



DISCLOSURE REGARDING RISK MANAGEMENT AT NASDAQ BROKER SERVICES AB IN 2018

Nasdaq Broker Services AB (Broker Services), company registration no. 556405-0127, is a securities company under the supervision of the Swedish Financial Supervisory Authority. Broker Services is a wholly-owned subsidiary of Nasdaq Technology AB and is part of Nasdaq Group with its parent company in the United States.

Broker Services' business operations consist of providing back office services to banks and securities companies in the Nordic countries. The company also offers system solutions for various services in the financial market. The company's Nordic Fund Market (NFM) is an electronic fund service for fund companies and distributors, currently with over 4,000 funds. In addition to these services, Broker Services offers Regulatory Reporting services. Depending on the nature of the reporting, clients may be internal clients within the Nasdaq Group, or external financial or non-financial companies.

In June 2016, Broker Services established a branch office in Vilnius, Lithuania, from where the back office administrative services are carried out.

The purpose of this publication is to provide information regarding Broker Services' risks, risk management and capital requirements under the Capital Requirements Regulation (CRR) (EU) no. 575/2013. This information is published on Broker Services website at:

<https://business.nasdaq.com/trade/Post-Trade/Nasdaq-Broker-Services/About-Broker-Services.html>

Broker Services' Authorisations and regulatory licenses

NFM

1. Broker Services holds authorization pursuant to Chapter 2, section 1, paragraph 1, subsection 1 of the Securities Market Act for the receipt and transmission of orders
2. Broker Services holds authorization pursuant to Chapter 2, section 1, paragraph 1, subsection 2 of the Securities Market Act for the execution of orders on behalf of customers
3. Broker Services holds ancillary authorization pursuant to Chapter 2, section 2, first paragraph, subsection 4 of the Securities Market Act to perform currency services
4. Broker Services holds authorization pursuant to Chapter 4, section 12 of the Investment Funds Act for registration as a nominee holder of Fund Shares
5. Broker Services holds authorization pursuant to Chapter 5, section 4 of the Securities Market Act, for cross-border operations, to "hold in custody financial instruments on behalf of customers and accept funds subject to a reporting obligation".

NFM/Back Office for Hire

Broker Services holds ancillary authorization pursuant to Chapter 2, section 2, first paragraph, subsection 1 of the Securities Market Act to hold in custody financial instruments on behalf of customers and accept funds subject to a reporting obligation

ARM

Broker Services holds another authorization pursuant to Chapter 2, section 3, and Chapter 10 of the Securities Market Act to act as a data reporting services provider.

Side Activities

Authorization for ancillary operations pursuant to Chapter 2, section 3, first paragraph of the Securities Market Act with respect to the IT services /IT operations.

Licencing

Nasdaq Broker Services is affiliated with Swedsec Licensiering AB, a wholly-owned subsidiary of the Swedish Securities Dealers Association. Swedsec Licensiering AB was founded in 2001 for the purpose of increasing the public's confidence in companies active on the securities market. Sweden was the fourth country in the world which introduced licensing after the United States, Great Britain and the Netherlands. There are currently 180 affiliated companies with approximately 22,000 employees working as active license holders.

Summary

Broker Services employs an Enterprise Risk Management (ERM) approach that manages risk within an approved risk appetite. Risk governance includes an overarching risk appetite statement to guide risk-taking decisions, committees designed to oversee risks, and ERM policies and procedures that document core risk management principles. The ERM Framework incorporates the Three Lines of Defense model to manage risks.

Broker Services' operations are characterized by a low risk profile since the company neither conducts lending operations nor proprietary trading. The company's risk strategy is that risk-taking is carried out at a low level in accordance with the approved risk appetite and balanced with the commercial and financial targets for growth and return as well as being in compliance with external and internal regulations governing the capital base.

Set forth below are descriptions of how the company has been organized with respect to its risk and control functions in order to actively minimize the risks the company faces. Broker Services are primarily exposed in its operations to operational risks and strategic and business risk.

Internal control governance

As a part of the Nasdaq Group, and as a regulated investment firm, Broker Services have the documentation, agreements and policies demanded to guarantee the correct internal control mechanisms, transparent and consistent lines of responsibility, and sound administrative procedures.

The governance arrangements, which enable identification and mitigation of possible conflicts of interests, include the separation of the control functions from management. Hence, the ERM Risk function, the Compliance function and Internal Audit work independently from the business line, and report directly to the Board of Directors of Broker Services.

The allocation between the functions is set forth in the respective ERM Policy, Compliance Policy and Plan and Internal Audit Charter and Plan.

