FINANTSINSPEKTSIOON

Advisory Guidelines of Financial Supervision Authority

Addressing Concentration Risk under Pillar 2

These advisory guidelines have been established by Resolution No. 1.1-7/26 of the Management Board of the Financial Supervision Authority of 18 May 2011.

1. Competence

According to § 3 of the Financial Supervision Authority Act (hereinafter FIS), the Financial Supervision Authority conducts state financial supervision in order to enhance the stability, reliability, transparency and efficiency of the financial sector, to reduce systemic risks and to promote prevention of the abuse of the financial sector for criminal purposes, with a view to protecting the interests of clients and investors by safeguarding their financial resources, and thereby supporting the stability of the Estonian monetary system.

According to § 57(1) of the FIS, the Financial Supervision Authority has the right to issue advisory guidelines to explain legislation regulating the activities of the financial sector and to provide guidance to subjects of financial supervision.

2. Purpose

These advisory guidelines are enforced to credit institutions for interpreting § 63^1 of the Credit Institutions Act and to investment firms for interpreting § 82^2 of the Securities Market Act.

The objective of these guidelines is to provide guidance to credit institutions and investment firms on how to address concentration risk within the internal capital adequacy assessment process under Pillar 2. The regulatory thresholds of risk concentration and the procedure of their calculation for credit institutions have been established on the basis of § 85 of the Credit Institutions Act and for investment firms on the basis of § 105 of the Securities Market Act. These guidelines address the aspects of concentration risk assessment and management that have not been fully covered by regulatory requirements. In these guidelines, concentration risk has been defined both as the concentration of risks in terms of high credit risk exposures as well as other major sources of concentration risk, which can cause potential loss to the extent that might compromise the on-going operations of a credit institution or an investment firm.

The guidelines should be applied based on the ‘comply or explain’ principle, which means that a credit institution or an investment firm has to be able to explain to the Financial Supervision Authority, why it does not apply a requirement set by the guidelines or does it only partially. The explanations submitted to the Financial Supervision Authority have to take into account the

principle of proportionality as set out in the next sentence.[1] Subject to it, the methods and procedures used for risk assessment and management should correspond to the weight of the risk in the risk profile of a credit institution or investment firm and to the size of a credit institution or investment firm, the impact of their activities on the financial system and the nature, scope and complexity of their activities.

These guidelines have been developed in line with the principles set out in *Guidelines on aspects of the management of concentration risk under the supervisory review process* issued by the Committee of European Banking Supervisors (CEBS). In developing these advisory guidelines, the Financial Supervision Authority has also taken into account the principles applied by other European supervisory authorities to the internal capital adequacy assessment process and supervisory assessment.

3. Scope of application

3.1. These guidelines shall apply to all credit institutions and investments firms and to their consolidation groups.

3.2. The application of these guidelines is governed by the scope of application set out in clause 5 of *Requirements to the internal capital adequacy assessment process* issued by the Financial Supervision Authority as advisory guidelines.

4. Definitions used in the guidelines

4.1. Dispersion – an indicator expressing the variability of a random variable.

4.2. Diversification – the spreading of risks, achieved, inter alia, by avoiding a strong positive correlation between risk exposures.

4.3. Granularity – an indicator expressing the dependence of the concentration of the portfolio on the weight of individual exposures in the portfolio.

4.4. Herfindahl-Hirschman index – an indicator for assessing the concentration of the portfolio with regard to the relative weights of counterparties.

4.5. Capital – the set of instruments included in equity capital or liabilities, which a credit institution or an investment firm can use for covering its losses.

4.6. Capital need – the amount of capital required to cover risks adequately.

4.7. Concentration risk – a risk resulting from the exposure to a counterparty or related counterparties or from exposures which are affected by a common risk driver or risk drivers in a strong positive correlation.

[1] The "principle of proportionality" described in these guidelines differs from the principle of proportionality as it is understood in the context of general administrative procedures and the content of the former is explained in the main text. The frequency of supervisory activities of the Supervision Authority as an administrative authority and the methodology applied shall take account of the size of the subject of financial supervision, the effect of its activity to the financial system as well as the type, extent and complexity of the activity, based on the principle of proportionality (FIS, § 5(2)).

