Nasdaq Clearing AB

Disclosure framework

Based on activities of Nasdaq Clearing AB as of 1st March 2018
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Responding institution:
Nasdaq Clearing AB

Jurisdiction(s) in which the Financial Market Infrastructure (“FMI”) operates:
Sweden
Norway

Authority(ies) regulating, supervising or overseeing the FMI:

Nasdaq Clearing AB’s competent authority is Finansinspektionen under EMIR. Nasdaq Clearing AB is overseen by a college of European regulators, which includes Riksbanken, the central bank in Sweden, which also has a task to promote financial stability which includes the oversight of Nasdaq Clearing AB.

The date of this disclosure is March 2018.

This disclosure can also be found at:

For further information, please contact Chief Compliance Officer, Linn Thuvesson, linn.thuvesson@nasdaq.com.

I. Executive summary

This document (“Disclosure Framework”) is prepared in accordance with the Principles for Financial Market Infrastructure” (“PFMIs”) published in February 2012 and developed jointly by the Committee on Payment and Market Infrastructures (“CPMI”) and the Technical Committee of the International Organization of Securities Commissions (“IOSCO”). No disclosure is provided with respect to Principles 11 and 24 as they do not apply to CCPs. The objective of this Disclosure Framework is to provide relevant disclosure to market participants with respect to Nasdaq Clearing AB (hereinafter referred to as “Nasdaq Clearing”, the “clearing house” or the “CCP”) and its role as a central counterparty and its management of different types of risk. The scope of the Disclosure Framework is limited to the clearing activities performed by Nasdaq Clearing under its current clearing license: i.e. (i) Nasdaq Derivatives Markets which is the clearing of financial instruments (“Nasdaq Financial”), and (ii) Nasdaq Commodities which is the clearing of commodities instruments (“Nasdaq Commodities”).

Nasdaq Clearing is part of the Nasdaq Group – an international group that inter alia offers services for trading in securities and technical systems for trading and processing.

1 In June 2014, the Committee on Payment and Settlement Systems (CPSS), changed name to the Committee on Payments and Market Infrastructures (CPMI).
of transactions in securities in more than 50 countries. The European part of the
Nasdaq Group includes the stock exchanges in Stockholm, Copenhagen, Helsinki,
Reykjavik, Tallinn, Riga and Vilnius, as well as the central securities depositories in
Iceland and the Baltics.

For a market participant to access Nasdaq Clearing, there are a number of different
clearing membership categories to choose from. Regardless of the type of legal entity
and membership category, an approved clearing member must at all times meet the
financial requirements and be considered fit and proper for the relevant membership
category. This includes possessing a suitable organization, necessary risk management
organization and routines, secure technical systems, and also otherwise, in Nasdaq
Clearing’s opinion, being suitable to participate in clearing operations. Nasdaq Clearing
has more than 300 clearing members from 25 different jurisdictions of the following
sectors: Oil & Gas Producers, Chemicals, Basic Resources, Construction & Materials,
Industrial Goods & Services, Food & Beverage, Utilities, Banks, Insurance, Real Estate,
Financial Services, Municipalities and Government welfare

Nasdaq Clearing handles traditional business risks, as well as specific risks that are
unique to the derivative clearing services it provides. The most noteworthy of these
risks, with respect to the risk of loss, is counterparty default, the risk that one or several
market participants will default on their obligations to the clearing organization. Nasdaq
Clearing’s counterparty risks are professionally managed within the Risk Management
department, through a comprehensive counterparty risk management framework. This
consists of policies, procedures, standards, and human, informational and technological
resources. All together this provides accurate measurement, reasonable control, and
desired level of protection from all identifiable counterparty risks and all risks arising
within the operations and services of Nasdaq Clearing.

The European Market Infrastructure Regulation (Regulation (EU) No 648/2012 of the
counterparties and trade repositories) ("EMIR") came into force on August 16, 2012.
One of the objectives of EMIR is to reinforce the role of central counterparties in
mitigating certain aspects of market and counterparty risk with the aim to protect the
stability of the financial system.

Nasdaq Clearing has been authorized by and is under supervision by the Swedish
Financial Supervisory Authority, Finansinspektionen, (the “Swedish FSA”) to conduct
clearing operations under EMIR. The operations of Nasdaq Clearing are also governed
värdepappersmarknaden). All operations of Nasdaq Clearing are subject to the
supervision of the Swedish FSA and the central clearing party operations are also
overseen by the Swedish Central Bank ("Riksbanken").
II. Summary of major changes since the last update of the disclosure

This Disclosure Framework has been conducted on the basis of Nasdaq Clearing’s activities as a central counterparty as per 1 of March 2018.

The first version of Nasdaq Clearing’s Disclosure Framework was published in March 2014. This is the second bi-annual update and changes include enhancements to the Liquidity at Risk model and the Enterprise Risk Management framework, as well as general updates to reflect the clearing house as of March 2018.

III. General background on the FMI

General description of the FMI and the markets it serves

Nasdaq Clearing’s role in the overall payment, clearing and settlement landscape

One of the principal functions of a clearing house is to guarantee that all contracts traded will be honored. The derivatives trading carried out at Nasdaq Stockholm AB (the financial derivatives exchange) and Nasdaq Oslo ASA (the commodities derivatives exchange) is automatically subject to clearing at Nasdaq Clearing, whereby Nasdaq Clearing becomes the counterparty in all transactions, i.e. acts as a buyer to the seller and as a seller to the buyer. Nasdaq Clearing also clears seafood derivatives for the Norwegian exchange Fish Pool. Counterparty risk is the risk that one party in a transaction will not be able to fulfill its obligations in due time. In its capacity as a clearing house, counterparty risk is always present for Nasdaq Clearing. In order to ensure that the clearing house has the capacity to fulfill its obligations, it requires and receives collateral from the participating counterparties. In addition, it holds a member-sponsored default fund and retains its own capital resources.

As part of the clearing house operations, Nasdaq Clearing carries out expiration procedures, cash settlement and deliveries that arise from the contractual responsibilities established between the clearing house and its members. Daily cash settlement related to premiums, fees, mark-to-market (variation margin) and other cash settlement not related to delivery of securities are settled through one of Nasdaq Clearing’s approved settlement banks. Members of Nasdaq Clearing are required to hold a bank account with such approved settlement banks for purposes of managing daily cash settlement.

In addition to the settlement banks, Nasdaq Clearing has appointed concentration banks which act as an intermediary between Nasdaq Clearing’s approved settlement banks. All transfers between Nasdaq Clearing’s accounts with approved settlement banks are done through a concentration bank. For payments in SEK, DKK, EUR and GBP, the Swedish Riksbank, the Danish National Bank, the Finnish Central Bank, and The Bank of England respectively are engaged as concentration banks. For other currencies, a commercial bank is engaged as concentration bank.
As a central counterparty, Nasdaq Clearing guarantees all deliveries, independent of the original counterparty’s delivery or payment ability. However, Nasdaq Clearing does not undertake the responsibility to fulfill the transaction on the original settlement day if the original counterparty cannot fulfill its obligation. In that case, Nasdaq Clearing has the right to buy securities and charge a delay fee for failed delivery or take other steps to complete the delivery.

Delivery of shares is made through Nasdaq Clearing’s accounts in certain central securities depositories (“CSDs”). The principle Delivery-versus-Payment (“DvP”) applies for all financial deliveries of underlying securities due to expiration or exercise. Delivery of Swedish fixed income instruments takes place in Euroclear Sweden and delivery of Danish fixed income instruments takes place in VP Securities Denmark. Delivery of the emission allowances and the electricity certificates takes place in Nasdaq Clearing registry accounts with the relevant registry.

The credit enhancing effects of a centralized clearing house boost market efficiency, reduce risk and allow broader client participation. Each of these features contributes to increasing liquidity in the marketplace. As a central counterparty, Nasdaq Clearing also plays an important role in terms of stability in the financial system.

**General description of Nasdaq Clearing’s operations and services**

Nasdaq Clearing clears all trades executed on the derivatives markets operated by Nasdaq Financial and Nasdaq Commodities as well as OTC trades done outside the regulated markets and reported to the clearing house for clearing. Nasdaq Clearing offers clearing of equity and index derivatives; fixed income derivatives; repos in fixed income; and commodity derivatives on; power, natural gas, emission rights, electricity certificates, freight, fuel-oil, seafood and renewable energy.

As a clearing house, Nasdaq Clearing becomes the legal counterpart to the original buyer and seller in a trade, through so called novation. This means that the original counterparts no longer have risk towards each other. Instead, the clearing house takes on this counterparty risk.

The ability to manage the counterparty risk is dependent on pro-active risk management, a sound legal foundation and the financial strength of the clearing house. Furthermore, rigid financial and operational requirements are applied to its members. Nasdaq Clearing also relies on an advanced portfolio-based margining system to determine the amount of collateral appropriate for the counterparty risks it assumes. In the event of a loss resulting from a counterparty default, Nasdaq Clearing has a member sponsored default fund as well as its own funded risk-bearing capital, which serves as a buffer between any defaulting counterparty and all other counterparties.

By taking on the responsibility of the original counterparts to the trade, as described above, Nasdaq Clearing becomes the counterpart to both the buyer and seller of the original trade. The clearing house thus becomes exposed to the risk of the original counterparts not being able to fulfill their obligations to the clearing house. Nasdaq Clearing is protected from this risk by a number of means, including the collateral it
collects, the default fund and its own capital resources. Nasdaq Clearing also has pre-defined default management procedures, which are tested and proven via real defaults and default fire drills.

Please see below statistics showing the average aggregate intraday exposure that Nasdaq Clearing has towards its participants:

The intraday exposure of Nasdaq Clearing to its participants can be measured by the total average daily margin requirement, i.e. the total amount of collateral that it demands from its participants. For 2017, the average total daily margin requirement was **SEK 49.2 billion or EUR 5.1 billion**.

One of the cornerstones of a clearing house is its operations. The clearing house should have stable and reliable systems, adequate capacity and the ability to quickly handle major disruptions by the use of backup facilities and well-tested routines to mitigate the effects of operational risk. The operational reliability of Nasdaq Clearing is high: availability of the Genium INET clearing system during 2017 was 100%, and for the CMS WIZER custody system during 2017 was 100%. As well as resilience of systems, which is tested at least annually with failover from primary to secondary sites, the clearing house also has controls and checks in place to cover resilience of daily operations. These Business Continuity Plan ("BCP") arrangements cover all aspects of the business including relocation of staff from the primary offices as well as back-up processes in case a critical function is not functioning.

Since the end of 2009 Nasdaq Clearing is in full compliance with the Sarbanes-Oxley Act. Each process that significantly contributes to the financial result of Nasdaq Clearing is described in detail and the existing controls are documented. Subsequently, each process is analyzed from a risk perspective, utilizing the COSO framework, and any potential risk issues or control weaknesses are addressed and remedied.

**General organisation of the FMI**

Nasdaq Clearing has in place a Board of Directors (the “Board”), represented by executive members of the Nasdaq Group as well as external executive members and independent non-executives. The Board takes overall responsibility for the functioning of the CCP. The Board committees include the Audit and Remuneration Committee as well as the Member Risk Committee which consists of four members, three clients and two independent directors. Both the Default Committee and the Recovery Committee have delegated authority from the Board, and meetings would be called if necessary. Internal Audit, the Chief Risk Officer and the Chief Compliance Officer report directly to the Board. Other functions report to the CEO. Key policies, including the Clearing Risk Policy, Risk Mandate, Regulatory Capital Policy, Investment Policy, Compliance Policy and Conflicts of Interest Policy (amongst others) are adopted by the Board on an annual basis, or more frequently if significant changes are required.

**Legal and regulatory framework**

Nasdaq Clearing is authorized as a central counterparty and is licensed to conduct
clearing operations by the Swedish FSA pursuant to EMIR. The operations of Nasdaq Clearing are also governed by the Swedish Securities Market Act. Nasdaq Clearing submitted its application for an EMIR clearing license to the Swedish FSA on 16 April, 2013, and was approved by the same authority as a clearing house under EMIR on 18 March 2014. The Swedish FSA has also approved and designated Nasdaq Clearing as a system for settlement and notified this to the European Securities and Markets Authority (ESMA) pursuant to the Swedish Act (1999:1309) concerning Systems for the Settlement of Obligations on the Financial Market (Sw: lagen (1999:1309) om system för avveckling av förpliktelser på finansmarknaden) (the Swedish Act implementing the Settlement Finality Directive (98/26/EC)). Similarly, the Norwegian FSA has approved and registered Nasdaq Clearing Oslo Branch as a designated settlement system in accordance with Norwegian Payment System Act 17 December 1999 No 95.

All operations of Nasdaq Clearing are subject to the supervision of the Swedish FSA and the central clearing party operations are also overseen by the Swedish Central Bank, Riksbanken. In Sweden, trading and clearing are primarily governed by the following acts and regulations, as amended:

- EMIR
- Securities Market Act (2007:528)
- Rights of Priority Act (1970:979)
- Swedish Bankruptcy Act (1987:672)


Nasdaq Clearing has issued rules and regulations applicable to its clearing activities. The rules and regulations together with the membership agreements constitute the contractual framework governing the relationship between Nasdaq Clearing and its participants. The rules and regulations become binding for participants through the execution of the membership agreement. The contractual relationships between Nasdaq Clearing and the respective participants are governed by Swedish law (for Nasdaq Financial) and Norwegian law (for Nasdaq Commodities).

System design and operations

The Genium INET Clearing system supports the clearing of equities, fixed-income, commodities and over-the-counter instruments including functionality for margining, risk management, collateral management and settlement activities for all asset
classes. CMS WIZER, which is linked to Genium INET is used as a cash settlement, custody and delivery system.

Systems and controls are in place to manage these processes on a day to day basis, and business continuity and crisis management plans and procedures are in place for situations out of the normal routines.

*General lifecycle of the transaction process*

Agreement on the details, e.g. which contract, price and quantity, and matching of a trade, occurs either on one of the exchanges for which the clearing house offers clearing services or bilaterally outside an exchange. Transactions matched on exchange are automatically reported to the clearing house for clearing whilst transactions matched outside an exchange are reported to the clearing house for clearing by the parties to the trade. Trades reported to the clearing house are novated, meaning that the clearing house becomes the counterparty and takes on the counterparty risk towards each of the parties to the trade. The clearing house accepts trades for clearing in accordance with its own rules and the rules of the respective exchange. Certain trades concluded on a bilateral basis are subject to additional pre-novation collateral controls, requiring collateral to a certain level to be posted in advance.

For each trade and subsequent position the clearing house calculates a margin requirement based on the market risk of the trade/position and the estimated cost of winding down the position in the event of a default. Members of the clearing house are required to cover their margin requirement with eligible collateral on a daily basis or, if deemed necessary by the clearing house, on an intraday basis. For certain contracts the clearing house also calculates variation margin, corresponding to the change in market value of a position, which is shifted between parties with open positions.