Risk management governance and risk organization

Broker Services employs an Enterprise Risk Management (ERM) approach that manages risk within an approved risk appetite, and consequently creates value for our clients and shareholders, through objective and consistent identification, assessment, monitoring, and measurement (ERM framework) of significant risks across the company. ERM Framework comprises the activities and methods that support timely, transparent, and well-informed management decisions to accept,

mitigate, transfer, avoid, or increase risks (risk treatment). Risk governance includes an overarching risk appetite statement to guide risk-taking decisions, committees designed to oversee risks, and ERM policies and procedures that document core risk management principles.

The Enterprise Risk Framework consists of the following components:

1. Risk appetite statements, tolerances and limits for financial and non financial risks
2. Risk identification through the capture of internal and external risk-incident data, as well as the consideration of potential emerging risks.
3. Risk assessment framework includes Top down Risk Assessment, Risk and Control Self Assessment (RCSA - bottom up), Scenario Analysis.
4. Risk monitoring and measurement through KRI, KPI, capital modeling and quality assurance.
5. Training and workshops to promote Risk Culture and provide the foundation of a culture wherein employees recognize risk and understand their responsibility to manage that risk. Company-wide introductory training explains ERM Framework components, while specialized training addresses the needs of targeted audiences.

Nasdaq Broker Services ERM Framework incorporates the Three Lines of Defense model to manage risks.

The First Line of Defense incorporates Broker Services' Business Units and Support Functions. The First Line of Defense has primary ownership and accountability for maintaining a robust risk management environment, which includes identification, assessment, monitoring, and risk treatment. In addition, the First Line of Defense has responsibility for reviewing information, data and/or records that inform the level of risk in the operating environment. The company's CEO, other senior executives and other employees in the company are responsible for identifying, managing and reporting the risks that arise in the business operations.

The Second Line of Defense serves as an independent advisor to the First Line of Defense and defines a framework to direct the First Lines' of Defense risk management and reporting efforts. The functions consist of ERM Risk Officer, Compliance Officer, AML Officer, Nordic CISO.

The Third Line of Defense comprises the independent assurance provided by the Internal Audit Department to management and the Board.

The company's Board bears the primary responsibility for ensuring that the company's risk management takes place in an organized and suitable manner. Nasdaq Broker Services AB's risk management is supported by the Global Risk Management function for risk management in Nasdaq Inc's global risk organization whose task consists of coordination and control of the internal risk management procedures, and monitoring of Nasdaq Broker Services AB's compliance to the set intra-Group guidelines.

ERM Risk function

ERM Risk function is carried out by an ERM Risk Officer. The ERM Risk Officer is independent from the business, provides independent advice and guidance to the First Line of Defence in regards to the risk management and reports directly to the Board of Directors. The ERM Risk Officer is responsible for ensuring implementation of the defined risk frameworks as approved by the Board as well as risk standards, guidelines and procedures. The ERM Risk Officer facilitates identification, assessment, monitoring, and measurement of risks related to the company,

coordinating risk management activities and reporting, provides the Board of Directors and management an aggregated view of their risks.

The ERM Risk Officer represents company's risk topics to the relevant regulators, as required. The activities, responsibilities and tasks of the ERM Risk Function are described in the ERM Policy, ERM Annual Risk Plan and the Governance Policy. The company's CEO ensures that the management follows the Board's governance documents for the risk management.

ERM Risk function as a part of the Second Line of Defense is outsourced to the Group Risk Management ("GRM") function where one of the group risk specialists is tasked to work as a full time ERM Risk Officer

Compliance Officer

Broker Services' compliance officer shall monitor whether the licensed operations are being conducted in accordance with applicable legislation, regulations, internal rules and generally accepted practices. The compliance officer reports directly to the board of directors, and to the company's CEO, and shall report at the board of directors regular meetings. Broker Services compliance is outsourced internally within Nasdaq to another company.

2nd line AML Officer

In accordance with AML Regulations Broker Services have Specially Appointed Executive, Independent Control Function (Internal Audit) and Independent Appointed Officer for controlling and reporting obligations (Second Line AML Officer).

The Second Line AML Officer is independent of the functions and areas and reports directly to CEO and the Board of Directors. The Second line AML officer is responsible for submitting an annual AML report to the Swedish FSA and reporting the suspected transactions to the Swedish Police.

Chief Information Security Officer (CISO)

The Nordic CISO coordinates information security and is working together with the CTO and Services Monitoring Manager (SMM) for overseeing the outsourced services when it relates to Cybersecurity. The Nordic CISO is also responsible for monitoring and reporting cyber risks to management and the board. This role is not within Broker Services but supports and coordinates relevant issues together with CTO, CEO and SMM.