4.8. Correlation – the simultaneous change in two random variables of certain strength and direction.

4.9. Covariance – an indicator expressing the co-variability of two random variables.

4.10. Credit risk – the risk that the counterparty to the transaction will not be able or willing to perform their contractual commitments.

4.11. Liquidity risk – the risk that a credit institution or an investment firm will not be able to perform its future commitments in time or in full.

4.12. Operational risk – the risk resulting from the inadequacy or unexpected failure of internal processes, human activity or systems or from external events.

4.13. Reputational risk – the risk resulting from the deterioration of reputation in the eyes of customers, business partners, owners, investors or supervisory authorities.

4.14. Risk – the potential loss or change in revenues or in the value of assets, which can be described by probability distribution.

4.15. Intra-risk concentration – a situation where different exposures in one risk category are in a strong positive correlation or they are affected by a common risk driver.

4.16. Inter-risk concentration – a situation where different exposures in more than one risk category are in a strong positive correlation or they are affected by a common risk driver.

4.17. Risk appetite – the informed decision of a credit institution or an investment firm to accept risks.

4.18. Risk profile – the unique combination of risks of any credit institution or investment firm, resulting from the nature, scope and complexity of its activities as well as from its operational environment.

4.19. Internal capital adequacy assessment process – the set of actions aimed at evaluating the risk profile of a credit institution or an investment firm and the respective capital need.

4.20. Stress testing – the analysis aimed at measuring the effect of considerable adverse changes in environmental factors on the risks and capital need of a credit institution or an investment firm.

4.21. Scenario analysis – the analysis aimed at evaluating the effect of simultaneous changes in several environmental factors on the risks and capital need of a credit institution or an investment firm.

4.22. Sensitivity analysis – the analysis aimed at evaluating the effect of a change in a single environmental factor on the risks and capital need of a credit institution or an investment firm.

4.23. Market liquidity – the property of the instrument, which reflects the speed of converting the instrument into cash or some other instrument without bearing significant losses.

5. General requirements

5.1. A credit institution or an investment firm has to take concentration risk into account within the internal capital adequacy assessment process.

5.2. A credit institution or an investment firm has to define the risk appetite of concentration risk based on the nature of its business activities.

5.3. A credit institution or an investment firm has to establish written policies and procedures for the identification, assessment, management and monitoring of concentration risk and reporting thereon.

5.4. A credit institution or an investment firm has to regularly review its concentration risk policies and procedures and adjust them as appropriate by taking into account the changes in its risk appetite and operational environment.

5.5. The concentration risk policies and procedures of a credit institution or an investment firm have to include the principles of addressing concentration risk both on solo and consolidated basis.

5.6. The concentration risk policies and procedures of a credit institution or an investment firm have to include the principles of addressing both intra-risk concentration and inter-risk concentration.

5.7. A credit institution or an investment firm may address intra-risk concentration within the framework for the identification, assessment, management and monitoring of a specific risk and reporting thereon. In this event, it must be able to demonstrate to the Financial Supervision Authority that it has taken account of concentration risk in accordance with the principle of proportionality.

5.8. The framework of a credit institution or an investment firm for the identification, assessment, management and monitoring of concentration risk and reporting thereon has to include both qualitative and quantitative aspects and methods.

5.9. A credit institution or an investment firm must have an appropriate internal control system in place, including risk control and internal audit procedures in order to ensure that concentration risk is being addressed in accordance with the requirements set out in these guidelines and internal policies, procedures and limits.

5.10. As it may be challenging to quantitatively assess concentration risk, a credit institution or an investment firm has to pay even more attention to the avoidance, limiting, identification and monitoring of excessive concentrations.

6. Identification of concentration risk

6.1. A credit institution or an investment firm has to identify the risk concentration sources resulting from the nature of its business activities and their potential impact.

6.2. For the identification of concentration risk, a credit institution or an investment firm has to take into account the concentrations resulting from its trading portfolio; credit institutions have to also take into account the concentrations resulting from their bank portfolio, and investment firms the concentrations resulting from their other activities.