Matching and novation occurs during the opening hours of the exchange and clearing house respectively. At the end of the business day, at approximately 19:30, the clearing house calculates margin requirements and other cash settlement obligations. Members have until 11:00 the following day to cover their margin and cash settlement obligations.
IV. Principle-by-principle summary narrative disclosure

<table>
<thead>
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<th>Principle 1: Legal Basis</th>
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<td>An FMI should have a well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.</td>
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Swedish and Norwegian law, together with EU legislation and the rules and regulations of Nasdaq Financial and Nasdaq Commodities (referred to as “Nasdaq FIN R&R” and “Nasdaq COM R&R” respectively and jointly as the “R&Rs”), provide a well-founded, clear, transparent and enforceable legal basis for Nasdaq Clearing’s central counterparty clearing.

The material aspects in relation to Nasdaq Clearing operation includes settlement finality, netting arrangements and collateral arrangements, including rights and interest in financial instruments, custody activity and default management procedures.

The legal basis provides a high degree of certainty for each material aspect of Nasdaq Clearing’s activities in all relevant jurisdictions and is primarily monitored by its legal department. One of the key objectives of the legal department is to identify and mitigate the legal risks associated with the clearing operations. However, the Board of Directors of Nasdaq Clearing, Risk Management and/or the head of the respective business unit, as well as independent law firms and the Swedish Securities Dealers Association also play an important role in the monitoring of the legal basis as they are involved in the process of reviewing and updating the rules, procedures and contracts. By having this process in place, Nasdaq Clearing ensures the consistency of its rules, procedures and contracts with relevant laws and regulations.

The cross-border nature of the clearing infrastructure gives rise to specific risks. The cross-border implications arise where the seller, the buyer and/or the assets are located in different jurisdictions. Further, agents through which the parties act and/or intermediaries through which the assets are held may be located in different jurisdictions. This cross-border component of clearing necessitates that potential conflict of law issues are addressed and analyzed.

By the implementation of the Settlement Finality Directive and Collateral Directive into Swedish and Norwegian legislation, many of the cross-border implications and risks have been reduced by providing legal certainty as to settlement, netting and collateral risk. However, Nasdaq Clearing takes into consideration that the Settlement Finality Directive and Collateral Directive may have been implemented differently in different member jurisdictions.

Nasdaq Clearing has obtained legal opinions in order to further enhance predictability and certainty as regards the enforceability of the material aspects of Nasdaq Clearing’s operations in the relevant jurisdictions, including that any actions taken by Nasdaq Clearing will not be voided, reversed or subject to stays. Nasdaq Clearing has also obtained external legal analysis in relation to its operations and the R&Rs. The starting point for the external analysis has been the enforceability of the material aspects of the
R&Rs (i.e. settlement finality; netting arrangements; and collateral arrangements, including rights and interest in financial instruments, custody activity and default management procedures).

The legal opinions obtained, as per the above description are to be updated on a regular basis to ensure consistency with the latest legal developments.

The R&Rs states that their respective interpretation and application are subject to Swedish law (Nasdaq Financial) and Norwegian law (Nasdaq Commodities). The different rules are publicly available on Nasdaq Clearing’s website and the website also includes related information, and links that can be used as explanatory notes. Nasdaq Clearing’s contact details are also available through the website so that participants can ask any questions directly to Nasdaq Clearing.

The R&Rs clearly specify Nasdaq Clearing’s and the participants’ rights and obligations, e.g. how and when registration, set-off, netting and settlement take place. The R&Rs also specify when a transfer order should be regarded as irrevocable and the measures available to Nasdaq Clearing in the event of any delay in the delivery of securities or cash. There are clear rules on the requirements to post collateral and the clearing house’s right to enforce such collateral.

The process of changing or amending the R&Rs also ensures that the rules, procedures and contracts are clear and understandable and consistent with relevant laws and regulations. Changes and amendments to the R&Rs are approved on a case by case basis, and depending on how significantly the change would impact Nasdaq Clearing or any of its participants, Nasdaq Clearing needs to have the change approved by the Board, the risk management and the heads of respective business unit. Moreover, Nasdaq Clearing’s legal department needs to approve the change or amendment and ensures that the change or amendment is consistent with relevant laws and regulations. When necessary, the legal department verifies that the change or amendment is consistent with relevant laws by requesting legal opinions from independent law firms.

When making changes to the Nasdaq FIN R&Rs, Nasdaq Clearing has an obligation, which is stipulated in Nasdaq FIN R&R, to consult with the Swedish Securities Dealers Association before any such change would enter into force. Any change or amendment is notified well in advance before entering into force. In the membership agreement and the applicable R&Rs, which are publicly available on Nasdaq Clearing’s website, Nasdaq Clearing states the applicable law and the legal basis for its activities to participants and to participants’ customers. Through signing the membership agreement and thereby consenting to the relevant R&Rs, the participants confirm that they have received and understood the relevant rules and legal documents.

No court in any of the relevant jurisdictions has held any of Nasdaq Clearing’s relevant activities or arrangements under its rules and procedures to be unenforceable.
Principle 2: Governance

An FMI should have governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.

Nasdaq Clearing’s overall objectives are to provide clearing services honestly, fairly and professionally and in a manner so that public confidence is maintained. Nasdaq Clearing also ensures that any safety requirements associated with the clearing business are met. The main principles guiding Nasdaq Clearing’s services are 1) free access for participants that meet the requirements stipulated in law and Nasdaq Clearing’s own requirements, and 2) neutrality such that the R&Rs are applied uniformly on the participants.

These objectives and principles are clearly identified in the management report in the annual report, in the R&Rs and also in the various policies, guidelines and instructions used to govern the activities of the CCP. Nasdaq Clearing has well-established, documented and sound objectives and governance arrangements in place. The Swedish Companies Act, EMIR, the Swedish Securities Market Act and the Articles of Association provide the legal prerequisite for the arrangements. The governance arrangements are complemented by a framework of governance documentation defining the responsibilities of the Board, the President and the different committees, as well as the division of work, accountability and reporting lines between these organs.

The prerequisites for safety, efficiency and financial stability are reflected in the overall governance arrangements of Nasdaq Clearing and in its framework of committees and policies, as well as in the organization and reporting lines of the clearing risk management.

In addition to the above, Nasdaq Clearing has identified the following other public interest considerations:

- providing an efficient CCP solution to lower the risks for parties on the relevant derivatives market; and
- providing support for financial stability and ensure an efficient, safe and sound derivatives market.

These are reflected in the objectives by, inter alia, efficient collateral and risk management system, proper governance structure and a robust capital structure.

The governance arrangements enabling identification and mitigation of possible conflicts of interests pertain to the separation of clearing risk management organization, including the different committees’ roles, from the business organization, compliance and Internal Audit organization working independently from the business line, and reporting directly to the relevant Board of Directors of Nasdaq Clearing, Nasdaq Nordic Ltd and the Nasdaq Group, Inc., respectively.

The legal basis for the responsibilities for the Board is derived from the Swedish
Companies Act (Sw. Aktiebolagslagen (2005:551)), the Articles of Association and EMIR. All board members must pass the Swedish FSA’s test in respect of being fit and proper, which focuses on three areas: (1) personal conduct; (2) competence; and (3) conflicts of interest.

The Board has legal responsibility for major decisions related to Nasdaq Clearing, as well as for the legal and regulatory compliance of Nasdaq Clearing. All major decisions of legal or regulatory concern to Nasdaq Clearing need to be taken by the Board and consequently decisions by another Nasdaq entity would not be self-executing with respect to Nasdaq Clearing. The role and the responsibilities of the Board, and its individual members, especially the Chairman, are further defined in the Rules of Procedure adopted by the Board. The Board has also adopted Instructions for the President, which define the division of responsibilities between the Board and the President.

The Board shall make all major decisions in respect of investments, organization and agreements, provided they are not defined as matters that should be resolved by the shareholders’ general meeting in the Articles of Association or the Swedish Companies Act. The Board shall also ensure that Nasdaq Clearing complies with its obligations under the Swedish FSA’s regulatory framework, including the obligations of Nasdaq Clearing as a licensed entity and the regulatory requirements under EMIR. In addition, the Board adopts policies and reviews reports on operational and clearing risk management, internal control, regulatory capital, compliance, remuneration, outsourcing, IT and information security, conflicts of interest, code of ethics, and internal audit. The Board also adopts the compliance plan and the internal audit plan. Furthermore, the Board shall make decisions on amendments to the R&Rs where the amendment is of principle significance or major importance.

Any conflict of interest issues with respect to the Board are dealt with according to a written policy. This policy ensures that the CCP assumes final responsibility and accountability for managing the CCP’s risks as well as ensuring that the Board members understand their responsibilities with regard to personal conflicts.

The members of the Board, including the independent board members, and the committees, the president and the management have all appropriate skills, experience and integrity to carry out their duties and tasks. The remuneration principles and the performance review procedure have been implemented to ensure the integrity of Nasdaq Clearing’s central counterparty clearing operations. Nasdaq seeks to strengthen the integrity of its managers by requiring them to go through regular training regarding the code of conduct and regulatory issues. Moreover, all managers are required to certify annually their compliance with information security, the code of ethics and related code of conduct policies. The CCP has an annual performance review process for the Board of the CCP which assesses both the performance and competence of the Board and its members.

The Board of the CCP retains responsibility for compliance and risk management of the CCP and has adopted the relevant policies which pertain to this. These include (but are not limited to) the Clearing Risk Policy, the Risk Mandate and the Compliance Policy.
The risk management framework within Nasdaq Clearing is substantially provided by way of the establishment of three risk committees:

(i) the Clearing Risk Committee;
(ii) the Default Committee; and
(iii) the Member Risk Committee;

and through the adoption of instructions from the Board for each of these committees. The instructions define the tasks and duties, composition, decision making, meeting procedure and reporting for each committee. The instructions are updated regularly and the framework is assessed in connection with the changes by the Board. Nasdaq Clearing also has in place a Remuneration Committee, an Audit Committee and a Recovery Committee.

A well-established enterprise risk management assessment procedure is conducted at least annually as a key element in the internal control framework. Internal Audit, having an independent position in relation to Nasdaq Clearing’s management, carries out regular audits in accordance with the annual plan as well as ad hoc audits, where appropriate. The external auditors, appointed by the general meeting, exercise the control from the owner’s point of view. Nasdaq Clearing uses a framework of policies and guidelines, including, but not limited to, clearing operations and clearing capital, risk management, information security, remuneration and outsourcing. The risk management framework is also built upon the separation of the Risk Management from the clearing business line in terms of organization and reporting. The Chief Risk Officer, Chief Compliance Officer and Internal Auditors report directly to the Board of the CCP.

Nasdaq Clearing has a well-established and multi-channel procedure in place in order to ensure that the legitimate interests of its direct and indirect participants and other relevant stakeholders will be taken into account in material decisions, for example pertaining to the strategy, design and R&Rs. Nasdaq Clearing discloses on its public website a considerable amount of information of its governance arrangements, including, but not limited to, the Board, clearing operations and activities, clearing policies, default procedures, stress testing and the audited financial statement.

### Principle 3: Framework for the comprehensive management of risks

An FMI should have a sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.

Nasdaq Clearing defines risk as the exposure to adverse consequences arising from internal or external changes, actions, events, decisions and/or circumstances that have the potential to reduce shareholder value. Those adverse consequences may include one or more of the following: financial gain/loss, regulatory censure, harm to Nasdaq Clearing’s reputation, disruption to the clearing house’s operations, and impact to members and clients.
The Risk Management department within Nasdaq Clearing is responsible for managing the day-to-day risks associated with the clearing services and identified by the Board of Directors. The risks are measured and managed via a comprehensive risk management framework made up of policies, risk appetite, risk mandates, procedures, and different resources, e.g. human, informational and technological resources. The framework ensures that all risks are recorded, assessed and controlled, and that the risks and exposures are reported to the Board of Directors.

The Board of Directors is ultimately responsible for the risk management framework. The Risk Management department consists of experienced resources with competence in both quantitative and qualitative risk management. The Risk Management department is an independent function within Nasdaq Clearing with the Chief Risk Officer reporting directly to the Board.

The risk framework is subject to annual reviews and re-approval by the Board. In addition to the annual updates, updates are made if changes in the market, regulations, operations or product portfolio.

Nasdaq Clearing has a Member Risk Committee which is chaired by an independent board member. The committee also consists of representatives of clearing members and clients and has the role to exercise oversight, in an advisory role, over Nasdaq Clearing’s risk management activities, controls, models, policies and procedures.

Nasdaq Clearing continuously monitors internal and external environments to identify and validate the clearing house risks. Risks are classified into the following four broad categories:

1. **Financial Risk**: Risk to the company’s financial position or ability to operate due to investment decisions and financial risk management practices in particular as it relates to capital, liquidity, market, and credit risks:
   - Capital and Liquidity Risk: Risk that the company will not be able to efficiently meet both expected and unexpected current and future cash flow and collateral needs without affecting either daily operations or the financial condition of the firm.
   - Credit risk: Risk that a client or counterparty will default on an obligation to the company; often mitigated by collateral and / or margin requirements.
   - Market risk: Risk of loss caused by the effect of market conditions on the company’s revenues, expenses, assets, and / or liabilities.

2. **Operational Risk**: Risks arising from the company’s people, processes, and systems and external causes.

3. **Legal and Regulatory Risk**: Exposure to civil and criminal consequences - including regulatory penalties, fines, forfeiture, and litigation - while conducting business operations.
4. **Strategic and Business Risk**: Risk to earnings and capital arising from changes in the business environment and from adverse business decisions, improper implementation of decisions or lack of responsiveness to changes in the business environment.

The risk universe classifications and risk definitions are periodically re-evaluated in order to determine whether the identified risk universe remains appropriate or requires changes. Identified risks are for instance classified into the different risk categories as part of the Risk Control Self Assessment (“RCSA”) process. The RCSA is one component of Nasdaq Clearing’s Enterprise Risk Management (“ERM”) framework. The ERM includes the methods and processes to identify, assess, monitor, and manage Nasdaq Clearing’s risks. It provides the clearing house the opportunity to understand, control, and articulate the types and level of risk it chooses to take in pursuit of its strategy and in meeting its objectives. The ERM commits Nasdaq Clearing to employing an ERM approach that manages risk within an approved risk appetite. (Please see principle 17 for further information).

Nasdaq Clearing provides its members and members’ clients with a range of tools to stay well informed about the clearing process and the risk they have towards the clearing house. There is comprehensive information on the website, including description of the clearing process, margin methodology guides, default fund policy and stress test methodology descriptions etc. Participants have access to more specific information via the clearing system, such as account positions, margin requirements, exposure reports, margin simulation etc. The clearing system is available through a variety of interfaces, which enables the participant to establish its exposure and risk towards the clearing house, simulate anticipated changes in the exposure, as well as administrate its transactions with the clearing house in an efficient way.

In addition to the public information and the system tools available to its members, the Clearing Operations and Clearing Risk Management departments are in regular contact with market participants regarding exposures, margining requirements, collateral arrangements and liquidity issues.

A breach of a participant’s obligations towards Nasdaq Clearing is ground for default. Certain operational failures are also grounds for default, but more often, penalties are issued for late deliveries, late margin confirmation and late settlement payments. Communication, penalties and the possibility of a defaulting member all contribute to incentives for members to handle and limit the risks they pose to the clearing house.

The mutualization of risk through the default fund also ensures that clearing participants are incentivized to manage the risk they, and other participants, are posing to Nasdaq Clearing.

