

3. Risk management

The mBank Group manages risks on the basis of regulatory requirements and best market practice, by developing risk management strategies, policies and guidelines. The risk management functions and roles are released on all of the levels of the organizational structure, starting at the level of the Supervisory Board down to each business unit of the Group. Risk management is streamlined in unified process run by specialized organizational units.

3.1. General information

Location of risk management disclosures

mBank Group's risk management disclosures for 2017 are included in the Annual Report of the mBank Group and in the Disclosures regarding capital adequacy.

The table below presents reference to disclosures regarding various aspects of risk management within the abovementioned documents.

Disclosures regarding capital adequacy of mBank S.A. Group as at 31 December 2017 and Management Board Report for the year 2017 are not the part of mBank S.A. Group Consolidated Financial Statements.

Type of risk	Information	Location of information for 2017		
		Annual Report of mBank Group		Disclosures regarding capital adequacy
		Management Board Report	Consolidated Financial Statements	
General information	Location of risk management disclosures	-	p. 37	p. 3
	Glossary of terms	-	p. 38	-
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Credit risk	Organization of risk management	p. 59	p. 51	-
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	Collaterals accepted	-	p. 53	p. 71, 74
	Rating system	-	p. 54	-
	Monitoring and validation of models	-	p. 55	-
	Calculating impairment charges and provisions	p. 64	p. 55	p. 84
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	Tools and measures	p. 66	p. 68	-
	Risk measurement	p. 67	p. 69	-
	Interest rate risk in the banking book	p. 68	p. 73	-
	Currency risk	-	p. 72	-
Liquidity risk and funding	Strategy of liquidity risk	p. 71	p. 75	-
	The measurement, limiting and reporting the liquidity risk	p. 72	p. 79	-
	Funding sources	-	p. 81	-

Operational risk	Tools and measures	p. 73	p. 85	p. 98
	Operational losses	-	p. 85	-
	Compliance risk	-	p. 86	-
Other risks	Business risk	-	p. 87	-
	Model risk	-	p. 87	-
	Reputational risk	-	p. 88	-
	Capital risk	-	p. 89	-
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Capital adequacy		p. 74	p. 158	p. 9
Leverage ratio		p. 76, 83, 84	p. 39, 40, 160	p. 67

Glossary of terms

Add-on - estimated future potential exposure.

Collateral - asset that is to be paid or received depending on the current valuation of the derivatives portfolio to mitigate potential credit risk in the future. Currently the main collateral asset is cash.

CCF (Credit Conversion Factor) - estimated level of off-balance sheet items converted to balance sheet items at the date of default.

Common Equity Tier 1 Capital Ratio (CET1 ratio) - shall mean the Common Equity Tier 1 Capital expressed as a percentage of the Total Risk Exposure Amount (TREA).

Coverage ratio of non-liquid assets and limited liquidity assets with own funds and stable external funds (measure M4) - the ratio defined in KNF Resolution No. 386/2008 of 17 December 2008 on establishing liquidity measures binding on banks, calculated as a ratio of own funds diminished by sum of capital requirement on market risk, sum of capital requirement on delivery settlement, counterparty risk and stable external funds to sum of limited liquidity assets and non-liquidity assets.

CRD IV - Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC with further amendments (Capital Requirements Directive IV).

CRR - Regulation (EU) No. 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012 with further amendments (Capital Requirements Regulation).

EAD (Exposure at Default) - estimated value of exposure at the time of default (amount).

Earnings at risk (EaR) - a potential decrease in the annual interest income within 12 months assuming defined change of market interest rates scenarios, fixed volume and structure of balance and off-balance portfolio and unchanged interest rate structure of particular position, therein interest margin.

Economic capital (EC) - the amount of capital required to cover unexpected loss (estimated by the Bank at the assumed confidence level over a one-year time horizon) arising from:

- credit risk,
- market risk,
- operational risk,
- business risk.

EL - Expected Loss taking into account the probability of default (amount).

ICAAP - Internal Capital Adequacy Assessment Process.