6.3. A credit institution or an investment firm has to take into account the concentration risk resulting from the scarcity of its transaction or hedging transaction counterparties and the concentration of its activities in certain products, economic sectors or geographical areas.

6.4. For the identification of concentration risk, a credit institution or an investment firm has to analyse both intra-risk concentration and inter-risk concentration.

6.5. In addition to intra-risk concentration and inter-risk concentration, a credit institution or an investment firm has to also take into account the possible concentration risk in its revenue structure, resulting from significant dependence on earning revenue in certain economic sectors or geographical areas.

6.6. A credit institution or an investment firm has to take into account the correlation between different revenue sources.

6.7. In identifying concentration risks, investment firms have to specifically take into account the concentration of revenues resulting from significant dependence on the low number of transactions.

6.8. In planning the development of new products or entering into new markets, a credit institution or an investment firm has to analyse potential concentration risk associated with it.

6.9. A credit institution or an investment firm has to take into account the possibility that the correlation of exposures which is normally low, might significantly increase under negative market conditions.

6.10. For the identification of concentration risk, a credit institution or an investment firm has to, inter alia, perform scenario analyses, stress tests and sensibility analyses that help identify hidden links between risk factors and their potential effect.

7. Credit risk concentration

7.1. A credit institution or an investment firm has to take into account the concentration of credit risk resulting from the exposures to a single counterparty or related counterparties, or resulting from exposures that are affected by common risk drivers or risk drivers in a strong positive correlation.

7.2. A credit institution or an investment firm has to define, what is internally understood as a credit risk concentration; it has to also define the meaning of concentration resulting from one counterparty or related counterparties and the concentration resulting from certain economic sectors or geographical areas.

7.3. A credit institution or an investment firm has to take into account the concentration of credit risk resulting from guarantees or other hedging instruments of credit risk.

7.4. A credit institution or an investment firm has to introduce appropriate methods and procedures for consistent identification of the aggregate credit risk exposure with regard to certain counterparties, products, economic sectors or geographical areas.

7.5. The framework of the aggregation and consolidation of credit risk exposures at a credit institution or an investment firm has to allow for the identification of inter-related counterparties.

7.6. In identifying the concentration of credit risk, a credit institution or an investment firm has to take into account the following common characteristics of counterparties as the potential sources of concentration risk exposure:
1) economic sector;
2) geographical area;
3) currency; and
4) type of instrument or product.

7.7. In addition to the correlation of exposures belonging to one economic sector, a credit institution or an investment firm has to also take into account the correlation between exposures belonging to different economic sectors.

7.8. A credit institution or an investment firm has to take into account the stability of the correlations of credit risk exposures over time.

8. Market risk concentration

8.1. A credit institution or an investment firm has to take into account the concentration of market risk resulting from market risk exposures affected by common risk drivers or risk drivers in a strong positive correlation.

8.2. A credit institution or an investment firm has to take into account the concentration of market risk resulting from the changes in the risk preferences of market actors under negative market conditions, which cause a change in the correlation between risk premiums and assets.

8.3. In assessing the concentration of market risk, a credit institution or an investment firm has to take into account different potential liquidity horizons, i.e. the possibility that the market liquidity of market risk exposures might considerably decrease under negative market conditions.

8.4. A credit institution or an investment firm, who uses internal model of market risk assessment, must be aware of the extent to which the internal model expresses the correlation between market risk exposures, especially under negative market conditions.

9. Operational risk concentration

9.1. A credit institution or an investment firm has to take into account the concentration of operational risk resulting from, inter alia, its dependence on the products, services, facilities, equipment or service channels of one supplier.

9.2. Within the management of operational risk, a credit institution or an investment firm has to identify the sources of operational risk concentration, resulting from the nature of its business activities and organisational structure, and their potential effect.

9.3. In order to identify the concentration of operational risk, a credit institution or an investment firm has to analyse the frequency of losses caused by operational risk and the magnitude of their effect, and assess the potential sources of operational risk concentration based on the analysis.

9.4. In course of assessing its operational risk, a credit institution or an investment firm has to implement appropriate methods for the assessment of the concentration of operational risk.