Nasdaq Clearing identifies the material risks it bears from other types of entities, such as investment and counterparties for investments, settlement banks, nostro agents, custodians, liquidity providers and other services providers. In the implemented risk framework, Nasdaq Clearing has processes to address the different types of risk stemming from these entities, such as financial-, operational-, legal- and concentration
risk.

As with all other parties in the financial markets, Nasdaq Clearing poses risks on its members and on its key providers such as settlement banks. The risks Nasdaq Clearing poses to others are in essence the same type of risks it is exposed to itself as a clearing house, e.g. credit risk, operational risk and liquidity risk. Thus, in building a robust infrastructure to manage the risks it bears from others, Nasdaq Clearing also builds arrangements that protect interdependent entities. Service providers are regulated through service level agreements (SLAs) with the clearing house and quarterly meetings with the settlement banks are held to go through services and BCP’s.

To manage and minimize the risks Nasdaq Clearing bears from and poses to other entities, Nasdaq Clearing has different arrangements in place to handle incidents and risk arising from the clearing activity, e.g.;

- in relation to settlement risk, Nasdaq Clearing has liquidity arrangements in place and access to the underlying markets for physical settlement. Well defined processes and routines are in place to handle a default situation, including involvement of participants to secure an efficient close out process thereby mitigating the spill-over effect on other participants;
- credit risk stemming from the members is managed via the margin and collateral regime and also via robust and tested financial resources; and
- for system or business disturbances, Emergency Response Team, disaster recovery plans and business continuity plans are in place including back-up site outside the main office to secure continuous operations.

These arrangements are monitored and reviewed by the Clearing Risk Committee and the Local Risk Management Forum.

Nasdaq Clearing has implemented a Recovery Plan (“the RP”). The RP describes the Recovery process for the clearing house. This includes stress scenarios where the “business as usual” procedures are not sufficient to cover losses encountered by the clearing house. The Recovery procedure also includes early warnings and triggers, defining when the clearing house should consider entering into Recovery and the decision making process in these events. Further, the RP sets out proposed Recovery tools that can be used to restore Nasdaq Clearing in such a way that it can continue to perform its responsibilities as a clearing house. Orderly wind-down of the clearing house is also covered in the final section of the RP. A separate Resolution plan is to be maintained by a Resolution Authority (to be appointed). The RP is reviewed on an annual basis or more often if deemed necessary due to, inter alia, major changes in recommendations and/or regulations or the operations and services of Nasdaq Clearing.
Principle 4: Credit risk
An FMI should effectively measure, monitor, and manage its credit exposures to participants and those arising from its payment, clearing, and settlement processes. An FMI should maintain sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence. In addition, a CCP that is involved in activities with a more-complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions.

Nasdaq Clearing has established a robust framework to manage its credit exposures to its participants and the credit risks arising from its payment, clearing, and settlement processes. Nasdaq Clearing has efficient processes in place to identify, monitor and manage the credit risk resulting from its clearing activity, including robust stress test modeling and a range of tools to control credit risk.

Nasdaq Clearing covers its current and potential future exposures to each participant fully with a high degree of confidence using margin and other prefunded financial resources. Nasdaq Clearing has identified all relevant sources of credit risk. Nasdaq Clearing monitors and manages on a daily and intra-day basis changes in counterparty/credit risk exposures against a range of risk limits and well-established margining methodologies which are validated regularly by automated model and parameter back testing and sensitivity testing. It also monitors the credit risk relating to the participants of Nasdaq Clearing and that the applicable membership requirements are complied with continuously, including provision of collateral in accordance with the R&Rs.

Nasdaq Clearing also controls and mitigates the credit risk by utilizing central bank money, where possible, and only uses DvP instructions in the delivery processes of financial securities.

Adequate prefunded financial resources are in place to cover the simultaneous defaults of the largest credit exposures (Cover 2) in extreme but plausible market conditions. Nasdaq Clearing has implemented a multilayer protection system in its risk framework where different sources of prefunded resources ensure the fulfilment of the clearing house’s obligations. The multilayer system, the Waterfall, includes (in order of utilization):

a) Margin of defaulting member
b) Default fund contribution of defaulting member
c) Dedicated capital by Nasdaq Clearing ("the Junior Capital") for the applicable clearing service
d) Default fund contribution by other members for the applicable clearing service

e) Dedicated capital by Nasdaq Clearing ("the Senior Capital")

f) Default fund contribution by other members to the "Mutualized Default Fund"

In addition to these prefunded resources, members have a guarantee commitment towards Nasdaq Clearing, the so called Assessment Power, amounting to 100% of the prefunded resources in each default fund. The structure of the financial waterfall is specified and publicly available on the Nasdaq Clearing’s website and in the R&Rs.

Nasdaq Clearing documents the supporting rationale for, and has appropriate governance arrangements relating to, the amount of total financial resources it maintains. The Clearing Risk Committee (one of Nasdaq Clearing’s Board committees) is responsible for the governance and decisions concerning financial resources. All meeting minutes from the Clearing Risk Committee are made available to the Swedish FSA.

Nasdaq Clearing determines the amount and regularly tests the sufficiency of its total financial resources available in the event of a default or multiple defaults in extreme but plausible market conditions through rigorous stress testing.

In more detail, the stress tests are performed and monitored on a daily basis by Nasdaq Clearing and used to size the appropriate level of financial resources and default funds. As for maintaining the adequacy of capital resources, Nasdaq Clearing re-evaluates the size of its Clearing Capital and member-contributed default funds on a quarterly basis. Nasdaq Clearing also have the right to initiate intra-quarterly default fund updates, in order to mitigate the effect of increased stress levels between quarterly updates. When performing an intra-quarterly update, Nasdaq Clearing may call on extraordinary margin requirements from the relevant members in order to reduce stress levels during the period between having communicated the new default fund contributions and receiving the new default fund contributions. Nasdaq Clearing may also employ a Clearing Capital Buffer amounting to 20% of the available financial resources, in order to increase the robustness of the Waterfall at the quarterly updates. The Clearing Capital Buffer is funded by the members in the form of an increase to the default fund, and its minimum level at quarterly updates is 120% multiplied by the average Cover 2 stress levels over the last 10 business days, less the available financial resources prior to the application of the buffer.

The use of an EVT methodology and maximum available price history for individual instruments mitigates the risk of model failure that comes with solely statistical models, and secure coverage of historical extreme market conditions.

Finally, Nasdaq Clearing has established clear and explicit rules and procedures to address fully any uncovered losses it may face and to ensure it can operate in a safe and sound manner even during stress events.

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Nasdaq Clearing is further performing the following routines in its framework for managing credit risk:

- Stress parameters and assumptions used in stress testing models are comprehensively and thoroughly reviewed, analyzed, validated and tested on at minimum a monthly basis.
- When the products cleared or markets served display high volatility, become less liquid, or when the size or concentration of positions held by Nasdaq Clearing’s participants increases significantly, Nasdaq Clearing performs the analysis, validations and tests more frequently than on monthly basis.
- Reverse stress tests are performed on Nasdaq Clearing’s capital base, which allows it to determine which market conditions would be necessary for its Clearing Capital to be depleted.
- Full validation of models, including validation from a party that is independent from Nasdaq Clearing’s risk management function, is performed on at least an annual basis.

Nasdaq Clearing considers the effect of a wide range of relevant stress scenarios in terms of both defaulters’ positions and possible price changes in liquidation periods. Hypothetical scenarios include relevant peak historic price volatilities, shifts in other market factors such as price determinants and yield curves, multiple defaults over various time horizons, simultaneous pressures in funding and asset markets, and a spectrum of forward-looking stress scenarios in a variety of extreme but plausible market conditions. In more detail, Nasdaq Clearing divides its instruments in stress test markets (risk groups). The hypothetical scenarios considered shift these markets up and down, and every combination thereof, to generate an exhaustive series of scenarios. In that way, simultaneous stresses in the equity and funding markets, simultaneous equity stresses across geographies, as well as idiosyncratic market disturbances are all covered. By maximizing the market moves simultaneously across risk groups, as well as using scenarios with both maximum correlation and maximum anti-correlation, very extreme scenarios that have never been observed in history are generated, thereby adding to the robustness of this methodology. In addition, historical stress scenarios are implemented as replay of historical extreme market events. Nasdaq Clearing has a documented methodology for identifying relevant stress scenarios per market given current cleared portfolios.

Nasdaq Clearing has established explicit rules and procedures that address fully any credit losses it may face as a result of any individual or combined default among its participants with respect to any of their obligations to the FMI. In more detail, Nasdaq Clearing has established rules and procedures to allocate uncovered credit losses (see Nasdaq FIN R&R “Appendix 16 Default Fund Rules” and Nasdaq COM R&R “Clearing Appendix 9 Default Fund Rules”).

The rules and procedures addresses how potentially uncovered credit losses would be allocated, including the repayment of any funds Nasdaq Clearing may borrow from liquidity providers. In more detail, Nasdaq Clearing has bilaterally negotiated credit
facilities provided by liquidity providers, i.e. not liquidity providers formalized within its R&Rs. If Nasdaq Clearing has utilized any of its credit facilities from its liquidity providers, such facilities should be fully repaid as soon as collateral and any financial resources from the waterfall have been realized in order to cover for the losses incurred as a result of the defaulting member.

The rules and procedures indicate Nasdaq Clearing’s process to replenish any financial resources that Nasdaq Clearing may employ during a stress event, so that Nasdaq Clearing can continue to operate in a safe and sound manner. In more detail, the respective default fund rules fully address how utilized default fund contributions shall be replenished, both in regards of members that are obliged to contribute to the default fund and Nasdaq Clearing’s own capital (see Nasdaq FIN R&R “Appendix 16 Default Fund Rules” and Nasdaq COM R&R “Clearing Appendix 9 Default Fund Rules”). Replenished funds will not be placed in their original position in the Waterfall until a 90-day period has elapsed (the “Interim Period”). During the Interim Period, the replenished funds will be placed above the Assessment Power in the Waterfall and the same priority order within the replenished funds will be applied as with the Waterfall (i.e. replenished Nasdaq Junior Capital below replenished default fund contributions etc.). When the Interim Period has elapsed, the funds will be moved down to their original, junior level.

**Principle 5: Collateral**

An FMI that requires collateral to manage its or its participants’ credit exposure should accept collateral with low credit, liquidity, and market risks. An FMI should also set and enforce appropriately conservative haircuts and concentration limits.

Nasdaq Clearing only accepts highly liquid collateral with readily available market prices and with low market and credit risk. The haircuts on collateral are applied according to a conservative method to ensure that they can withstand volatility during times of market stress and to avoid pro-cyclical adjustments. Nasdaq Clearing avoids wrong way risk by not allowing securities issued by the counterparty itself, or securities issued by any subsidiary of the counterparty, or any other company in the same group. Eligible collateral, applicable haircuts and valuation principles can be found in Appendix 10 of Nasdaq COM R&R and in Appendix 14 of Nasdaq FIN R&R.

A broad range of acceptable collateral provides diversification and allows for ensuring the best collateralization for each type of participant, client, and position and market conditions at each time. The following are accepted types of collateral in the Eligible Collateral List of Nasdaq Clearing:

1. Cash funds in pre-set currencies (only currencies in which Nasdaq Clearing is clearing products or in currencies which are a natural part of Nasdaq Clearing’s day to day operation)
2. Covered bonds issued by Swedish and Danish mortgage institutions (with...
3. Bonds issued by the Swedish Municipalities Agency, “Kommuninvest” (with restrictions)
4. Government bonds and bills (for selected countries and with credit rating restrictions)
5. World Bank Green Bonds (for selected currencies and with credit rating restrictions)
6. Shares (a selection admitted for trading on Nasdaq Stockholm exchange, and excluding shares in credit institutions or investment firms).
7. ETF's (Exchange Traded Funds) (for selected issuers listed on The Nasdaq Nordic Exchange. Approved on an ISIN by ISIN basis)
8. Net sellers of EUAs (European Union Allowances) and El-Certs may pre-deliver allowances to Nasdaq Clearing registered accounts to use it as collateral to cover net sold positions.

According to Appendix 14 of Nasdaq FIN R&R and Appendix 10 of Nasdaq COM R&R; all securities accepted as collateral shall have daily prices available. If daily prices are missing, the security is valued at zero. All collateral is valued in Nasdaq Clearing’s proprietary Collateral Management Service (“CMS”). The collateral valuation is based on the previous business day’s prices. The evaluation of collateral in respect to the corresponding margin requirement is done in real time.

The risk of valuing collateral based on previous business day’s prices is mitigated by setting conservative haircuts on the collateral. If Clearing Risk Management considers it necessary, collateral prices can be updated intraday and also manually entered into the systems if required. Nasdaq Clearing can monitor posted collateral and any surpluses/deficits in real time and can easily and quickly make changes to the set-up in terms of limits and haircuts.

Haircuts are applied according to Nasdaq Clearing’s Collateral List (Appendix 14 to Nasdaq FIN R&R and Appendix 10 of Nasdaq COM R&R). The haircuts are designed to ensure that the net liquidation value of the assets is equal to or exceeds the margin required between the last valuation and liquidation. The individual haircut parameter for each security is based on an analysis of the volatility of historical prices for a specified look back period. The haircuts are validated regularly under assumptions of severe (extreme but plausible) market stress. Nasdaq Clearing uses a sufficiently long look-back period to ensure that periods of stress are included in the data sample, at a high confidence level. This approach reduces the need for pro-cyclical adjustments of the haircuts. Nasdaq Clearing runs daily price checks of collateral securities to verify that market movements does not exceed certain predefined thresholds (in line with the applicable haircuts).

Nasdaq Clearing handles concentration risk by applying limits based on the observed risk of the posted collateral. The concentration limits used by Nasdaq Clearing are based on an analysis of the accepted collateral. The asset types perceived to have the highest total risk in terms of credit-liquidity- and market risk get a lower concentration limit compared to asset types with a lower total risk. Concentration limits are reviewed at
least annually. Concentration limits and haircuts are approved by the Clearing Risk Committee and are included in the collateral list (Appendix 14 of Nasdaq FIN R&R and Appendix 10 of Nasdaq COM R&R). On a clearing house level, Nasdaq Clearing only allows a certain percentage of its total collateral to be guaranteed by a single credit institution. The percentage allowed is in accordance with EMIR.

In addition, the clearing house has a concentration limit of how much of each individual member’s total collateral that may be issued by one and the same issuer. The limit applies to collateral issued by credit institutions and to member’s with a total margin requirement higher than SEK 250 million. The limit is 33% of the total posted collateral by that member.

Nasdaq Clearing has various means and processes in place to mitigate the risks associated with the use of cross border collateral, particularly the risk of conflicts of law issues arising in relation to the realization of cross-border collateral. Nasdaq Clearing’s legal opinion program has been established to ensure that the R&Rs are enforceable and sound, to identify and analyze potential conflicts of law issues and to mitigate legal risk resulting from such issues.

The collateral is also held directly in Nasdaq Clearing’s accounts with applicable CSD (or if not possible in a custodian institution which fulfills certain predefined requirements). Collateral processing takes place in streamlined processes through standardized and automated interfaces which ensure operational promptness and access in a timely manner.

