operational by 12 August 2022.</p>
<p>2. Nasdaq Clearing should continue to refine its liquidity risk model.</p>	<p>A refined liquidity risk model has been designed and implementation is pending approval from ESMA college. Please refer to the ESMA notification form: "Notification Form - Refined liquidity stress testing framework" dated 21 May 2018.</p> <p>The liquidity risk model - "Lar2" - which was notified in 2018 is subject to validation by ESMA and FI. Approvals are expected in Q2 2022.</p> <p><u>FI's comment:</u> The Lar2 model was on 5th April approved by CCP Supervisory Committee and are awaiting approval from the Board of Supervisors by written procedure.</p>

<p>3. The Board of Nasdaq Clearing should adopt objectives that explicitly support financial stability and other public interest considerations.</p>	<p>The policy framework has been implemented and includes objectives supporting financial stability and other public interest considerations. Examples are: "Contribute to the orderly functioning and sound reputation in the markets in which Nasdaq Clearing operates", "Strive to support stability of financial markets by designing risk management methodologies and frameworks that limit procyclicality" and "Assure that risks are conservatively managed and support the stability of the financial system"</p>
<p>4. Nasdaq Clearing should review whether its use of a 99.9 percent confidence level to define 'catastrophic' events delivers sufficiently extreme outcomes in all cases.</p>	<p>Our stress testing framework has been reviewed by ESMA and FI during 2021, incorporating several improvements such as additional stress applications for market developments following a default as well as increased concentration risk following a default, as well as narrative scenarios. Our new framework offers three types of scenarios; Historical scenarios, hypothetical scenarios (historical data is used to generate certain risk parameters that are combined using conservative correlation and de-correlation assumptions with a worst-of methodology that generates final scenarios more severe than the in-going historical data) and narrative scenarios (allowing us to account for risk not present in historical data). We believe that the 99.9% confidence level is suitable for the in-going individual risk factors in our hypothetical scenarios but note that this follows from the additional conservativeness built-in to the constructions of the final hypothetical scenarios, which generates events that exceed the 99.9% confidence level on a portfolio level.</p>
<p>5. Nasdaq Clearing should adopt a more conservative approach to the treatment of individual client segregated accounts in stress testing of its pre-funded default resources.</p>	<p>The assumption of successful porting of individual client segregated accounts was removed from the stress testing of pre-funded default resources. Please refer to the current Credit Stress Test Policy.</p>

<p>6. Nasdaq Clearing should consider whether there are options to replenish its prefunded default resources in a more timely manner.</p>	<p>The replenishment timeframe has been shortened from ten to two business days</p>
<p>7. Nasdaq Clearing should review whether all stakeholders that would be affected by an operational failover participate in business continuity tests, and should consider posing more stringent requirements regarding participation in these exercises.</p>	<p>Nasdaq Clearing is constantly working in order to increase its recovery capabilities and ensure continuation of its critical services. Current business continuity management framework includes enhanced requirements for failover test scenarios, member participation, reporting and issue tracking, if identified during the failover test. In regards to failover tests, it should be noted that Nasdaq Clearing invites all stakeholders that would be affected by an operational failover to participate in its failover tests. Nasdaq Clearing seeks to secure Member participation in failover tests by stressing out that member's participation would test and strengthen its own operational resilience and ensure its compliance with market's best practices, Nasdaq Clearing also stresses that failover test participation data can be disclosed to the relevant regulator, if requested. Besides, Nasdaq Clearing is informing about the upcoming failover test in various IT forums and distributes IT notices accordingly. Moreover, it has recently enhanced its communication channels with members to secure that relevant functions (Head of IT and Compliance function) retrieves directed information about the business continuity tests and are aware of its importance. Members are also instructed to confirm, if they will participate and specify a reason for not participating. Nasdaq Clearing continues evaluating, if it's feasible to add business continuity test participation as a Membership Requirement.</p> <p>Nasdaq Clearing has, instead of introducing mandatory requirements, worked to strengthen member participation rates by proactively engaging members, improving communication channels, highlighting importance of such</p>

	<p>exercises and reporting member engagement results in such tests. These efforts have significantly increased the participation from an average around 20 participants for 2015-2018 to more than 80 each year during the period 2019-2021.</p>
<p>8. Nasdaq Clearing should consider whether there are additional areas of its stress testing framework in which interdependencies should be included. Nasdaq Clearing should also consider including the default of a clearing participant that plays multiple roles in a default management fire drill.</p>	<p>NC's framework state that we shall be running one firedrill per asset class and year. When planning, we set the firedrill in a context and last year the focus was set on volumes to test the market liquidity, and with the secondary effect of testing the members risk capacity and tolerance/appetite. For 2022 we will run at least one firedrill where we test a defaulted member portfolio with multiple asset class exposure.</p>
<p>9. Nasdaq Clearing should consider introducing a more holistic approach to the management of pro-cyclicality, including by regularly assessing the effectiveness of its chosen tools.</p>	<p>The introduction of the new APC measure was temporarily delayed during Q4 2019, and after the events of March 2020 it was further delayed. Based on our experiences of March 2020 our existing APC measures were effective and able to deal with the volatility following the outbreak of the pandemic, but we decided to postpone the implementation of the automated measures in order to evaluate how those measures would have performed. Since then, considerable efforts have been invested by various international bodies as well as regulators into examining the effects of APC measures, such as the on-going work by ESMA to update the EMIR RTS with additional guidelines. We follow these developments closely, in order to make sure we incorporate the latest regulation and best practices developed over the past few years as we implement a more automated system.</p>
<p>10. Nasdaq Clearing should consider eliminating its credit exposure to its settlement banks, by extending the clearing participants' obligation until the funds are paid to the concentration bank.</p>	<p>NC has considered this but has decided not to initiate a change in the rulebook transferring the credit risk on funds temporary held in a Settlement Bank intraday (for a limited number of hours between cash sweeps) from NC to clearing participants.</p>

	There is currently no immediate plan to make such change.
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