Internal Audit

There is also an independently established internal audit department to assist the Board of Directors with risk controls. The internal audit department is outsourced to another company within the Group which carries out regular follow-ups and controls which are reported to the board of directors and to the Group's central Internal Audit unit.

Risks in the business

In accordance with IFRS 7 and the Capital Adequacy Directive, Broker Services reports on the following risks: liquidity risk, credit risk, market risk, interest rate risk and currency risk. The company's risks in the operations are also published on the company's website.

Broker Services ERM Risk Officer monitors and follows up the risks that arise in the business. The risk control function's work is based on the so-called Pillar I, II and III risks to ensure that the capital adequacy requirements are met:

Pillar I describes the minimum capital requirements for credit risk, market risk and operational risk.

Pillar II covers internal assessment of Pillar I risks and assessment of all other risks that are not covered by Pillar I requirements including business & strategic risk, interest rate risk, concentration risk, etc.

Pillar III sets up the requirements for the disclosure of capital adequacy and risk management.

The different risks, that the company is exposed to, are specified below. More detailed information and key figures for the various risks, can be found on Broker Services' Annual Report published on Broker Services website.

RISK PILLARS

Capital adequacy requirements for the company

CRR and the Swedish Financial Supervisory Authority's regulations and general recommendations (FFFS 2014:12) regarding supervisory requirements and capital buffers govern the establishment of the company's statutory capital requirements. The rules entail that the company's capital base (shareholders' equity) must cover, with a margin, the prescribed minimum capital requirements, which includes the capital requirements for credit risks, market risks and operating risks. The rules also cover capital requirements for additional risks identified in the operations in accordance with the company's capital and liquidity adequacy assessment process. In August 2014, new rules regarding buffer requirements were introduced prescribing that credit institutions and securities companies must hold the capital required to handle losses during difficult economic times, commonly referred to as capital conservation buffers.

Broker Services calculates the capital requirements under Article 95 (EU no. 575/2013) due to the fact that the company has a limited authorization to provide security services. The capital requirements are based on the highest of the following requirements:

- capital requirements for sum of credit and market risks
- operational risk

Broker Services external capital requirements have so far been the capital requirement for operational risk, as this has been the greater (25% of the fixed overheads of the preceding year).

The following methods are used for the calculation of the statutory capital base requirement:

- For credit risk: the standardized approach according to article 107.1 in CRR.
- For market risk (exchange rate risk): the standardized approach according to article 351 in CRR.
- For operating risk: fixed overheads (25% of the fixed overheads of the preceding year)

The capital requirement for market risk is equal to 8% of the market risk-weighted exposure amount. Capital requirements for operational risk based on fixed overheads are calculated as one quarter (25 %) of the fixed overheads of the preceding year. Risk-weighted exposure amount is calculated as the capital requirement divided by 8 %, or alternatively multiplied by 12.5.

In addition to this, the company must hold 2.5% of the total risk-weighted exposure amount in the capital conservation buffer. The company carries out regular controls to ensure that these minimum requirements are fulfilled by reporting the information regarding capital base and statutory requirements to the Board of directors. As at December 31, 2018, CET1 Capital Ratio is 29,45%.

During 2018 the capital ratio remained on a very comfortable level with a quota of 29,43% as per December 30 (29,45% in Q3 2018). This ratio can be compared to the minimum requirement including Capital Conservation Buffer of 13,13 % (12,46 % in Q3 2019). The internal minimum requirement is 15,10 % (14,33% in Q3 2019) including internal buffer.

Credit risk

The credit risk is the risk that a counterparty in a transaction will not perform its obligations. The types of credit risks can be divided into concentration risk and counterparty risk. As at December 31 2018 total capital demand for credit risk was 5 mSEK.

In handling the concentration risk, the major exposures are reported regularly. The concentration risk is stress tested and compared with the current capital requirement for credit risks. In order to minimize Broker Services' counterparty risk, the company uses a proven credit assessment model. In the opinion of the company the credit quality of financial assets, which are neither due nor payable nor written down, are good. A new requirement regarding the concentration risk is taken into consideration in the Pillar II risk assessment. Capital demand for concentration risk was 1,2 mSEK as at the end of 2018.

For credit rated exposures to institutions and corporates credit ratings from Standard & Poor's are used. If no rating are available from S&P then Moody's will be used to determine credit quality.

Market risk/currency rate risk

The market risk is related to how a market, as a whole, reacts to various events, such as changes in interest rates, inflation, tax legislation, the political climate, etc. The company's management regards this risk very small. The currency rate risk is the risk that fluctuations in the currency rate will affect the company's cash flow when exchange rates change. This is calculated on a quarterly basis and published on the company's website in conjunction with the quarterly reporting. As at December 2018 the capital demand for market risk (currency risk) was 0,2 mSEK.