The overall CMS at Nasdaq Clearing is designed to allow for operational flexibility and effectiveness, including cash optimization and direct debit/credit functionality. The dedicated Clearing Operations team is sufficiently staffed, and has robust BCP plans in place to ensure smooth operations even during times of market stress. Information regarding the collateral management service can be found on Nasdaq Clearing’s website.

**Principle 6: Margin**

*A CCP should cover its credit exposures to its participants for all products through an effective margin system that is risk-based and regularly reviewed.*

Nasdaq Clearing has a margin system that establishes margin levels commensurate with the risks and particular attributes of each product, portfolio, and market it serves. Currently, Nasdaq Clearing runs three different margin models, SPAN® for commodities, OMS2 for equities and CFM for interest rates. Each margin model is tailored for its respective market. All three margin models are parametric, i.e. margins are established through structured simulation of significant risk factors. SPAN is implemented for commodities due to its robustness, its wide acceptance in the market and its capacity to cater for the price dependencies manifested in the commodities markets. OMS2 is chosen for equities primarily due to its capacity to handle options and its robustness. CFM is implemented for interest rates primarily due to its capacity to
handle yield curves, and as such capture the natural price dependency between different interest rate products.

Nasdaq Clearing covers its credit exposures to its participants for all products it clears through an effective margin system that is risk-based and with individual risk models per asset class. The margin system calculates accurate and timely risk-based margin requirements for all cleared products on an hourly basis throughout the day as well as end of day.

All open positions in various markets are margined with regards to the specific nature of the risks involved. Nasdaq Clearing calculates margin requirements based on price volatility, price dependence between products in a market as well as price dependence between markets and market liquidity for determination of close-out periods. Individual product characteristics (settlement/delivery cycle, physical delivery/financial settlement) are reflected in the margining parameters and margin models structure. In addition, when evaluating credit exposures, Nasdaq Clearing also takes into account the size and concentration of positions a participant holds. For portfolios of significant size and concentration Nasdaq Clearing applies concentration risk charges.

Nasdaq Clearing has reliable sources of timely price data for its margin system. Nasdaq Clearing primarily uses prices from the markets it clears products from as the main sources for price data in its margining system. For the vast majority of the products cleared by Nasdaq Clearing prices are electronically fed into the margin system. The design and implementation of the system secure that the prices used are appropriate for margin calculations.

Nasdaq Clearing uses either industry standard price models, and/or price models that are agreed with the market participants. Such models are included in the scope of the annual independent model validations.

Nasdaq Clearing has the capacity to manually enter prices into the system used for margin calculations. In such cases prices are either calculated by models or retrieved from a third-party (Reuters, Bloomberg or Market makers). A manual check following the four-eye principle is conducted in those occasions by Clearing Operations.

Nasdaq Clearing has procedures and sound valuation models for addressing circumstances in which pricing data are not readily available or reliable.

Nasdaq Clearing has initial margin models and parameters that are risk-based and generate margin requirements sufficient to cover its potential future exposure to participants in the interval between the last margin collection and the close out of positions following a participant default.

Initial margin calculated by Nasdaq Clearing meets an established single-tailed confidence level of at least 99 percent with respect to the estimated distribution of future exposure. Currently 99.2% confidence level or higher is applied by Nasdaq Clearing. Where correlation netting between products are allowed it is ensured that that the confidence level requirement is met for all portfolios.

The models employed uses highly conservatives estimates of the time horizons for the
effective hedging or close out of the particular types of products cleared by Nasdaq Clearing (including in stressed market conditions). Nasdaq Clearing considers liquidity, presence of close-out arrangements, hedging possibilities in underlying contracts or equivalent products in other markets, price reliability and required confidence level as the main factors for determination of the size of the liquidation period. Nasdaq Clearing’s minimum liquidation period is 2 days for listed derivatives and 5 days for OTC derivatives. The liquidation period is reviewed at least on an annual basis and more often if deemed necessary. Concentration risk which could have an impact on the liquidation period is handled by requiring additional margin for positions in a market segment which poses a concentration risk to the clearing house.

Re-estimation of risk parameters is made at minimum monthly or more frequently in case market conditions are stressed or changed crucially in the opinion of Risk Management.

Nasdaq Clearing has appropriate methods for measuring credit exposure that accounts for relevant product risk factors and portfolio effects across products. Nasdaq Clearing estimates parameters to the margin models based on historical prices, market information and the established confidence level. To estimate the parameters, distribution-free or robust estimation methods are applied to address the fact that price changes are not Gaussian distributed.

Nasdaq Clearing limits the need for destabilizing, pro-cyclical changes. Nasdaq Clearing uses margin parameter floors to mitigate tail risks and make the margin system more robust with respect to the systemic risks, originated from unexpected events influencing the markets Nasdaq Clearing are involved in. This helps to avoid destabilizing changes in margin requirements in times of market stress. The margin parameter floors are based on estimations with a ten year sample period or a buffer of 25% on the normal parameter estimation that is based on a one or two year lookback period.

Nasdaq Clearing marks participant positions to market and collect variation margin at least daily to limit the build-up of current exposures.

Nasdaq Clearing has the authority and operational capacity to make intraday margin calls and payments, both scheduled and unscheduled, to participants. Nasdaq Clearing has decided on an intra-day margin policy, and immediately calls for more margin in case pre-defined collateral deficit limits are breached. For some markets, pre-novation collateral checks are utilized, i.e. trades reported for clearing are only novated in case there are sufficient collateral in place.

In calculating margin requirements, Nasdaq Clearing allows offsets or reductions in required margin across products that it clears, if the risk of one product is significantly and reliably correlated with the risk of the other product. Nasdaq Clearing uses a highly conservative approach when estimating offset levels taking into account the established confidence level for its margin system. Margin offset is only provided in case correlation between products historically has been high and stable. By choosing a sufficiently long sample period for historical data when estimating correlation, Nasdaq Clearing accounts for variability of price dependence with overall market conditions.
Nasdaq Clearing has implemented a comprehensive model validation framework for its margin models. The framework is governed by a number of policies approved by the Board of Directors and/or the Clearing Risk Committee and entail governance in relation to back-testing, sensitivity testing and validation.

Nasdaq Clearing performs daily testing of its margin models by conducting several back-tests. These are done both on an enterprise level, where actual changes in portfolios’ market valuation are tested against required margin under applicable time horizon, and on individual risk parameters (which are monitored against actual movement to determine that the parameter holds up to the expected levels).

On a monthly basis, a thorough analysis of all back-testing results on various levels of portfolios and sub-portfolios are conducted and reviewed. Moreover, model tests and sensitivity analyses are conducted on the margin models where main risk factors are stressed in order to detect any weaknesses in the models. In conducting sensitivity analysis of the models’ coverage, Nasdaq Clearing takes into account a wide range of parameters and assumptions that reflect possible market conditions, including the most-volatile periods that have been experienced by the markets it serves and extreme changes in the correlations between prices. The model behavior in hypothetical stressed market scenarios worse than experienced by Nasdaq Clearing, is also examined. The Clearing Risk Committee reviews the results of the margin model validation tests, including ex-post margin coverage back-testing of all portfolios and all cleared products, ex-ante back-testing on margin model level and other model specific validation tests.

Results on the back-testing are presented to the Member Risk Committee and the Board in the ongoing risk reporting. Moreover, back-testing results are also made publically available on the website of Nasdaq Clearing.

On an annual basis Nasdaq Clearing performs a thorough review and validation of its margin system. The review is initiated and governed by the Clearing Risk Committee in accordance with the Model Validation Policy. The review of the margin methodology ensures that the applicable valuation and margin models fit their purpose and market conditions. The review is based on the results of the back-testing and sensitivity analysis performed by Nasdaq Clearing. The review further aims to identify if new models have been developed within the industry, and, if so, consider if these could be more appropriate for Nasdaq Clearing than the existing models. An independent validation of the theoretical and empirical properties of the margin model is included in the annual review.

The models used are well documented and the documentation is available on the website\(^3\).

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### Principle 7: Liquidity risk

An FMI should effectively measure, monitor, and manage its liquidity risk. An FMI should maintain sufficient liquid resources in all relevant currencies to effect same-day and, where appropriate, intraday and multiday settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.

Nasdaq Clearing has developed a robust framework to identify measure and manage its liquidity risks. The framework is primarily focused on the potential stressed liquidity needs in conjunction with its clearing operations and its role as clearinghouse.

The various sources of liquidity risk that Nasdaq Clearing has identified are 1) default of a member (including its affiliates and all its customer positions); 2) operational problems in a settlement bank; 3) liquidity need due to delivery failures 4) failure of participants also serving as liquidity providers; 5) possibility to realize collateral and the number of lead-days for such realization; and 6) cash call back outflows. These liquidity risks can occur in the currencies in which Nasdaq Clearing’s cleared contracts are denominated. The framework identifies the total need for liquidity across all currencies as well as the liquidity need in each applicable currency. Generally, the liquidity need in SEK is significantly larger than other currencies since the majority of Nasdaq Clearing’s contracts are denominated in SEK and daily cash settled products with higher volumes are primarily SEK-contracts.

Nasdaq Clearing’s liquidity model ("LaR") is a robust framework for liquidity risk management which measures and monitors, on a daily basis, the Total Requirement (TR) in all relevant currencies (both total cross-currency need and in each applicable currency). The liquidity requirements are calculated based on rigorous stress testing using a wide range of relevant scenarios, including the default of the two participants and their affiliates that would generate the largest aggregate payment obligation to Nasdaq Clearing in extreme but plausible market conditions.

Nasdaq Clearing maintains sufficient Liquid Resources ("LR") to meet TR with a significant excess. Nasdaq Clearing measures the TR as well as the size of LR on a daily basis in each currency. Finally, Nasdaq Clearing has established rules and procedures and suitable governance arrangements to enable it to affect same-day or intraday and multiday settlement of payment obligations on time following any default of its participant(s).

In SEK the LR is composed of: (i) committed credit facilities among four liquidity providers; (ii) cash and cash equivalent and (iii) highly liquid securities issued by or explicitly guaranteed by the Swedish government, the Central Bank of Sweden or supranational entities. The securities included in LR are all eligible as collateral in the Central Bank of Sweden and the most liquid and credit worthy instruments in the Swedish financial market. To cover operational flows that can occur late in the day and ensure diversification of liquid resources, cash and available credit facilities should
always cover the largest of the maximum delivery failure during the last twelve months or 10% of TR. LR in DKK, NOK and GBP are composed of (i) committed multi-currency credit facilities; which enable quick utilization with minimal time delay and direct liquidity supply in the applicable currency and (ii) cash and cash equivalent and (iii) highly liquid securities issued or explicitly guaranteed by government, central bank or supranational entities. LR for EUR and USD is composed of (i) committed credit facilities; (ii) cash and cash equivalent and (iii) highly liquid securities issued or explicitly guaranteed by government, central bank or supranational entities. All securities included in LR are available to sell or repo, under prearranged Global Master Repurchase Agreement (GMRA), with same day value.

Moreover, three of the credit facility providers are Nordic banks with direct access to the Central Bank of Sweden and access to central banks in almost all of the other applicable currencies. Their status as approved counterparties in the Swedish Central Bank’s monetary policy operation forms the basis for the assessment that they understand and can manage their liquidity risk. A fourth credit facility provider is an international bank which also provides a multicurrency credit facility. In the currencies the bank does not have direct central bank access, several options to access liquidity in applicable currencies are available. The Nasdaq Clearing Liquidity Policy stipulates a lowest credit rating threshold for Nasdaq Clearing’s liquidity providers. Since the credit facilities providers also are settlement banks of Nasdaq Clearing, the clearing house performs ongoing monitoring of these entities as service providers. Nasdaq Clearing ensures that all credit facilities are utilized at least once a year.

The process to establish the TR includes a daily report which is run by Nasdaq Clearing. The report identifies the estimated liquidity requirement based on current positions and various default assumptions in a range of stressed market scenarios. This process includes a check on whether a new historic “High Point” has occurred.

The stress model is based upon a variety of scenarios where the main markets (Fixed Income, Equity, Commodity and Seafood, per currency) are fully uncorrelated and can move either in same or opposite market direction. A combination of peak historic price volatilities shifts in other market factors such as price determinants and yield curves are captured. Nasdaq Clearing utilizes a 12 month look-back period to determine the “High Point”.

Other types of liquidity risks, deliveries, and settlement amounts and cash outflows in terms of cash callbacks are assessed based on maximum historical values.

The liquidity model is based on rigorous stress testing and the results are presented and used in a predetermined process according to the Nasdaq Clearing Liquidity Policy. Nasdaq Clearing should ensure and verify that the LR exceed TR on a daily basis. To ensure sufficient LR at all times and to reduce the reliance on credit facilities, LR should always cover TR with a buffer. The buffer is set to the largest of 10% of TR or 25% of available credit facilities. If the buffer in LR is utilized (due to either new High Point or decrease in LR) a Trigger 1 has occurred and the matter shall be escalated to the Chief Risk Officer and the Chief Risk Officer shall in turn convene a Clearing Risk Committee meeting. The Clearing Risk Committee should perform a risk assessment and decide
whether any action should be taken in order to restore the buffer. Actions are not required if the high point is not structural but due to a temporary, one-off event. A temporary event cannot last for more than 3 business days and the TR in such case shall not be considered a new high point. The Board of Directors shall be informed about the Trigger 1, the risk assessment and any decision on actions. If TR exceeds LR a Trigger 2 has occurred. In such event the Chief Risk Officer should immediately inform Nasdaq Clearing’s Board of Directors and provide a remediation plan. The Chief Compliance Officer should communicate the Trigger 2 and the remediation plan to the Swedish FSA to remedy the Trigger 2 should be implemented immediately (or as soon as possible). The Chief Risk Officer should inform the Board of Directors and the Chief Compliance Officer should inform the Swedish FSA when the measures have been implemented.

Furthermore, cash and available credit facilities should always cover the largest of the maximum delivery failure during the last twelve months or 10% of TR in order to diversify liquid resources and cover operational flows that can occur later in the day. If cash and credit facilities are insufficient to cover such need, a Trigger 1 has occurred and the Trigger 1 escalation process is applicable.

Nasdaq Clearing has documented its Liquidity method in the Nasdaq Clearing AB Liquidity Policy and Liquidity at Risk Stress Test Policy. The Liquidity Policy is subject for approval by the Nasdaq Clearing Board of Directors and is reviewed annually. Nasdaq Clearing Risk Committee approves Liquidity at Risk Stress Test Policy and will review it annually. If deemed necessary, both policies can be reviewed more frequently due to change in risk exposure for Nasdaq Clearing.

Nasdaq Clearing utilizes central bank services in SEK and DKK, where intra-day liquidity is also obtained. The services consist of accounts and payments. For EUR and GBP the Bank of Finland respectively the Bank of England provide central bank services, however, intra-day liquidity is not obtained.

Most of the liquidity resources are replenished automatically. For instance, collateral held but not yet realized would, when realized, replenish the utilized liquidity resources.