9.5. A credit institution or an investment firm may hedge the risk resulting from the concentration of operational risk, inter alia, by entering into insurance contracts, but therewith it has to take into account the additional operational risks resulting from the instruments used for hedging, including legal risk and additional concentration risk resulting from a single insurer.

10. Liquidity risk concentration

10.1. A credit institution or an investment firm has to take into account the concentration of liquidity risk, resulting from the concentration of assets into instruments, the market liquidity of which might significantly decrease under negative market conditions or from the concentration of financing sources, which will make a credit institution or an investment firm vulnerable to the loss of financing sources or worse access to them.

10.2. In assessing the concentration of liquidity risk, a credit institution or an investment firm has to take into account both off-balance sheet positions and the liquidity need resulting from them as well as on-balance sheet positions.

10.3. In assessing the concentration of liquidity risk, a credit institution or an investment firm has to take into account additional liquidity need, which might result from the necessity to support other undertakings belonging to the same group or from the premature repayment of loan commitments.

10.4. A credit institution or an investment firm has to take into account possible concentrations in the assets maintained in its liquidity buffer.

10.5. The concentration of financing sources is expressed by a high volume of funding received from a limited number of financers, the loss of which can force a credit institution or an investment firm to considerably adjust its financing strategy.

10.6. A credit institution or an investment firm has to closely analyse the factors affecting its financing sources, which may unexpectedly cause a significant decrease in the volume of funding or a loss of access to certain financing sources.

10.7. In order to identify the concentration of financing sources, a credit institution or an investment firm has to analyse the structure of its financing, including the weight of deposit-based and market-based financing and the factors affecting it over time.

10.8. A credit institution or an investment firm has to take into account the concentration of liquidity risk related to financing, which results from the concentration:

1) with regard to certain financing sources, including:
   a) interbank market;

  - b) bond market; and
  - c) other market-based financing sources.
2) with regard to certain instruments, including:
  - a) subordinated bonds;
  - b) secured bonds;
  - c) repos and reverse repos; and
  - d) securitised receivables.
3) with regard to individual financiers, including:
  - a) intragroup financers;
  - b) other related parties;
  - c) large institutional and corporate depositors; and
  - d) individual large depositors or counterparties.
4) with regard to the currencies of financing sources;
5) with regard to the geographical location of financing sources; and
6) with regard to the expiry date of financing sources.

10.9. A credit institution or an investment firm has to take concentration of liquidity risk into account in liquidity contingency planning.

10.10. The liquidity contingency plan of a credit institution or an investment firm has to include indicators, which enable the growth of the concentration of liquidity risk to be identified, and measures for addressing it quickly and appropriately.

11. Inter-risk concentration

11.1. In order to avoid the underestimation of concentration risk, a credit institution or an investment firm has to also take into account significant inter-risk concentrations in addition to intra-risk concentrations.

11.2. In order to take into account inter-risk concentration, a credit institution or an investment firm has to analyse, inter alia, the following inter-risk correlations:

1) credit risk - liquidity risk – a situation where the non-performance of their commitments by material counterparties will impair the cash flows and liquidity of a credit institution or an investment firm;
2) credit risk - market risk – a situation where a credit institution or an investment firm has both credit risk and market risk exposures to one counterparty or related counterparties;
3) credit risk - operational risk – a situation where the level of credit risk is influenced by operational risk factors or the credit risk of the issuers of hedging instruments affects the level of the operational risk of a credit institution or an investment firm;
4) market risk - liquidity risk – a situation where the increased volatility of the market or drastic decrease in market liquidity impairs the liquidity of a credit institution or an investment firm;
5) reputational risk - liquidity risk – a situation where the realisation of the reputational risk of a credit institution or an investment firm reduces financing sources and access to them;
6) operational risk - liquidity risk – a situation where the realisation of the operational risk impairs the liquidity of a credit institution or an investment firm.

12. Assessment of concentration risk

12.1. A credit institution or and investment firm must be able to assess the potential negative effect of the concentration risk on its capital, liquidity and revenues.

12.2. The methodology and frequency of the assessment of concentration risk has to be proportional to the nature, scope and the complexity of the activities of a credit institution or an investment firm.