ILAAP - Internal Liquidity Adequacy Assessment Process.

Internal capital (IC) - the amount of capital estimated by the Bank required to cover unexpected loss arising from material risks identified in the Group's activity within the risk inventory process. Internal capital is the sum of economic capital and capital necessary to cover other risks (including hard to quantify risks).

KNF - Polish Financial Supervision Authority

LCR (Liquidity Coverage Ratio) - a relation of liquid assets of the liquidity buffer to the expected net outflows within 30 calendar days.

Leverage ratio - shall mean the relation of Tier 1 Capital to the institution's total exposure measure, understood as the sum of the exposure values of all assets and off-balance sheet items not deducted, when determining the Tier 1 capital.

LGD (Loss Given Default) - estimated relative loss in case of default (%).

LtV (Loan to Value) - the ratio of the loan value to the property market value.

NSFR (Net Stable Funding Ratio) - a relation of own funds and stable liabilities ensuring stable financing to illiquid assets and receivables requiring stable financing.

PD - Probability of Default.

Ratio of coverage of non-liquidity assets with own funds (measure M3) - the ratio defined in KNF Resolution No. 386/2008 of 17 December 2008 on establishing liquidity measures binding on banks, calculated as a ratio of own funds diminished by sum of capital requirement on market risk, capital requirement on delivery settlement risk and counterparty risk to sum of non-liquidity assets.

RBC (Risk Bearing Capacity) - shall mean the relations of Risk Coverage Potential (RCP) to the internal capital - internal measure.

RCP (Risk Coverage Potential) - shall mean the amount of own funds adjusted by specific correcting items, in accordance with respective internal regulations in mBank - internal measure.

Short-term liquidity factor (measure M2) - the ratio defined in KNF Resolution No. 386/2008 of 17 December 2008 on establishing liquidity measures binding on banks, calculated as a ratio of primary and supplementary liquidity reserves to unstable external funds.

Short-term liquidity gap (measure M1) - the ratio defined in KNF Resolution No. 386/2008 of 17 December 2008 on establishing liquidity measures binding on banks, calculated as a sum of primary and supplementary liquidity reserves diminished by unstable external funds.

Tier 1 Capital Ratio (T1 ratio) - shall mean the Tier 1 Capital expressed as a percentage of the Total Risk Exposure Amount (TREA).

Total Capital Ratio (TCR) - shall mean the own funds expressed as a percentage of the Total Risk Exposure Amount (TREA).

Total Risk Exposure Amount (TREA) - shall mean the total of risk-weighted exposure amount for credit risk, counterparty credit risk and (multiplied by 12.5) own funds requirements for other types of risk, ie:

- market risk,
- operational risk,
- other risks, eg. credit valuation adjustment risk, large exposures in the trading book, etc.

Value at risk (VaR) - a measure of potential loss of market value (of financial instrument, portfolio, institution) to which the financial instrument, portfolio, institution is exposed over defined period of time at a given confidence level under normal market conditions.

3.2. Risk management in mBank Group in 2017 - external environment

Basel III regulatory standards

The rules on prudential requirements for banks set out in the Capital Requirements Regulation on prudential requirements for credit institutions and investment firms (CRR) and the Capital Requirements Directive (CRD IV) on access to the activity of banks and the prudential supervision, implementing provisions of Basel III, are effective in the European Union as of 1 January 2014. The amendments introduced under Basel III included:

- a universal definition and components of the bank's capital as well as implementation of capital ratio specified for the funds of the highest quality,
- introduction of own funds requirement associated with credit valuation adjustment,
- implementation of financial leverage ratio,
- introduction of additional capital buffers, including a capital conservation buffer, a countercyclical buffer, a global systemically important financial institutions buffer and systemic risk buffer,

- liquidity requirements, measured by the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR).

The provisions of CRD IV were transposed into a national legislation, which took place in 2015 with the endorsement of the Act on Macro-prudential Supervision over the Financial System and Crisis Management in the Financial System and with an update of the Banking Law. Whereas CRR took effect as of 1 January 2014 without harmonisation with national laws.