If liquidity is utilized and it corresponds to Waterfall losses such funds will not be automatically replenished. In such circumstances, the default fund rules stipulate that members must replenish the default fund within 10 business days. Moreover, Nasdaq Clearing holds substantial buffer in non-regulatory tangible equity according to its Regulatory Capital Policy, which means that financial resources backing this buffer in equity could, within a short time period, replenish any used LR. The replenishment rules are explicitly specified in the default fund rules.

**Principle 8: Settlement finality**

An FMI should provide clear and certain final settlement, at a minimum by the end of the value date. Where necessary or preferable, an FMI should provide final settlement intraday or in real time.
By registration of a contract a participant is obliged to perform liabilities consistent with the contract specifications as specified in the R&Rs and the participant shall accordingly complete settlement on the date specified by Nasdaq Clearing. Other than as set forth in the R&Rs regarding protest, the obligations in the contracts are binding and the settlement instructions shall prevail. Any late payments or deliveries are considered a breach of R&Rs.

**Nasdaq Financial**

A transfer order under the Nasdaq FIN R&R has the same definition as under Article 2 (i) of the Settlement Finality Directive and shall therefore be deemed to include every express or automated instruction that results in the registration of a contract and every express or automated instruction intended for settlement of a contract. Section 2.9.30 of the Nasdaq FIN R&R stipulates that a transfer order with respect to cash settlement or delivery shall be deemed to have been placed in the clearing system upon receipt of a request by Nasdaq Financial or when the clearing system, without such a request, generates a final settlement report in accordance with section 2.11.8 of the Nasdaq FIN R&R. Other than as set out in section 2.10 of the Nasdaq FIN R&R regarding protests, transfer orders may not be revoked after receipt of such settlement basis by Nasdaq Financial. As per section 2.10 of the Nasdaq FIN R&R, clearing members shall continuously assist in reconciliation of transactions registered during the day and shall submit to the clearing house any protests attributable to registrations or failures to register or in the event that discrepancies exist compared with the members’ own records. Members shall also, within the times stated in the Nasdaq FIN R&R, submit protests against transactions that are erroneously executed or have failed to be executed, exercised or cash settled. Protests submitted at times later than stated in section 2.10 of the Nasdaq FIN R&R shall be invalid.

Settlement banks and Central Banks engaged by Nasdaq Financial are domiciled in countries which have implemented the Settlement Finality Directive. i.e. a transfer order entered by a participant of a settlement system to place an amount of money by means of book entry in the account of a credit institution (or Central Bank) are covered by the Settlement Finality Directive (c.f. Settlement Finality Directive Article 2 (i)). Hence transfer orders regarding cash settlement via a credit institution (as well as via a Central Bank) may not be revoked in the event of a participant’s default (including insolvency) and the insolvency of a participant may not have retroactive effect. The effect of this is that transfer of funds by participants in accordance with transfer orders under the Nasdaq FIN R&R (see section 2.9.30 of the Nasdaq FIN R&R) are final once the transfer of funds have been completed by way of book entries to Nasdaq Clearing’s accounts with the applicable credit institutions/Central Banks.

**Nasdaq Commodities**

Section 4.1.1 of the Nasdaq COM R&R stipulates that a clearing transaction including all related variable fees to the clearing house, shall be deemed entered into the Security Settlement System and be deemed registered for the purposes of the R&R at the time when it has been created through a registration of a clearing transaction. Other than as set forth in the section 4.7 of the Nasdaq COM R&R, Clearing transactions may not be revoked. According to section 7.1 of the Nasdaq COM R&R, each account holder
warrents to the clearing house on each date on which a transaction is registered for clearing that its obligations under each clearing transaction and the clearing rules constitute legal, valid and binding obligations.

Cash settlement shall be performed in accordance with section 6.2 of the Nasdaq COM R&R and binding set-off (payment netting) has taken place once the clearing house has calculated the relevant cash settlement amount and made the other relevant calculations in connection with cash settlement. Cash settlement in accordance with section 6.2 of the Nasdaq COM R&R is final and binding to all parties involved (section 6.1.4 of the Nasdaq COM R&R) except as explicitly set out in the section 6.6 of the Nasdaq COM R&R regarding settlement errors. Settlement banks engaged by Nasdaq Clearing are domiciled in countries which have implemented the Settlement Finality Directive.

Nasdaq Commodities specifies the applicable volume of allowances and electricity certificates due for delivery and a counterparty that has a delivery obligation shall act in accordance with the settlement schedules 3.3.1 and 4.3.1 of Appendix 2 of the Nasdaq COM R&R. A delivery shall be deemed completed when the delivering counterparty has received a confirmation that the relevant deliverables have been deposited to the applicable delivery point of the receiving counterparty without any possibility of revocation by the delivering counterparty (section 6.3.3 of the Nasdaq COM R&R). If the account holder believes that settlement has been carried out incorrectly and submitted the protest in accordance with the timing stipulated by section 6.6 of the Nasdaq COM R&R, the protest shall be deemed valid. The clearing house shall then as soon as possible inform the concerned account holders and perform the corrected settlement. Any correction in accordance with the Nasdaq COM R&R will be binding on all counterparties concerned.

The cash settlement report is provided to the members by the end of the clearing day (21:00 CET) and expected to be paid during the settlement day’s cutoff times, i.e. same day value. The payments are managed in the CMS system for automatic handling of cash settlement. The payment instructions are transmitted by Swift and the confirmations are received by Swift, providing real time update on the bookings of the accounts. The payment process is continuously monitored by the Clearing Operation personnel of Nasdaq Clearing.

For equity and debt securities, the deliveries shall be completed on the delivery day and in accordance with the CSDs rules and routines (Nasdaq FIN R&R 2.11). The delivery instructions are generated and sent by the CMS system and the monitoring by the Clearing Operations personnel is performed in the CMS or directly in the CSDs. The Nordic CSDs primarily operate in batches, and before each batch the settlement headroom (the amount constituting the payment capacity of a delivering party in a CSD) must be secured in order for the deliveries to be executed. If the settlement headroom is not updated, the delivery will not be executed in that batch. The instructions will remain the same and the personnel at Nasdaq Clearing will have to wait for the next batch to settle the transactions.

Nasdaq Commodities operates through the Emission Registry for emission allowances and the El-cert Registry for the electricity certificates (jointly referred to as the
“Registries”). The deliveries are considered final and binding on the members account when the members receive confirmation that the delivery is completed.

If the settlement obligation is not fulfilled on the day specified in the contract specifications, it constitutes a breach of the Nasdaq FIN R&R. The breach of a participant’s obligations towards the clearing house is a ground for default. In situations of operational failure, such as late deliveries and delays in confirming margins, the clearing house has the right to declare a participant in default. However, this is not enforced by default and the clearing house may make an exception and accept a later delivery.

If a member at Financial has failed to deliver on the settlement day, Nasdaq Clearing shall send a buy-in notification on the same day as on which the delivery should have been made, if this follows from the relevant contract specification as set out in Chapter 3 of the Nasdaq FIN R&R. When the failing clearing member has been notified, it has as specified in the contract specification a limited number of bank days to fulfill its obligation to deliver before the buy-in notification enters into force. When the buy-in notification enters into force Nasdaq Clearing has the right, on behalf of the failing clearing member, to buy the instrument that the clearing member should have delivered. Once the buy-in notification comes into force and the member has been informed, Nasdaq Clearing will no longer accept delivery from the member. Nasdaq Clearing has facilities in place to buy in shares. As a CCP, Nasdaq Clearing guarantees the completion of all deliveries, independent of the original counterparty’s delivery or payment ability. Nasdaq Clearing is able to prolong the collateral requirement during the days of the buy-in. Delay fees are debited in connection with the delayed delivery.

If a member fails to procure an emission allowance or electricity certificate transfer to Nasdaq Clearing with respect to the quantity on the delivery day, and Nasdaq Clearing is unable to meet its obligation to procure a delivery to the buyer despite its best efforts, Nasdaq Clearing may decide that the transaction shall be cash settled. Once the decision is taken, the member can then no longer fulfill the obligation by delivering the instrument. The different alternatives that Nasdaq Clearing can choose from in order to procure the cash settlement is stipulated in section 3.4.4 and 4.4.4 of the Nasdaq COM R&R. Delay fees will be debited in connection with the delayed delivery.

Principle 9: Money settlements

An FMI should conduct its money settlements in central bank money where practical and available. If central bank money is not used, an FMI should minimise and strictly control the credit and liquidity risk arising from the use of commercial bank money.

Nasdaq Clearing monitors the levels of settlement amounts in absolute terms paid to and from the clearing members in the different currencies, and prioritize that central banks are appointed as concentration banks and that the main currencies are settled in central bank money. Nasdaq Clearing currently operates money settlement operations in the Swedish, Finnish, English and Danish Central Bank. For the currencies USD and
NOK where the concentration bank is not a central bank due to Nasdaq Clearing not being an US registered bank and has low settlement volumes in NOK, Nasdaq Clearing has parallel bank account arrangements and back-up routines in place.

Approved settlement banks are used in the settlement process. Nasdaq Clearing sends payment instructions to approved settlement banks to debit the clearing members’ account and credit Nasdaq Clearing’s account in the respective settlement banks. When the settlement banks have confirmed that the payments have been received, Nasdaq Clearing issues payment instructions for exchange of payments between the settlement banks in question in the concentration banks.

Nasdaq Clearing has the CMS system which provides system generated payment instructions, effective monitoring of the accounts and real-time updates on payments. Nasdaq Clearing follows the principle of first receiving the incoming payments and then sending out the payments, in order to limit the amount of funds needed by the clearing house for daily money settlements. If additional funds were to be needed Nasdaq Clearing’s accounts are equipped with credit facilities, in order to prevent delays in the payment process.

The money settlement is performed in SEK, DKK, EUR, NOK, USD and GBP. For NOK and USD, commercial banks are appointed as concentration banks and they comply with the same terms as the appointed approved settlement banks. According to the Settlement Bank Agreement the approved settlement banks shall comply with the technical requirements (Swift, lead times etc.), the support requirement, the credit rating requirements and the operational requirements related to the respective markets. Before being approved, the settlement bank shall participate in tests in order to verify that their payment flows operate in accordance with the Settlement Bank Agreement. When the tests are successfully passed and the Settlement Bank Agreement is signed by the parties, the settlement bank may participate in the daily money settlement process and be appointed as a settlement bank by clearing members.

Nasdaq Clearing uses concentration banks and settlement banks with a minimum rating level, A- (S&P) or A3 (Moody’s), in order to ensure the banks’ creditworthiness. All banks appointed by Nasdaq Clearing are reviewed and evaluated in accordance with the Credit Risk Policy. The management of the liquidity risks and the mitigations taken by Nasdaq Clearing are described in Nasdaq Clearing’s Liquidity Policy and also in more detail in Principle 7.

Nasdaq Clearing has appointed a large number of banks to participate in the settlement, in order to spread the concentration exposure and to ensure that Nasdaq Clearing has parallel arrangements in case of a disruption.

**Principle 10: Physical deliveries**

An FMI should clearly state its obligations with respect to the delivery of physical instruments or commodities and should identify, monitor, and manage the risks associated with such physical deliveries.
The carbon emission contracts and the electricity certificates contracts have physical delivery. The delivery information needed for a member to fulfill its physical delivery obligation is clearly stated in Nasdaq COM R&R section 6 and appendix 2 part B sections 3 and 4. The physical delivery obligations are further clarified in the guide, “Nasdaq Clearing as a Counterparty”.

Before being accepted to trade the participants receive information in relation to delivery and must assure Nasdaq Clearing that they understand the information, are able to comply with physical delivery obligations and have the necessary set up to fulfill the delivery obligation.

The delivery instructions are monitored on a daily basis in the respective markets, registries and internal systems with intraday updates by Nasdaq Clearing’s personnel, to assure that the deliveries are completed on the correct day. A participant can request to pre-deliver electricity certificates contract and in return receive decreased margin requirement. A participant can also pre-deliver European union allowances which can be used as collateral for 6 days prior to the expiration day until the settlement day. The pre-delivered electricity certificates and European union allowances are all held on Nasdaq Clearing own accounts which are reconciled daily.

The delivery settlement arrangements at Nasdaq Clearing are continuously evaluated in order to provide the best possible delivery solution for Nasdaq Clearing and its participants.

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**Principle 12: Exchange-of-value settlement systems**

If an FMI settles transactions that involve the settlement of two linked obligations (for example, securities or foreign exchange transactions), it should eliminate principal risk by conditioning the final settlement of one obligation upon the final settlement of the other.

The following sections describe the delivery versus payment mechanism implemented for Financial and Commodities respectively. A supporting Physical Delivery Policy is written, particularly with regard to DvP, to ensure that the delivery is at all times processed in accordance with EMIR.

For Financial, deliveries in the Nordic CSDs are always affected in accordance with the principle of DvP (i.e. the settlement obligations payment and delivery are linked together and finalized simultaneously) and the CSDs guarantee that the DvP instructions shall be performed accordingly. The DvP mechanism implies that if deliveries are late no cash is withdrawn, and both the delivering and the paying counterparty will pay an overdue delivery margin to Nasdaq Clearing until delivery is finalized.

The quantities delivered are dependent on the netting process. How the trade
registrations are netted depends on the instrument, the account and the contract.

For Commodities, the contracts are registered as DvP transactions in the clearing system, however due to the market structure for the aforementioned contracts, most notably how the Registries function, a DvP settlement mechanism is not technically possible to achieve and instead the cash settlement is performed in the CMS. In order to limit the principal risk, Nasdaq Clearing issues a margin requirement (equal to the contract value) on the final trading day and Nasdaq Clearing receives the collateral on D+1.

The quantities delivered are dependent on the netting process and the derivatives contracts are always netted.

Principle 13: Participant-default rules and procedures

An FMI should have effective and clearly defined rules and procedures to manage a participant default. These rules and procedures should be designed to ensure that the FMI can take timely action to contain losses and liquidity pressures and continue to meet its obligations.

Nasdaq Clearing has default rules and procedures that enable it to continue to meet its obligations in the event of a participant default and to address the replenishment of resources following a default. The R&R clearly states what constitutes a default and the procedures available to Nasdaq Clearing in the event of a default. Nasdaq Clearing has wide discretion as to the actions it may take in the event of a default by a member, with any such discretion being exercised by the Clearing Default Committee.

The Default Policy approved by the Board, and the operational procedures and arrangement in relation to this outline the management of transactions in the different stages of the default process, including the role and obligations of the Clearing Default Committee and non-defaulting members.

In respect of a defaulting participant’s customer transactions, Nasdaq Clearing may transfer some or all open positions, pending settlement and collateral provided for such positions to another participant in accordance with the R&R. Should such transfer not be possible, Nasdaq Clearing will close out the open positions of the customer. The participant’s proprietary positions will be forced closed out in case of a member default.

The order in which the financial resources can be utilized is described in the default rules and on the website.5 The collateral structure and the liquidity facilities available to Nasdaq Clearing in a pressured liquidity situation provide Nasdaq Clearing with prompt access to liquidity resources (both from the participants in regards of margin, default fund contributions and the assessment power and also Nasdaq Clearing’s own capital, outlined in the waterfall). Under the default rules, Nasdaq Clearing is entitled to realize

5 http://www.nasdaqomx.com/europeanclearing/risk-management/default-management
the default fund contributions, including the replenishment, without requiring additional consent from participants. The default rules also stipulate that any realized default fund contributions shall be replenished by new contributions by each non-defaulting default fund participant and Nasdaq Clearing so that the fund requirement is fulfilled within ten (10) business days following a replenishment request. Replenishment refers to the participant’s obligation to provide new (pre-funded) default fund contributions to restore the size of the fund in the event the clearing house has had to use any contributions to the default fund.