Operational risks

Operational risks are risk arising from the company's people, processes, and systems and external causes. The company employs ERM Risk Policy and ERM frameworks to manage operational risks. Through risk identification, assessment, monitoring, and measurement, Broker Services identifies issues, existing control deficiencies, or unaddressed contributory factors that require management attention.

Capital requirements for operational risk, for an investment firm such as Broker Services that provide certain investment services and activities, are based on fixed overheads according to article 97.1 of the CRR and as at the end of December 2018 the capital demand for operational risk was 23 mSEK.

PILLAR II RISKS

Strategic and Business/earnings 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. Business & strategic risk for Broker Services is retrieved from its latest scenario assessment in the ICLAAP.

Concentration risk

Swedish FSA's method (FI Ref. 14-14414) using a Herfindahl-index. The calculation deals with concentration risk in respect of concentration to individual counterparties (single-name concentration), concentration to individual industries (industry concentration) and concentration to individual countries or regions (geographical concentration). Due to the fact that the company's operations are strictly concentrated to the Nordic region and towards mostly financial institutions, this risk is relatively high.

Interest rate risk in the banking book

Interest rate risk in the banking book (IRRBB) is calculated in accordance with the Swedish FSA's method (FI Ref. 14-14414) using economic value. The method for assessing IRRBB is based on three kinds of yield curve stress scenarios. These include firstly parallel shifts (+/- 200 bps) of the curve and a number of curve slope changes are produced using this as a point of departure. This stress are applied to the Treasury department information of market data for Broker Services investments.

Due to the low interest rates prevailing in Sweden, Broker Services have invested assets with longer fixed interest periods, increasing the interest rate risk compared to previous years.

PILLAR III

With the introduction of the new CRR regulations, securities companies are subject to stricter transparency requirements through the publication of capital coverage and risk management information. As a result, on a quarterly basis, Broker Services publishes information regarding the capital base and risk-weighted exposures in the various risk groups and assesses capital requirements internally. Information is also published on the website on a quarterly basis regarding the company's financial situation and liquidity status. The quarterly publication of financial information on the website normally takes place two months after the expiration of the reporting period. Annual information is also published on Broker Services' website regarding the company's management and governance and remuneration paid by the company. Through this document containing information regarding the company's risk management which is published annually, the publication requirements under the new CRR regulations are therefore fulfilled.

The implementation directive (EU) 1423/2013 contains standardized forms which Broker Services publish on its website. The documents as at December 31 2018 are attached in Appendix 1.

Liquidity risk

Broker Services monitor and meet future liquidity needs in normal daily management, both in temporary and extended crisis situations. The Company's liquidity risk management aim at having prompt access to sufficient liquidity.

Broker Services' liquidity decisions shall be cost-based, founded on an assessment of liquidity in the operations, be forward looking and aligned with strategic and business planning. Liquidity risks shall be minimized through documented processes / routine descriptions and policy documents, identification / determination of risk measurements, key figures and limits, follow-up and reporting thereof.

The Broker Services CEO follows and regularly reports the Company's management of liquidity risks, liquidity position and liquidity development to the Board. Broker Services' executive management ensures that the management of liquidity risks is in accordance with the risk tolerance. Risk tolerance is set by the Board of Directors.

Identification of liquidity risks is included in Broker Services RCSA process and liquidity stress testing conducted at least annually.

Broker Services liquidity is managed centrally by Nasdaq Treasury.

Stress tests for liquidity

On at least an annual basis, Broker Services must carry out stress tests for liquidity and report the results of these tests to the Board of directors. The stress tests are to be calculated on the basis of the cash flow which is anticipated to arise when the total assets, liabilities and memorandum items are realized. Broker Services must use at least seven horizons: one day, more than one day up to one week, more than one week up to one month, more than one month up to 3 months, more than 3 months up to 6 months, more than 6 months up to one year, more than one year. Broker Services must calculate the net cash flow for each horizon using the total anticipated cash outflow less the total anticipated cash inflow. All of these horizons are accumulated in order to illustrate how long the company will have a positive cash flow.

Liquidity reporting

Broker Services reports information to the Board of directors on a quarterly basis regarding what the liquidity reserves and outstanding liabilities consist of, and their liquidity quotient. The information is also published on the company's website.