On 23 November 2016, the European Commission published a proposal of amendments to the supervisory regulations in force for European banks, including CRR/CRD IV and the Bank Recovery and Resolution Directive (BRRD), subject to legislative works during 2017 which have not yet been finalized.

The proposed amendments to the CRR include new methods of calculating capital requirements for counterparty credit risk and market risk (based on the proposals of the Basel Committee on Banking Supervision) which would replace the methods used so far. A change in the approach to the treatment of exposure to a central counterparty and the extension of capital "incentives" for banks financing small and medium-sized enterprises were also proposed. The proposal includes also the binding 3% minimum value of the leverage ratio (prudential measure) as well as significant modifications relating to the net stable funding ratio (NSFR) together with its minimum level of 100%. Introduction of the minimum standard for Global systemically important institutions (GSIIs) with regard to total loss absorbing capacity (TLAC) is proposed.

The amendments to the CRD IV include more detailed guidelines on restrictions on profit-sharing. They explain the relationship between additional capital requirements under Pillar 2, minimum requirements for own funds, the combined buffer requirements, and requirements for own funds and eligible liabilities the banks are obliged to fulfill. Extension of supervisory expectations concerning identification, assessment and management of interest rate risk in the banking book and the definition of a 'standard shock' were proposed.

Proposed amendments would be applicable two to four years after the entry into force of the amended CRR and CRD IV.

In terms of the recovery and resolution, there were proposed changes concerning the construction of the ratio of minimum requirement for own funds and eligible liabilities in order to ensure consistency of this ratio with TLAC.

Out of the proposed amendments to supervisory regulations two elements were separated and fast-tracked in order to swiftly finalize the legislative proposals to ensure their application in the European Union starting from January 2018. The endorsed amendments were related to transitional arrangements for mitigating the impact of the introduction of IFRS 9 on own funds and gradual withdrawal of the exclusion of public sector exposures from the large exposure regime (amendments to CRR) and to the ranking of unsecured debt instruments in insolvency hierarchy (amendments to BRRD).

Recommendations of the KNF

On January 1, 2017 the updated Recommendation C of the KNF concerning concentration risk management (which replaced the Recommendation C on exposure concentration risk management issued by the banking supervision in 2002) came into force. The updated Recommendation defines the principles of identification, measurement, monitoring and limiting concentration risk in banks.

In April 2017, the KNF issued the updated Recommendation H concerning internal control system in banks (which replaced the Recommendation H issued by banking supervision in 2011). The updated Recommendation applies to banks from 31 December 2017 and includes significant changes that were implemented in domestic and international law and recommendations.

3.3. Principles of risk management

3.3.1 Division of responsibilities in the risk management process

1. **Supervisory Board**, through the **Risk Committee**, exercises constant supervision over the Bank's operations in the risk taking area, which includes approving the Risk Management Strategy of the Group and supervising its implementation.
2. **Management Board of the Bank** accepts the Risk Management Strategy of the Group and is responsible for defining and implementing the principles of managing individual risk types and for their consistency with the Strategy. Moreover, the Management Board defines

the organisational structure of the Bank, ensuring the separation of roles, and allocates the tasks and responsibilities to individual units.

The Management Board undertakes actions to ensure that the Bank maintains a policy enabling management of all risks relevant to the Bank's operations and has appropriate procedures for this purpose. In particular it is responsible for developing, implementing, effectiveness and updating written strategies and procedures for: internal control system, risk management system, internal capital adequacy assessment process, capital management and capital planning.

3. **Chief Risk Officer** is responsible for integrated risk and capital management of the Bank and the Group in the scope of: defining strategies and policies, measuring, controlling and independent reporting on all risk types (in particular credit risk, market risk, liquidity risk, non-financial risk including operational risk), approving limits (in accordance with internal regulations), and for processes of managing the risk of the retail credit portfolio and corporate portfolio.

4. **Committees:**

- a/ **Business and Risk Forum** is a platform for making decisions and dialogue for organizational units in particular business lines and the risk management area in mBank as well as between mBank and the Group subsidiaries.