Instructions to the Clearing Default Committee state that it shall convene when a default event has occurred or if a default event is likely to occur. The Clearing Default Committee shall be the single decision making authority for all decisions concerning default situations and close-out handling. The Chief Risk Officer of Nasdaq Clearing is the Chairman of the Clearing Default Committee and has power of veto along with the CEO of Nasdaq Clearing in all decision making in the Clearing Default Committee. The mandate and decision making process for the Clearing Default Committee is outlined by the Board in the policy Instruction to the Clearing Default Committee. The overall guideline for how the Clearing Default Committee shall act in case of a default event, is documented in the Default Policy, an appendix to the Instruction to the Default Committee. In addition to the policy documents, detailed process and strategy documents exists for each asset class on how to manage the close out process in a default.

Nasdaq Clearing is well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules. The default rules in combination with a robust and pre-defined default management process ensure that Nasdaq Clearing can continue to meet its obligation in the event of a participant default. Nasdaq Clearing’s default management process is well documented and includes a transparent default organization with clear mandate and the involvement of participants to secure efficient handling of a default. Product specific default fire drills are conducted on a minimum on an annual basis.

Nasdaq Clearing publicly discloses key aspects of its default rules and procedures. The key aspects of the default structure are made available through the respective R&R, the default rules, and through default fund policy papers and the information publicly available on the website. The R&Rs state under which circumstances actions may be taken, i.e. when a default is declared. The default rules further stipulate Nasdaq Clearing’s rights to take actions and in what order such actions should be taken. They also include rights for non-defaulting participants to have their claim against a defaulting participant assigned to them and rights to exit the default fund and thereby have a limited exposure towards Nasdaq Clearing. The General Terms for Custody Account forms an integral part of the default structure and discloses Nasdaq Clearing’s right to appropriate contributed assets.

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6 Nasdaq FIN R&R Appendix 16, Nasdaq COM R&R Appendix 9
Nasdaq Clearing involves its participants and other stakeholders in the testing and review of the FMI’s default procedures, including any close-out procedures. Such testing and review is conducted at least annually or following material changes to the rules and procedures to ensure that they are practical and effective. The default management process is tailored for each asset class, driven by the specific market characteristic and the product liquidity. This means that Nasdaq Clearing has different arrangement in place for Equity, Fixed Income and Commodities. Default strategy documentation is in place for each specific product class. Default management fire drills are conducted on a minimum on an annual basis. The test is conducted according to the product specific guidelines for default management fire drills. The scope of the fire drill will be set by Risk Management and the market participants in beforehand of the fire drill and different scenarios will be tested in each fire drill (inter alia member default, client default, different type of portfolios, etc.). The result of fire drills are documented in a final report and an annual summary is presented to the Clearing Risk Committee, the Member Risk Committee and to the Board.

Principle 14: Segregation and portability

A CCP should have rules and procedures that enable the segregation and portability of positions of a participant’s customers and the collateral provided to the CCP with respect to those positions.

Nasdaq Clearing’s rules and procedures enable segregation and portability on client by client level for certain categories of members and members’ customers (i.e. so called Direct Clearing Clients, customers with Individual Client Segregated Accounts (ICA) and Clearing Clients). This arrangement offers a high level of protection and a high likelihood of portability for positions and collateral. For members/customers that have chosen other account types than the aforementioned, Nasdaq Clearing offers segregation and portability at client/house level.

With respect to segregation arrangements, Nasdaq Clearing offers a range of account types, both individual and omnibus, to its members and customers with varying degrees of separate identification and treatment.

Independent of which account type the customer has chosen, the clearing system always keeps separate the positions and collateral of participants’ customers from the positions and collateral of the participant. Nasdaq Clearing provides a separate account type for participants (i.e. House Accounts) and it is clear from the R&Rs that this account type may only be used by the participant itself and that it is fully segregated from the accounts of its customers.

In addition to the protection of a participant’s customer’s positions and related collateral from the default or insolvency of the participant, Nasdaq Clearing also offers protection of customer’s positions and collateral against default of fellow customers.

The portability arrangements are designed to facilitate a transfer of a customer’s
positions and collateral from a defaulting participant to another clearing participant. To some extent the likelihood of portability is dependent on the account type the respective customer has chosen.

With respect to the legal framework, EMIR provides for requirements and support as to, inter alia, the segregation and portability of client positions and assets (collateral) in the event of a clearing member’s default. EMIR has direct effect in the member states of the European Union, including Sweden. In DS 2012:39 the Swedish Ministry of Finance has concluded that EMIR and the structures prescribed therein, including segregation and portability, will be enforceable in Sweden without the need for legislative changes.

Nasdaq Clearing’s arrangements to protect and transfer the positions and collateral of a participant’s customers have been developed to provide legal protection for the customers of participants in accordance and compliance with the requirements set out in the PFMs as well as EMIR.

In addition, in developing the mechanics for portability Nasdaq Clearing obtained external legal advice to ensure that the regulatory requirements are met as well as ensure enforceability in the relevant jurisdictions. The relevant jurisdictions are the jurisdictions where the collateral and positions are held as well as the jurisdiction which law will apply in connection with the default of a participant.

The arrangements have been calibrated with the ISDA/FOA European Client Clearing Addendum aimed at providing a standardized solution consistent with international best practice.

If the arrangements are provided to members outside of the EEA or a different jurisdiction’s legislation is determined to apply in the event of insolvency of a participant, Nasdaq Clearing has a process for verifying the enforceability of the arrangement in relation to such foreign legislation (as described further under Principle 1).

Nasdaq Clearing has an account structure with a range of account types. Please see below for short descriptions of the different account types. Some account types are common for Nasdaq Financial and Nasdaq Commodities, and others are only used within one of the markets. These differences are noted below. Following the list is a description of the level of segregation.

1. **House Account (Nasdaq Financial and Nasdaq Commodities):** House accounts for clearing members’ own positions. Netting of positions within the House Account is possible.

2. **Omnibus Account (Nasdaq Financial and Nasdaq Commodities):** Several customers per account, netting of customer positions within the Omnibus Account is possible (however subject to the prohibition of netting between the Omnibus Account and any connected Single-client Account, please see below). There is no legal relationship between customers and Nasdaq Clearing.

3. **Single-client Account (Nasdaq Financial):** The Single-client Account is
regarded as a sub-account of an Omnibus Account. One customer per account, no netting of positions with any other account (including the Omnibus Account to which the Single-client Account is a sub-account). The Single-client Account is normally used by NCMs. There is no legal relationship between the customer and Nasdaq Clearing.

4. Indirect Pledge Account - IDP (Nasdaq Financial): One customer per account, no netting of positions with any other account. The client has a direct legal relationship with Nasdaq Clearing. The clearing member administering the Indirect Pledge Account posts collateral to Nasdaq Clearing on behalf of the customer (Indirect Pledging Customer).

5. Individual Client Segregated Account (Nasdaq Financial and Nasdaq Commodities): One customer per account, no netting of positions with any other account. There is no legal relationship between the customer and Nasdaq Clearing and the clearing member posts collateral directly to Nasdaq Clearing.

6. Direct Clearing Client: One customer per account, no netting of positions with any other account. The customer (a Direct Clearing Client) has a direct legal relationship with Nasdaq Clearing and posts collateral directly to Nasdaq Clearing, without passing through the clearing member’s books.

It should be noted that accounts can have sub-accounts set up in the clearing system. If the clearing members so wish, Nasdaq Clearing can set up a number of sub-accounts, e.g. one for each customer. But this is only for information purposes and the internal use of the participant. The sub-account and the “main account” will be regarded and managed as one account and hence follow the segregation requirements applicable for the main account.

In all account types, positions are always segregated between the participant and its customers (i.e. its customers, Direct Pledging Customers, Indirect Pledging Customers and Clearing Clients), at a minimum. There are no accounts that hold a mix of positions from participants and customers. Further, there are no accounts above that hold any positions of the clearing house.

With regard to segregation of collateral, this is fully achieved for account types 5 and 6. For Direct Clearing Clients, the customer has a direct legal relationship with Nasdaq Clearing and posts collateral directly to the clearing house. Collateral is held on accounts with an individual customer identifier and is never mixed with the collateral of other customers, the participant, or the clearing house. For customers with Individual Client Segregated Accounts (5 above), collateral is posted to the participant, rather than directly to the clearing house, but is held on individually segregated accounts at the clearing house, with unique customer identifiers, and is never mixed with the collateral of other customers, the participant, or the clearing house.

For account types 2, 3 and 4 above, Nasdaq Clearing offers the ability to segregate customer collateral from that of the participant. In practice, this is achieved by
establishing separate collateral accounts for the participant’s house business and for its customer(s). Specifically, in relation to the Omnibus Account and the Single-client Account the participant posts collateral to Nasdaq Clearing on an aggregate basis for the Omnibus Account (i.e. net collateral for Omnibus Account plus net collateral for the respective connected Single-client Accounts). In relation to the Indirect Pledge Account collateral is provided to the clearing house on a net basis for all Indirect Pledge Accounts the participant administers. The collateral provided by the participant with respect to these two account types are held in two separate collateral custody accounts at the clearing house.

Nasdaq Clearing does not rely on participants’ records in order to ascertain customer’s interests held by the clearing house. For customers in omnibus accounts, individual customer interest is only held at participant level and is not known by Nasdaq Clearing (but is not required by the clearing house either).

For customers with account types 5 or 6, positions and margin requirements are calculated for each individual customer account. Customer margin is collected on a gross basis, i.e. customer by customer. Netting is only performed within a customer account. Collateral may only be used to cover losses associated with the default of the customer in question, so customer collateral is not exposed to “fellow-customer risk”. Accordingly, account types 5 and 6 fulfill the segregation requirements in Article 39.3 of EMIR, i.e. individual client segregation.

For customers with account types 3 and 4 (Single-client Account and Indirect Pledge Account), each customer has individual accounts and positions and margin requirements are calculated for each customer account. Customer margin is collected on a gross basis, i.e. customer by customer. Netting is only performed within a customer account. The difference compared to account types 5 and 6, is that Nasdaq Clearing will aggregate the margin figures for all accounts under the participant (types 2, 3 and 4 above – the participant’s house account is not included in this aggregation) and collateral is held on a single custody account. But again, netting is only performed within a customer account, not between customer accounts.

In case of a default of an Indirect Pledging Customer, with account type 4 (Indirect Pledge Account), Nasdaq Clearing has the right to use any collateral held on the account for the defaulting customer, the collateral held to cover the positions of the participant, and also collateral held to cover positions of other Indirect Pledging Customers of the same clearing member, but no collateral held to cover positions of any other customer. Customer collateral cannot be used to cover a shortfall resulting from the participant’s default either. So the customer in an Indirect Pledge Account is not protected from “fellow-Indirect Pledging Customer risk”.

For customers that use Omnibus Accounts (account type 2), Nasdaq Clearing does not generally have information on the customers in this account. Netting of margin requirements is performed within the omnibus account, i.e. between customers in the account, subject to the prohibition of netting with any connected Single-client Account (however, please note that there is no netting of positions on the Omnibus Account). Margin is thus obtained on an aggregate net basis for the Omnibus Account and the
Single-client Account, but no netting is done between different Omnibus Accounts. Customers in an Omnibus Account, including those customers that have a Single-client Account within the Omnibus Account, may be exposed to “fellow-customer risk”, as collateral posted can be used by Nasdaq Clearing to cover losses on the account, irrespective of which customer has caused the loss.

Accordingly, account types 2, 3 and 4 fulfill the segregation requirements in Article 39.2 of EMIR, i.e. omnibus client segregation.

Nasdaq Clearing has arrangements in place to enable porting of a customer’s positions and collateral in the event of a participant’s default. Porting is possible for all different account types even though the likelihood of porting for Direct Pledging Customers, Clearing Clients and customers having an Individual Client Segregated Account is slightly higher as such porting is only subject to the customer’s and the back-up clearing member’s consent.

For customers in an Omnibus Account or in an Indirect Pledge Account, portability can be achieved if the customers agree on the same back up participant and if such back up participant is willing to accept all positions and collateral belonging to the Omnibus Account and, with respect to the Indirect Pledging Account, all positions and collateral belonging to all Indirect Pledging Accounts administered by the defaulting participant.

In all cases above, portability is dependent on the customer having a backup participant on standby or the customer being able to find a back-up participant that is willing to receive the positions and collateral of the customer.

The R&Rs include provisions regarding the porting of participants’ customers’ positions and collateral to a back-up participant. The R&Rs specify that Nasdaq Clearing shall in the first instance attempt to port the customer’s positions and collateral to another participant, rather than forcibly settling the customer’s positions.

It is the responsibility of the customer to initiate the porting of positions and collateral to a back-up participant. It is up to the customer to find a back-up participant, if the customer hasn’t already a back-up participant on stand-by. When the customer has requested the clearing house to initiate the porting the clearing house is required to take certain actions to start the porting. The process for this is detailed in the R&Rs. However, it is never the responsibility of Nasdaq Clearing to find a back-up participant or obtain the consent of the back-up participant.

Nasdaq Clearing has actual experience from performing the transfer of customer positions and collateral from a defaulting participant to an alternative participant.

Nasdaq Clearing’s segregation and portability arrangements are disclosed in its R&Rs. In addition, segregation and portability arrangements are described in the brochure “Nasdaq as a counterparty” which can be found on the website.

A participant’s customer can establish whether its collateral is protected on an individual or omnibus basis through the type of account it has chosen and the type of agreement it has signed, in addition to asking its clearing participant to explain the level of segregation is being provided.
Customers that have not signed specific agreements with Nasdaq Clearing do not have a legal relationship with Nasdaq Clearing and must rely on the information provided by the participant to determine what level of protection they have. Provided the customer has information about the type of account being used, the customer can refer to the Nasdaq Clearing website to read more about the level of protection that is provided for each account type.

The risks, costs and uncertainties associated with Nasdaq Clearing’s segregation and portability arrangements are identified in an “Investor Risk Document” published on Nasdaq Clearing’s website.¹⁹

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**Principle 15: General business risk**

An FMI should identify, monitor, and manage its general business risk and hold sufficient liquid net assets funded by equity to cover potential general business losses so that it can continue operations and services as a going concern if those losses materialise. Further, liquid net assets should at all times be sufficient to ensure a recovery or orderly wind-down of critical operations and services.

Strategic and Business risks are risks to earnings and capital arising from changes in the business environment and from adverse business decisions, improper implementation of decisions or lack of responsiveness to changes in the business environment. Strategic and Business risks are managed as part of the Enterprise Risk Management framework. For further details in regards to the ERM framework refer to Principle 17.