12.3. A credit institution or an investment firm has to regularly review its framework of concentration risk assessment and adjust it as appropriate by taking into account the changes in its risk appetite and its operational environment.

12.4. In order to take adequately into account the different forms of concentration risk, it might be necessary to implement different assessment methodologies of concentration risk simultaneously.

12.5. Possible methods of assessing the concentration risk include, inter alia, scenario analysis, stress testing and sensitivity analysis.

12.6. The framework of assessing intra-risk and inter-risk concentrations of a credit institution or an investment firm has to enable the correlations between exposures to be adequately assessed.

12.7. In assessing its concentration risk, a credit institution or an investment firm has to take into account the limits of the methodology used for the assessment of concentration risks and the effect of underlying assumptions.

12.8. In assessing its concentration risk, a credit institution or an investment firm may use, inter alia, the following risk indicators and measurement:

1) the biggest exposures in absolute volume or in relation to relevant indicators (e.g. as a weight in the portfolio or capital);
2) the biggest inter-related exposures in absolute volume or in relation to relevant indicators (e.g. as a weight in the portfolio or capital);
3) concentration with regard to certain products and instruments;
4) concentration with regard to certain economic sectors and geographical areas;
5) indicators of actual implementation of internal concentration limits;
6) concentration indicators of a portfolio;
7) indicators of the dispersion and covariance of a portfolio;
8) indicators of the concentration of a portfolio (e.g. Herfindahl-Hirschman index);
9) graphic measurement of the concentration of a portfolio (e.g. concentration curve); and
10) measurement specific to credit risk models (e.g. granularity indicators).

13. Management of concentration risk

13.1. The risk management framework of a credit institution or an investment has to expressly address concentration risk and its management.

13.2. A credit institution or an investment firm has to avoid the accumulation of concentration risk unless it is adequately identified and managed.

13.3. The methods of concentration risk management include, inter alia:
1) the establishment of limits in order to reduce the risk;
2) the use of portfolio management techniques in order to diversify the risk;
3) direct or indirect transfer of the risk to other parties with the help of different instruments; and
4) maintaining liquidity buffers for hedging purposes.

13.4. In order to manage its concentration risk, a credit institution or an investment firm has to establish concentration risk limits with regard to individual or inter-related counterparties, economic sectors, products and geographical areas.

13.5. Concentration risk limits of a credit institution or an investment firm have to correspond to its risk profile and risk appetite.

13.6. In order to set limits to its concentration risk and to make sure that they are continually appropriate, a credit institution or an investment firm has to analyse its portfolios and exposures on a regular basis.

13.7. A credit institution or an investment firm has to adequately document the limits of concentration risk and to inform relevant parties thereof.

13.8. A credit institution or an investment firm has to establish concentration risk limits both on solo and consolidated basis.

13.9. Concentration risk limits have to cover both the on-balance sheet and off-balance sheet positions of a credit institution or an investment firm.

13.10. In a situation, where concentration risk exceeds the risk appetite of a credit institution or an investment firm, it has to implement appropriate measures for reducing or hedging the risk.

13.11. Measures to be implemented by a credit institution or for the management of concentration risk have to be appropriate and transparent.

13.12. A credit institution or an investment firm can hedge the concentration risk by implementing, inter alia, the following measures:
1) reducing the limits of concentration risk;
2) reviewing its business strategy;
3) diversifying its assets;
4) diversifying financing sources;
5) changing the financing sources;
6) acquiring hedging instruments;
7) selling assets; and
8) reviewing transferable services.

13.13. In managing concentration risk, the exposure to potential additional concentration risk due to the implementation of hedging instruments has to be taken into account.

14. Monitoring of concentration risk and reporting thereon

14.1. A credit institution or an investment firm has to have a reliable, timely and comprehensive framework in place for monitoring the concentration risk and reporting thereon, which enables management decisions to be effectively made.

14.2. The information systems of a credit institution or an investment firm have to ensure the availability of information required for the monitoring of concentration risk and the methods used for its management.

14.3. A credit institution or an investment firm has to have adequate procedures for the monitoring of methods used for the management of concentration risk and for reporting thereon.