The Business and Risk Forum is constituted by the following bodies:

- Retail Banking Risk Committee (KRD),
- Corporate and Investment Banking Risk Committee (KRK), and
- Financial Markets Risk Committee (KRF).

The committees are composed of the representatives of business lines and respective risk management departments in mBank and respective organizational units in mBank Group subsidiaries.

Each committee is responsible for all risks generated by business activity of the given business line.

The main function of the above mentioned committees is to develop the principles of risk management and risk appetite, by taking decisions and making recommendations concerning in particular:

- risk policies,
- processes and tools for risk assessment,
- risk limitation system,
- assessing the quality and profitability of portfolio of exposures to clients,
- liquidity risk issues such as methodology and limits,
- approval of introducing new products to the offer.

- b/ **Model Risk Committee** is responsible for supervising the model risk management process, performing the following functions: information, discussion, decision and legislative. In particular, the Committee:

- approves new and redesigned models, as well as amendments thereto, deciding also about the resignation from the application of the model,
- makes decisions on the scope of application of the group and external models, including central models, in banking processes,
- recommends the tolerance level for model risk and submits its findings to the decision of the Management Board and the Supervisory Board,
- makes final decision regarding approval of significance assigned to a model,
- approves preventive and remedial measures indicated within the results of monitoring,
- accepts the schedule for validation of models and the results of each model validation.

The organization of the Committee ensures an adequate level of independence between the various participants of the model risk management process and enables to avoid conflicts of interest between them. Moreover, this Committee provides the Validation Unit with the ability to issue binding recommendations with an adequate priority.

- c/ **Assets and Liabilities Committee** of the mBank Group (ALCO) is responsible, in particular, for developing, monitoring and managing the structure of assets and liabilities, obligations and off-balance sheet items, with the aim of optimizing funds allocation.
- d/ **Capital Management Committee** is responsible, in particular, for managing capital. Based on the decisions made, the Committee issues recommendations for the Management Board of the Bank on:
 - measures in respect of capital management as well as capital level and structure,
 - increasing the effectiveness of capital utilization,
 - internal procedures related to capital management and capital planning.
- e/ **Credit Committee of the mBank Group** is responsible, in particular, for the supervision of concentration risk and large exposures at the Group level by taken decisions and made recommendations. The Committee shall also take credit decisions as well as decisions on debt conversion into shares, stocks, and on taking over properties in return for debts (applies to the Bank).
- f/ **Investment Banking Committee** is responsible, in particular, for the control and management of risks (including market, credit, reputational and operational) of the Brokerage House transactions and making decisions regarding the execution of these transactions.
- g/ **Credit Committee of the Retail Banking** is responsible, in particular, for:
 - making individual credit decisions concerning retail clients in the case when the total exposure to such a client, the value of the transaction or the values of AIRB risk parameters (PD/LGD/EL) set for the client/transaction achieve a specified threshold set for this decision-making level,
 - granting/changing/revoking decision-making powers to individual employees of the Bank.
- h/ **Data Quality and IT Systems Development Committee** is responsible for the tasks and decision making process in scope of principles and structure of operation of the data quality management system, approving operational standards of data management, assessing the effectiveness of the data quality management system, initiating actions aimed at improving data quality at the Bank, in particular, taking into account the needs related with calculating the regulatory capital requirements of the Bank under the AIRB approach.
- i/ **Foreign Branch Supervision Committee of mBank S.A.** is responsible, among others, for issuing recommendations for the Management Board of the Bank on approval of the operational strategy and the rules for stable and prudent management of a particular foreign branch of the Bank, especially with reference to credit risk.

Other units:

1. Organisational units of the Risk Area

The function of management at the strategic level and the function of control of credit, market, liquidity and operational risks and risk of models used to quantify the aforesaid risk types are performed in the risk area supervised by the Vice-President of the Management Board, Chief Risk Officer.