In addition to this, the Local Risk Management Forum is designed to take all risks into consideration and when deemed critical escalate to the Board. In this forum major changes to products and services are discussed as well as existing operational, strategic and business risks. Also in the capital calculation, different scenarios are also defined in relation to the business risk, which are assessed which impact such scenarios could give rise to and whether they could jeopardize Nasdaq Clearing’s ability to perform its critical services.

Moreover, Nasdaq Clearing has established BCPs, in which scenarios are identified in relation to critical processes/functions (e.g. disturbances/close down of IT systems) which potentially could prevent Nasdaq Clearing to carry out its services. For the defined scenarios, mitigating actions have been set up in the BCP.

Nasdaq Clearing has a RP that has been approved by the Board of Directors (14 December, 2017). The RP describes the Recovery process for the clearing house. This includes stress scenarios where the “business as usual” procedures are not sufficient to cover losses encountered by the clearing house. The Recovery procedure also includes early warnings and triggers, defining when the clearing house should consider entering

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¹⁹ http://www.nasdaqomx.com/europeanclearing/accounts
into Recovery and the decision making process in these events. Further, the RP sets out proposed Recovery tools that can be used to restore Nasdaq Clearing in such a way that it can continue to perform its responsibilities as a clearing house. Orderly wind-down of the clearing house is also covered in the final section of the RP. A separate Resolution plan is to be maintained by a Resolution Authority (to be appointed). The RP is reviewed on an annual basis or more often if deemed necessary due to, inter alia, major changes in recommendations and/or regulations or the operations of Nasdaq Clearing.

Nasdaq Clearing will ensure it holds sufficient capital at all times to cover for general business risk and the potential losses from an orderly wind-down. The capital is fully funded by shareholders’ equity. According to Nasdaq Clearing’s Investment Policy the capital shall be invested in highly liquid securities in SEK only. The method for assessing the quality and liquidity of the net assets is fully integrated in Nasdaq Clearing’s other investment operations i.e. an ongoing monitoring of the credit quality of the investments and the annual review of the investment policy. These funds are held in addition to the Waterfall and are consequently held outside the resources of the Waterfall.

In addition to the regulatory capital, Nasdaq Clearing holds a buffer in non-regulatory tangible equity equal to 33% of regulatory capital. In the event that the buffer (or any additional tangible equity) is not sufficient to meet additional equity requirements, the plan entails requesting further capital from Nasdaq Clearing’s parent company. As Nasdaq Clearing is owned by a single entity, this process can be achieved within a very short timeframe, if needed.

The plan for increasing the regulatory capital is set out in the Regulatory Capital Policy and reviewed and updated if deemed necessary by the Board on an annual basis.

**Principle 16: Custody and investment risks**

*An FMI should safeguard its own and its participants’ assets and minimise the risk of loss on and delay in access to these assets. An FMI’s investments should be in instruments with minimal credit, market, and liquidity risks.*

The majority of assets that are used by Nasdaq Clearing to support its regulatory capital or that have been provided by members to secure their obligations to Nasdaq Clearing are all held with CSDs in Nasdaq Clearing’s own name (own account or nominee account). This ensures a limited exposure towards a single custodian and also a quick access to the securities if needed.

To mitigate the custody risk in relation to member’s contributions to the default fund, or posted collateral, all securities held with CSD’s are held on segregated nominee accounts and can never be co-mingled with the CSD’s own assets.

In those cases where it is not possible for Nasdaq Clearing to hold assets directly with a CSD, e.g. Nasdaq Clearing does not have direct access to the CSD or the local security settlement system, Nasdaq Clearing will hold the assets with a custodian institution.
A custodian institution must fulfill Nasdaq Clearing’s requirements of minimum restricted equity capital and minimum rating in order to be eligible as a custodian institution. To become a custodian institution the institution must be approved by the Clearing Risk Committee. The Clearing Risk Committee is presented with an analysis where the custodian institution is assessed. The assessment is based on a due diligence questionnaire, due diligence into its financial requirements, credit rating, supervisory authority, organization, ownership structure and legal analysis.

Custodian institutions are monitored by Nasdaq Clearing, with specific regards to the custodian institution’s rating and financial requirements.

Nasdaq Clearing measures continuously the exposure towards custodian institutions. Moreover, the entities which have multiple roles with Nasdaq Clearing are monitored and the risks in terms of custody service and liquidity provider, is measured on a daily basis. The total risk towards entities with multiple roles is reported quarterly to the Board of Directors.

Assets that are used by Nasdaq Clearing to support its regulatory capital or that have been provided by members to secure their obligations to Nasdaq Clearing are all secured by or are claims on high quality obligors as stipulated in Nasdaq Clearing’s Investment Policy. The credit quality is ensured by strict rating requirements on eligible investments.

The Investment Policy is processed by the Clearing Risk Committee and approved by the Board which ensures that it is aligned with Nasdaq Clearing’s overall risk management strategy.

Nasdaq Clearing has limits on how large the exposure towards an individual counterparty or towards a type of counterparty may be. The size of the limit is determined by the counterparty’s credit rating and investment type. All investments except exposures towards AAA-rated government bonds are subject to limits and controlled on a daily basis. Nasdaq Clearing does not invest in participants’ own securities or those of its affiliates.

All Nasdaq Clearing’s investments are either highly liquid securities and/or have a short term maturity which ensures a quick liquidation. Nasdaq Clearing invests in assets with a maximum average maturity of two (2) years. This limitation on the maturity risk in the portfolio ensures that no significant adverse price effect can arise in the portfolio in the event a defaulting party has long positions in fixed income products. Furthermore, due to the limitations in its investment policy Nasdaq Clearing cannot invest in other underlying instruments to the derivative contracts cleared by Nasdaq Clearing, or invest in securities issued by any participants (or its affiliates), which ensures that Nasdaq Clearing’s investments are exposed to little, if any, adverse price effects. Nasdaq Clearing discloses a summary of its investment policy on its website.

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10 http://www.nasdaqomx.com/europeanclearing/risk-management/investment-policy
Principle 17: Operational risk

An FMI should identify the plausible sources of operational risk, both internal and external, and mitigate their impact through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity. Business continuity management should aim for timely recovery of operations and fulfilment of the FMI’s obligations, including in the event of a wide-scale or major disruption.

Operational risks are risks arising from the clearing house people, processes, and systems and external causes and are managed through the ERM framework.

One of the components of the ERM framework is the Risk Control Self Assessment (“RCSA”) process. The RCSA provides an understanding of the relationship between the control environment and the risks that could threaten the successful execution of business objectives, cause potential reputational and brand damage, and/or result in financial loss.

Through RCSAs, risk owners assess inherent risks, identify and determine the effectiveness of controls in mitigating those risks, and determine whether to accept, mitigate, transfer, avoid, or increase the resulting residual risk levels.

In addition to periodic RCSAs, certain triggers may prompt Nasdaq Clearing to re-assess selected processes, risks and controls. Trigger examples include, inter alia: changes in the external or internal environment such as new products and initiatives; findings from second and third line of defense reviews; or the occurrence of incidents.

Another component of the ERM framework is risk incidents. Nasdaq Clearing classifies risk incidents that impact the clearing house, regardless of whether the cause stems from internal or external circumstances, operational errors, system failures or compliance incidents, as internal risk incidents.

Employees have responsibility for identifying and escalating risk incidents in a timely manner. Risk incident refers to the materialization of a risk that leads directly to, or has the potential to result in, one or more financial or non-financial impacts. The risk incident process promotes the structured reporting, documentation, and compilation of risk incident data, thus allowing timely analysis and appropriate dissemination of information throughout Nasdaq Clearing.

On an annual basis, Nasdaq Clearing identifies a list of positions that are considered to be risk takers in accordance with Nasdaq Clearing’s Remuneration Policy. These positions/names are reviewed and approved by the Board. Nasdaq Clearing defers variable remuneration for these risk takers in accordance with relevant laws and regulation and the Remuneration Policy. Nasdaq uses compensation programs like the Corporate Incentive Program to ensure that merit and equity programs are tied to performance. The performance appraisal process includes two annual opportunities where employees and managers meet to evaluate performance against the corporate
goals and personal goals, at mid-year and year-end.

Fraud prevention is embedded in the corporate policy framework, i.e. no specific fraud prevention policy exists. Fraud prevention is addressed from different angles in Ethics & Compliance-, Information Security-, Accounting-, Finance-, Legal Review- and SOX Compliance Policies.

Nasdaq Clearing has implemented a Change Management Policy to ensure control over the changes that are made in its environments, minimize risks and prevent errors, and to assure that the right people are informed about the changes and have formally approved them. Changes are implemented using a Product Development Life Cycle (PDLC) policy and process.

Nasdaq Clearing applies an ITIL based Technical Incident Management policy and process for resolving incidents in its IT systems. The clearing house manages the business implications of Major Incidents through its own incident management organization, and the Emergency Response Team. The Emergency Response Team is responsible for taking all business related decisions and works closely together with the technical Incident Management organization to restore services back to normal operation.

The Board has adopted working procedures to execute oversight and control of information security related issues. These procedures outline reporting requirements to support the Board when assessing the risk exposure and when evaluating the adequacy of and adherence to the Information Security Policy and related standards. It also establishes critical decision points for the Board during the annual cycle.

Operational management; the CEO, the Chief Risk Officer, the Chief Operating Officer and the Chief Technology Officer, of the clearing house are responsible for making sure there are independent controls of operational procedures. Management is supported in its responsibilities to identify, evaluate and control risks in their respective areas, supported by the Enterprise Risk Manager and by risk- and security professionals from Nasdaq Group level.

The Internal Audit function is responsible for making independent reviews of the adequacy of controls, reporting to the Audit Committee. The members of the Audit Committee are two Board members of Nasdaq Clearing. A charter that is approved on an annual basis governs the internal audit function. The Internal Audit function performs continuous reviews of the adequacy of controls based on an annual audit plan approved by the board.

The Internal Audit function reviews systems, policies, procedures and controls as well as risk management based on risks and in accordance with Internal Audit’s annual planning. Procedures covered by SOX requirements for Nasdaq Clearing’s operational and system related controls are also part of both Internal Audit and External Audit annual testing.

Both manual and automated controls have been built into the day-to-day clearing and settlement processes to mitigate potential risks at an early stage. These controls are reviewed on a continuous basis by the clearing house. All significant deviations from
normal operations are registered in a system for follow-up and resolution.

Operation objectives are defined in the service agreement between Nasdaq Clearing and the IT service provider within Nasdaq. The current system uptime objective of the central clearing system is at least 99.90%, and at least 98.50% for the custody and settlement system. To achieve this, the clearing house’s systems are designed to be fault tolerant and with fail over capabilities to at least one, and sometimes two, standby instances. The system uptime is measured and calculated monthly as a percentage value of the time the system was available compared to the expected time during the availability hours for the respective month. In addition, the services agreement contains quantitative service levels such as service desk response time, incident management priority levels, volumetric parameters, hours of operations and load profile parameters. Qualitative service levels include adherence to internal policies such as the Code of Ethics and the Information Security Policy.

Reports on the IT service are produced on a monthly basis. Technical operational meetings take place twice a week, in which performance issues can be brought up by the Chief Technology Officer if needed. Quarterly Service Level Review meetings are held by the outsourcing supplier. Outsourcing objectives are audited through Internal Audit procedures according to the annual audit plan.

In the service agreement the minimum capacity demands on all key systems are clearly defined. In order to make sure that these demands are met, tests are performed where also the maximum capacity is tested. In case of a major system update or platform change, these capacity tests are also performed with simulated loads to secure that the requirements can be met.

As a baseline, the clearing systems have undergone thorough performance and capacity tests as part of the pre-production integration tests. The tests have been done on the actual hardware and software configuration that was later launched as production systems. Load tests are also executed due to architectural changes in the systems. To ensure that new hardware and network solutions comply with the requirements, benchmark tests are performed. These are typically done prior to major releases.

Operational service level adherence, performance and capacity and other operational aspects are reported on a monthly basis and again followed up on in operational meetings and in the quarterly Service Level Review meetings. Capacity and performance is monitored closely on a daily basis. If a service level parameter is near or exceeds its stated limit, the situation is analyzed.

The clearing house has adopted Information Security Policies and Standards which are designed to maintain the confidentiality, integrity and availability of information and which applies to development, maintenance and production of systems within the clearing house as well as to outsourcing partners and third party vendors.

Detailed standards and procedures have also been established in many IT security related areas such as firewall management, Internet access, intrusion detection, password management and remote access.

The clearing house follows industry best practices with regards to policies, processes,
controls and security auditing. The clearing house’s datacenters are SSAE16-certified and the clearing house’s Information Security professionals hold the industry relevant certifications such as CISSP, CISA, ISSAP, CISM, and GIAC.

Nasdaq Clearing has established Business Continuity Plans, describing the management objectives and procedures for how to achieve continuity of the business, its key operations and processes in the event of a disruption. The plan includes a strategic and operational framework to secure the clearing house’s resilience to disruption, interruption or loss, in supplying its products and services. It also describes the process for how to prioritize, organize and manage the business operations to secure our service offering in case of a disruptive event or other serious situation, in order to fulfill our obligations towards customers, regulators and other stakeholders and minimize any negative consequences. This involves both a proactive planning element and reactive measures to be taken when an incident occurs.

Nasdaq Clearing’s systems are designed to recover and resume business critical operations within 2 hours of a critical event, including a complete loss of the primary data center or an evacuation of the Nasdaq Clearing offices.

The clearing house’s BCPs address situations where the operations could become severely disrupted. Formal incident response procedures have been developed and are tested on a regular basis and carried out with different scenarios. Scenarios of large scale disasters, typically complete outage of the primary site, are tested on a yearly basis. Failover procedures are performed in the production system and members are offered to test their connectivity to the secondary site and perform basic business queries. Verification of connectivity from the secondary site to CSDs and SwiftNet is included in the yearly testing.

The clearing house’s systems are designed and tested to provide full redundancy and fail-over functionality including maintaining transaction integrity. Failover for individual components is also available. The access network allows participants to connect to either or both of the primary and secondary sites, thus being able to reduce their risk and lessen the impact of a system disturbance affecting one site. In the event of a serious system disturbance, making the primary site unable to continue operating, system operation will fail-over to the secondary site, which is located approximately 20 km from the Nasdaq main office in Stockholm.

There is a back-up site for business operations available at all time. All operational procedures can be executed from the contingency office, using separate equipment located there. Procedures for relocating the staff are tested regularly, with a full scale test every second year, and critical operation every second month.

Backup routines, partly manual, are established for all time critical activities.

The clearing house conducts quarterly reviews of its BCPs, or more often if necessary. The BCPs are approved by the board. Periodic reviews are conducted of the BCPs by Compliance, Internal Audit and independent auditors and the result are reported to the Board.

In the event that situations arise in which the clearing house could be subjected to
highly significant or serious damage, the Crisis Management Team shall be summoned without delay. The Crisis Management Team is a virtual “task force” assigned to manage any type of crisis events. The Crisis Management Team coordinates activities on a Business Area and Regional level in order to secure a capacity to maintain critical functions, to minimize any damage and to reduce the time during which the organization is subjected to the crisis. Subordinated to the Crisis Management Team, one or several Emergency Response Teams may be operating to support the Crisis Management Team on the tactical level, aiming at quickly restoring normal operations. The Crisis Management Team shall maintain a high degree of readiness to handle internal and external communication. This supporting role is generally performed by Nasdaq Corporate Communications. External information shall be elevated to, and managed by, the Crisis Management Team in order to provide consistent and accurate information.