14.4. The reporting on the concentration risk of a credit institution or an investment firm should include, inter alia, qualitative and quantitative information about intra-risk and inter-risk concentrations, about major factors of concentration risk and hedging transactions both on solo and consolidated basis and according to lines of business, geographical areas and business units.

14.5. The frequency of concentration risk reporting has to correspond to the level of concentration in a credit institution or an investment firm and to the nature of major risk factors affecting it, including their volatility.

15. Coverage of concentration risk with capital

15.1. Within the framework of the internal capital adequacy assessment process, a credit institution or an investment firm has to assess the capital required for the coverage of concentration risk.

15.2. A credit institution has to pay particularly close attention to the capital that might be required to cover the credit risk concentration.

15.3. If a credit institution or an investment firm uses a standard method for calculating the regulatory capital requirement of credit risk, it may, within the internal capital adequacy assessment process, proceed from a simplified methodology for assessing the capital required for the coverage of risk resulting from the credit risk concentration, as described in clauses 15.4 to 15.7 of these guidelines.

15.4. In order to cover the concentration risk resulting from the concentration of economic sectors with capital within the internal capital adequacy assessment process, a sector-based Herfindahl-Hirschman index (HHI_{sector}) can be used, which has been calculated according to the following formula:

$$HHI_{sector} = \frac{\sum_{i=1}^{N} x_i^2}{\left(\sum_{i=1}^{N} x_i\right)^2} \times 100,$$

where x_i is the value of total capital requirement of a sector ranked as i and N is the total number of sectors.

15.5. Based on the value of the index calculated according to the formula in clause 15.4, a credit institution or an investment firm can determine the need of additional capital for the coverage of concentration risk pursuant to the regulatory capital requirement for credit risk based on the following table:

HHI_{sector}	Additional capital need
$0 < HHI_{sector} \le 10$	0%
$10 < HHI_{sector} \le 15$	2%
$15 < HHIs_{ector} \le 20$	4%
$20 < HHI_{sector} \le 25$	6%
$25 < HHI_{sector} \le 100$	8%

15.6. In order to cover the concentration risk resulting from the concentration of counterparties with capital within the internal capital adequacy assessment process, a counterparty-based Herfindahl-Hirschman index ($HHI_{counterparty}$) can be used, which has been calculated for one hundred largest counterparties according to the following formula:

$$HHI_{counterpaty} = \frac{\sum_{i=1}^{100} x_i^2}{\left(\sum_{i=1}^{100} x_i\right)^2} \times \frac{\sum_{i=1}^{100} x_i}{\sum_{i=1}^{N} x_i} \times 100,$$

where x_i is the value of total capital requirement of a counterparty ranked as i and N is the total number of counterparties.

15.7. Based on the value of the index calculated according to the formula in clause 15.6, a credit institution or an investment firm can determine the additional need of credit risk capital for the coverage of concentration risk pursuant to the regulatory capital requirement for credit risk based on the following table:

$HHI_{counterparty}$	Additional capital need
$0 < HHI_{counterparty} \le 1$	0%
$1 < HHI_{counterparty} \le 2$	2%
$2 < HHI_{counterparty} \le 4$	4%
$4 < HHI_{counterparty} \le 10$	6%
$10 < HHI_{counterparty} \le 100$	8%

15.8. A credit institution or an investment firm, which has obtained a permission from the Financial Supervision Authority to use the principal method of internal ratings or the advanced method of internal ratings for the calculation of regulatory capital requirements for credit risk, has to use the methodology of internal concentration risk assessment for evaluating the capital required for the coverage of risk resulting from the credit risk concentration within its internal capital adequacy assessment process.

15.9. In evaluating the capital required for the coverage of concentration risk, a credit institution or an investment firm may take into account the factors, which hedge concentration risk, including the efficiency of concentration risk management and other internal control mechanisms.

15.10. If a credit institution or an investment firm does not maintain any capital for the coverage of concentration risk within its internal capital adequacy assessment process, it has to be able to adequately explain this to the Financial Supervision Authority.

16. Entry into force of the guidelines

These guidelines shall enter into force on 1 January 2011.