Liquidity preparedness plan

The purpose of the continuity plan for liquidity is to establish certain conditions which enable Broker Services to be organized and function systematically, and to clarify the intentions as to how the company will handle liquidity crises. A serious liquidity crisis is defined as a situation in which the company, as a consequence of its lack of liquidity, is unable to fulfill at least one payment obligation. The CEO, risk manager and Board of directors of Broker Services must be immediately informed in the event of a liquidity crisis. The internal treasury function must execute liquidity-generating measures in the order which is operatively most effective in order to reinstate the liquidity reserve above the minimum level defined in the Treasury Policy.

Internal capital and liquidity adequacy assessment process, ICLAAP

In order to ensure that the risks have been correctly taken into consideration and that they reflect the company's actual risk profile and capital requirements, on an annual basis, or where necessary, an internal capital and liquidity adequacy assessment process is carried out (ICLAAP). An estimate is made in this assessment of forecasted outcomes for financial status, capital base and capital requirements for the various risks in a normal and in a stressed situation for a number of years going forward. In addition to the risks included in the capital adequacy requirements, other identified risks in the operations are analyzed, such as business/earnings risk, strategic risk, and reputation risk as described further above. Following the implementation of the new CRR rules, the assessment also includes estimates regarding current and future liquidity needs. Broker Services' risk manager, in cooperation with the accounting department and controller, is responsible for the ICLAAP assessment and controls. After the annual ICLAAP work has been completed, the board of directors receives training and information regarding the company's ICLAAP and financial situation. In conjunction with this, training is also provided regarding the directors' responsibilities and general risks encountered by securities companies.

Risk reporting

ERM Risk report is comprised of risk appetite status, risk profile, risk register, outcomes of RCSA and Top risk assessment and risk incidents, and presented to Nasdaq Broker Services Risk Committee and the Board of Directors by ERM Risk Officer every quarter.

Reporting of events of material significance to the Swedish Financial Supervisory Authority are carried out in accordance with the internal instruction of reporting such events.

Publications and references

In accordance with the Swedish Financial Supervisory Authority's regulations regarding supervisory requirements and capital buffers (FFFS 2014:12), the company publishes parts of the information that must be provided under Articles 435 – 455 (EU) no. 575/2013 in the form of references to equivalent information. The information that is provided in the form of references, and where this information may be found, is reported in the summary below.

The information which the company is obligated to publish under Articles 437 - 438 (EU) no. 575/2013 regarding capital base, capital requirements and capital buffers is found in the following documents:

- Nasdaq Broker Services AB Annual Report for the financial year 1 January 2018 to 31 December 2018
- Own Funds, Capital Requirements and Liquidity Reserve

The information which the company is obligated to publish under Article 450 (EU) no. 575/2013 regarding remuneration policy is found in the following documents:

- Report regarding remuneration policy for Nasdaq Broker Services AB according to FFFS 2011:1, 2014:22, 2014:12, 2016:25 and (EU) no. 575/2013
- Remuneration Policy
- Risk Analyses for Remuneration

The information which the company is obligated to publish under Article 435 (EU) no. 575/2013 regarding risk management and corporate governance is found, in addition to this document, in the following documents:

- Nasdaq Broker Services AB Annual Report for the financial year 1 January 2018 to December 31 2018
- Corporate Governance
- Board Members

All of the above-stated documents are published on Broker Services' website at:

<http://www.nasdaqomx.com/transactions/posttrade/posttradeservices/financialinformation>

Explanation of risk

Since Broker Services specializes in back office operations and associated ancillary services, and does not carry out any proprietary trading or lending operations, the company's credit risk is small. According to the company's internal regulations, the risk appetite and risk tolerance are low. The board of directors has decided that the company's goal is to regularly maintain core primary capital according to the external requirements set forth in CRR with an extra internal margin of 15%. The company has a strategy to maintain sufficient liquidity reserves of good quality which fulfill the internal requirements contained in the Treasury Policy, corresponding to 3 months budgeted amounts for operating costs. Losses as a consequence of transactional errors in the operations are followed up and reported continuously to the Board of directors and must not exceed an internally established percentage of the company's turnover.

Broker Services have by good margin exceeded the external and internal requirements regarding risk and capital coverage in 2018. The company's risk profile during the year corresponds well to the risk tolerance established by the Board of directors.

Declaration of risk

Nasdaq Broker Services AB's Board of directors concludes that the company's risk management is being handled satisfactorily and affirms that the arrangements made for risk management and risk controls which have been implemented at Broker Services are appropriate in relation to the company's business model, profile and strategy.

The Board of directors of Nasdaq Broker Services AB

Appendix 2 can be found on the home page

Financial Information / Capital Adequacy and Liquidity Reserve

<https://business.nasdaq.com/trade/Post-Trade/Nasdaq-Broker-Services/Financial-Information.html>