Operational risks posed by external parties such as participants, FMIs and service and utility providers are managed in several ways. Operational risks from participant connections are controlled by secure interfaces providing reliable and secure information. All internal communication in the platform is based on reliable messaging technologies to ensure consistent and accurate transactions within the systems. The messaging system is designed to handle both software and hardware failures without effect on the business operation. All external access to the clearing platform is done via well defined, documented, and supported APIs and protocols. The clearing house is dependent on electronic communications and ensures the integrity of messages by using reliable networks and procedures to transmit data. External applications are subjected to a certification process before being permitted to connect to the production system. The certification process is aimed at securing that connecting application behaves correctly and doesn’t generate any unwanted activity, such as excessive transaction rates or erroneously formatted transactions. Connectivity is provided by approved and certified service providers that offer dedicated or VPN based communication lines. Two-factor authentication is used for access directly via Internet. Finally, information transmitted within the clearing house is protected by IT security processes and controls as outlined in the Information Security Policy.

None of the clearing house’s operations are subject to external outsourcing. The clearing house has outsourced parts of the IT responsibilities to the internal Nasdaq IT services provider.

The risks posed by central banks and CSDs are issues in the settlement process, such as erroneous or delayed settlement. Risks are managed through real time monitoring of settlement flows and BCPs. Risks are mitigated through the collection of detailed statistics from which issues are identified and addressed.

Risks that the clearing house may pose to Central Banks and CSDs are managed in the BCPs. The clearing house ensures that the operational and technical requirements for connecting to Central Banks and CSDs are met. In addition, the clearing house takes part in the planning and execution of industry wide crisis exercises arranged by FSPOS, “Finansiella SektornsPrivat-Offentliga Samverkan”, an organization for private-public
co-operation in the financial sector.

The clearing house adheres to the business continuity planning requirements with the Central Banks and CSDs set by FSPOS, and participates in the exercises arranged by them. Issues that impact the business continuity planning are identified and changes are introduced in the documentation through regular revisions. The clearing house keeps itself informed about testing arranged by central banks and CSDs via newsletters and participation in meetings for this purpose.

Principle 18: Access and participation requirements

An FMI should have objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.

Nasdaq Clearing has an objective, risk-based, and publicly disclosed criteria for participation, and provides fair and open access to its services. All participants are subject to the same access criteria, which are set out to maintain acceptable risk controls while ensuring that they have the least restrictive access that circumstances permit.

Nasdaq Clearing publicly discloses all rules, procedures, and criteria for participation, on its websites. Members and potential members and other participants can thereby access information about the risk, cost and requirements to participate in clearing through Nasdaq Clearing. The detailed and publically available rules in relation to membership requirements ensure non-discriminatory enforcement of the rules.

To the extent there are any participation requirements stipulated in applicable law, such requirements have been incorporated in the R&Rs and procedures. Examples of such statutory participation requirements relate to e.g. capital requirements, risk management routines and that the participant is considered as appropriate to participate in the clearing. The participation requirements included in the R&Rs are regularly reviewed and updated if deemed necessary.

Nasdaq Clearing offers the following direct participation types: Clearing Members:

a) Direct clearing member (“DCM”), who may participate in clearing activities of Nasdaq Clearing on its own behalf and on behalf of clients.

b) General clearing member (“GCM”), who may participate in the clearing activities of Nasdaq Clearing on its own behalf, on behalf of clients and on behalf of Non Clearing Members (“NCM”s).

Direct clearing client:

a) Direct clearing clients (“DCC”) (Nasdaq Clearing Financials and Commodities) who may register clearing transactions on their own name and account, but only through a direct clearing agent (“DCA”) (only a clearing member can act as direct clearing agent if approved by Nasdaq Clearing).
The requirements for Nasdaq Clearing Financial participants can be found in the Nasdaq FIN R&R (GCM 2.2.1, DCM 2.2.2, and DCC Customers 1.3.12).

The requirements for Nasdaq Clearing Commodities participants can be found in the Nasdaq COM R&R (3.1).

Nasdaq Clearing has a dedicated Member Services team that handles all applications from prospective members and direct clearing clients. The Member Service team reviews all applications and assesses together with the Legal, Surveillance, and Risk Management teams, whether the applicant has the necessary operational capability, meets Nasdaq Clearing’s technical standards and both legal and financial requirements, and is otherwise deemed to be fit and proper for the intended membership- or direct clearing client category.

Members and direct clearing clients are monitored by Risk Management and Clearing Operations, with support from the Legal Department, in order to ensure that the membership or direct clearing client requirements are fulfilled at all times. If a member no longer fulfills the membership requirements, Nasdaq Clearing may terminate the membership agreement. Such termination right is provided for in the respective R&R. Furthermore, if a member no longer fulfills the requirements stipulated in the R&Rs, and no exemption has been made by the Clearing Risk Committee for such member, the Clearing Default Committee will assemble and take a decision to temporary suspend or declare the participant into default. In the default procedures of Nasdaq Clearing, the process and actions to be taken if a participant is declared in default are described. The default procedures are publically available on the website. The Clearing Operations Department will execute the suspension in the system if requested by the Clearing Default Committee. This can be done with immediate effect.

**Principle 19: Tiered participation arrangements**

*An FMI should identify, monitor, and manage the material risks to the FMI arising from tiered participation arrangements.*

Nasdaq Clearing offers both agency and member clearing to its participants. Within these two clearing structures, different types of tiered participation exist, where different liabilities and obligations among Nasdaq Clearing and either direct participant or indirect participant occur. The right to gather information on indirect participants is included in the R&Rs of Nasdaq Clearing.

Nasdaq Clearing has identified the following risks from tiered participation arrangements:

1. Counterparty risk, i.e. the risk that a default of an indirect participant would spill over and lead to a default of the direct participant.

2. Settlement risk, i.e. the risk that a failure in settlement (payment or delivery) of an indirect participant will not be managed by the direct participant and hence
disturb the general settlement process.

Most of the tiered participants are set up with individual accounts, sub accounts or segregated accounts in the clearing system. Nasdaq Clearing manages and mitigates the tiered counterparty risk by:

- calculating margins on individual account level (including sub accounts),
- define concentration limits on individual account level, and
- issue extraordinary/intraday margin calls on an individual account level.

In respect of the tiered settlement risk, Nasdaq Clearing has sufficient arrangement in place, such as liquidity resources and security lending, to mitigate the impact if a failure by an indirect participant would lead to disturbance for the direct participants.

Nasdaq Clearing has identified the following tiered participation arrangements on Nasdaq Commodities and Nasdaq Financials; (i) Non Clearing Members (NCM), (ii) Omnibus Clients, (iii) Individual Client Segregated Account (ICA) clients, and (iv) Indirect Pledging Customers (IDP). In terms of NCM, ICA and IDP, the identities of these clients are known to Nasdaq Clearing. For Omnibus Clients, the identities are unknown. Information regarding anonymity of clients can be found in the R&Rs of Nasdaq Clearing. Nasdaq Clearing does not request or gather credit information on a regular basis in respect of these participants, but has, according to the R&R, the right to require different information from the clearing members regarding the indirect participants.

Market information such as positions and exposures are generated and reviewed in real time through Nasdaq Clearing’s systems. Hence, Nasdaq Clearing has the full capacity to analyze the market risk in real time for these indirect participants and the impact that may have on the direct participant. Limits can be set on indirect participants’ portion of the exposures of direct participants and in case there is a limit breach, the indirect participants can be scrutinized in terms of their credit worthiness and the direct clearing member can be asked for its risk management procedures with regards to the relevant indirect participant.

In offering both agency and member clearing, Nasdaq Clearing has implemented an IT structure and operational procedure that provides Nasdaq Clearing and its direct participants with information and tools to manage the risk of the indirect participants. Nasdaq Clearing continuously monitors the positions and exposure of indirect participants and the tiered participants through its proprietary risk systems.

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<th>Principle 20: FMI links</th>
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<td>An FMI that establishes a link with one or more FMIs should identify, monitor, and manage link-related risks.</td>
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Nasdaq Clearing has processes in place to evaluate both the risks associated with prospective FMI links as well as already established FMI links. Nasdaq Clearing performs a thorough analysis of a prospective linked FMI before any link is established. For
example, Nasdaq Clearing reviews the CSD arrangements in order to ensure that the DvP requirement for deliveries can be fulfilled by the CSDs. Nasdaq Clearing further verifies that liquidity can be sent into the CSDs (the settlement headroom) in a secure and efficient way by evaluating a good liquidity provider for the respective CSD.

Nasdaq Clearing also verifies that the technical requirements imposed on the CSDs in order to ensure a good and efficient CMS system for management of the deliveries are fulfilled. Such verification is made through different performance tests. All performance tests shall be successfully completed before the final implementation of the link and production use.

After the establishment of the link, Nasdaq Clearing continuously evaluates and monitors the linked FMIs and the risks associated with such links.

Nasdaq Clearing has established links with CSDs in Sweden (Euroclear Sweden), Finland (Euroclear Finland), Belgium (Euroclear Bank), Denmark (VP Securities), Norway (VPS) and Luxembourg (Clearstream Bank). All linked FMIs (i.e. CSDs) are licensed and supervised by Financial Supervisory Authorities and/or Central Banks. Also, all linked CSDs are located within the EEA, which ensures that the CSDs’ activities are governed by local laws which have implemented relevant EU legislation and that the CSDs are obliged to comply with international standards and recommendations for securities settlement systems. By only establishing links with CSDs that fulfills the above, Nasdaq Clearing ensures that the links have a well-founded legal basis which provides adequate protection for the parties involved. Nasdaq Clearing has an ongoing project to update FMI links according to the CSDR and the changes each CSD makes. Nasdaq Clearing participates actively in project working groups established by the FMIs and carefully monitors the development and possible changes in how the regulation is implemented by the FMIs/CSDs.

The relevant legal frameworks that form the legal basis for the links are local laws (which have implemented EU legislation) including international standards and participant agreements.

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**Principle 21: Efficiency and effectiveness**

*An FMI should be efficient and effective in meeting the requirements of its participants and the markets it serves.*

The design of Nasdaq Clearing has been done with high attention to achieving efficiency and effectiveness in relation to inter alia margin models, cash settlement, securities settlement, account structure and technology.

Nasdaq Clearing is an international clearing house in a competitive landscape. It is of utmost importance to the clearing house to constantly keep in touch with market developments, competitors’ movements and participants’ views and requirements with regard to new developments and the efficiency of the clearing services offered.
With regard to participants’ views, there are a number of ways in which Nasdaq Clearing organizes the collection of these. These include regular meetings with the Securities Dealers Associations in key countries, the establishment of Clearing Councils in key locations and in some cases for specific asset classes, wider Clearing Forums and IT forums, in addition to numerous bilateral meetings with both members and customers. The organization has dedicated resources that follow market and regulatory developments.

There are goals with regard to operational effectiveness and the goals are regularly measured and analyzed. These goals include operational effectiveness and customer focus.

Nasdaq Clearing regularly reviews its efficiency and effectiveness. Metrics are gathered daily and monthly reports are analyzed by management. Annual customer surveys are also performed. In addition, input on efficiency and effectiveness is also received from i.a. Internal Audit reviews, compliance reviews and the RCSA which are conducted at regular intervals.

**Principle 22: Communication procedures and standards**

*An FMI should use, or at a minimum accommodate, relevant internationally accepted communication procedures and standards in order to facilitate efficient payment, clearing, settlement, and recording.*

The clearing information is visible to members via graphical user interfaces (GUIs) and via communication protocols, the later enabling members to access the clearing information via third party applications.

The GUIs available for members are the following: Genium INET Clearing Workstation 1, Nasdaq Q-Port, CMS Web and Nasdaq Member Portal. The communication protocols available are: FIX, FPML, OMnet API and Swift.

Clearing information is also available for members via reports, available via SFTP and through the GUIs, in CSV, Excel and PDF format.

Nasdaq Clearing is continuously working on improving the clearing functionality of the FIX protocol as the FIX standards becomes defined and implemented. Settlement instructions follows internationally accepted standards such as ISO and Swift messaging.

**Principle 23: Disclosure of rules, key procedures, and market data**

*An FMI should have clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the FMI. All relevant rules and key procedures should be publicly disclosed.*
Nasdaq Clearing has developed and publicly disclosed information on the systems rules and procedures and is continuously taking steps to enhance the member’s knowledge of the system. This is done through a website designated for clearing participants, including the respective R&R, the Investor Risks document, Nasdaq Clearing as a Counterparty and other various documents provide support for the participants to understand the rules, risks and procedures they face from participation. Fees and other material costs are publicly disclosed and changes are notified well in advance, if such change is not made as a discretionary decision due to extraordinary circumstances. Fees are separated into two different areas; business related fees and technical fees. The fees are specified per individual service offered and any discounts are made publicly available in the respective fee list. Nasdaq Clearing offer volume discounts on participant level, transaction level, participant type level, and account level where aggregated monthly or yearly volume is considered. These discounts apply equally for all participants. Services that are free of charge are not listed in price lists.

Nasdaq Clearing’s respective R&R underpins the various stages of derivatives clearing. The R&Rs provide instructions regarding risk management policy and security policy, if and when Nasdaq Clearing assumes counterparty risks, the rights and obligations of Nasdaq Clearing and dealing with the parties involved in a default situation.

Specific information about risk management is also displayed on the Nasdaq Clearing website – this includes back test and stress test results and information on the different margin models as well as external validation reports, default management procedures, parameter and collateral lists and details of the Investment Policy and default fund. As well as information on risk management the website includes information regarding Nasdaq Clearing’s corporate governance, strategy, BCPs, remuneration, accounts, collateral management, settlement, the clearing system and latest news. Related policies, strategies and margin models are also available.

Should a member request additional information on the systems rules, procedures, technology or operations, Nasdaq Clearing can provide specific training and education in that area.

Nasdaq Clearing has a structure for facilitating the participants understanding of the procedures and risks, and members have, in a vast majority, expressed that they are content with the information provided by Nasdaq Clearing.

The CPMI-IOSCO Quantitative Disclosure is publicly available on the website and updated quarterly as of the beginning of 2016. Nasdaq Clearing intends to meet the disclosure requirements found in the CPMI-IOSCO disclosure framework for financial market infrastructures and other relevant regulations, now and in the future.
V. List of publicly available resources

Public information related to Nasdaq Clearing can be found on the company website http://business.nasdaq.com/trade/clearing/nasdaq-clearing/index.html

From this page interested parties can navigate to detailed information about
  • Governance and strategy
  • Products cleared
  • R&Rs
  • Systems
  • Risk Management, including risk models, stress tests and default management
  • Collateral management, settlement and TR reporting

This is not an exhaustive list.

An overview of the CCP can be found in the document titled “Nasdaq Clearing as a Counterparty” which can also be accessed from the Nasdaq Clearing front page (link above).

Rules and Regulations of Nasdaq Financial

Rules and Regulations of Nasdaq Commodities
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