The chart below presents the organisational structure of this area:



The roles played by particular units in the process of identifying, measuring, monitoring and controlling risk, which also includes assessing individual credit risk posed by clients and establishing the client selection rules, have been strictly defined. Within the scope of their powers, the units develop methodologies and systems supporting the aforesaid areas. Furthermore, the risk control units also report the risk and support the major authorities of the Bank.

Integrated Risk and Capital Management Department:

- integrated risk, capital and liquidity management in the Bank and the mBank Group, in particular through: control of risk profile, capital and liquidity adequacy, and risk bearing capacity; integration of risk valuation; integration of control of non-financial risks and Internal Control System Self-assessment (ICS),
- identifying, measuring, controlling, monitoring and developing methods for measuring market risk, interest rate risk of the banking book, liquidity risk and counterparty risk,
- monitoring of overall risk profile of organizational units in the area of financial markets,
- managing the process of integrated risk, capital and liquidity reporting.

Risk Projects and Architecture Department:

- Risk Projects Portfolio Management,
- performing the function of competence centre in the area of process management,
- development and optimization of the architecture of IT processes and applications of Risk,
- management of the IT applications of Risk (maintenance and development),
- risk data management and cooperation with the Finance Division within the scope of centralized management information system.

Corporate Risk Assessment Department:

- implementation of the Bank's credit policy regarding corporate customers, countries and financial institutions,
- credit risk management in the Bank and the Group subsidiaries in the abovementioned areas.

Processes and Risk Measurement Department:

- developing and implementation of corporate credit process and supervision over its effectiveness,
- preparing corporate credit risk management strategy of mBank Group as well as credit policies including policies regarding sectoral risk appetite,
- preparing portfolio analysis and reports for the purpose of management of corporate credit risk,
- developing and monitoring the quality of rating models for retail and corporate clients and financial institutions (credit risk modelling),
- verification of value, liquidity and attractiveness of real estate and movables provided for collateral of loans.

Retail Risk Management Department:

- development of risk management principles and processes,
- acceptance of retail banking products, including the impact on the different types of risk and capital requirements,
- development of reports for monitoring of risk management policies,
- development and management of systems supporting the risk assessment and decision-making process.

Retail Debt Restructuring and Collection Department:

- handling the processes of debt restructuring and collection of receivables arising from retail loans granted on the Polish market,
- debt sale transaction of NPL for receivables arising from retail loans granted on the Polish market.

Credit Processes and Retail Risk Assessment Department:

- making credit decisions concerning retail banking products,
- monitoring credit agreements and performing administrative activities,
- developing and effectively using anti-fraud systems and tools,
- preventing credit fraud and exercising control over operational risk in the credit process for retail and corporate banking products, as well as developing the methodology of these processes,
- identifying gaps in processes, products and systems that impact an increase in fraud exposure and applying measures to eliminate such gaps.

Validation Division:

- integration of model and their risk management, and validation of quantitative models.

Position for risk development:

- managing development activities of the managerial staff and employees of the risk management area.

2. Organizational units outside the risk management area are in charge of the management and control of other risks identified in mBank Group's operations (capital risk, business risk, reputational risk, legal risk, compliance risk, outsourcing risk, IT risk, cyber risk).

3. Business units take part in managing particular risk types by means of taking risk into account in business decisions, in preparing the product offer and in the client acquisition process. The units assume the ultimate responsibility for taking risk within the set limits and for developing the Bank's results.

4. Control units:

- **Internal Audit Department (DAW)** carries out independent review of the process of identifying, taking, measuring, monitoring and controlling risk as part of its internal control and audit function.

- **Compliance Department (DC)** is responsible for establishing standards of managing the risk of non-compliance of internal regulations and standards of the Bank's operation with applicable law.

3.3.2 Risk culture

The foundations of the risk management culture implemented in the Bank and the mBank Group have been specified in the Risk Management Strategy of mBank Group and strategies for managing individual types of risk (retail and corporate portfolio credit risk, market risk, liquidity risk, operational risk, reputational risk) approved by the Management Board and the Supervisory Board of mBank.

Lines of defence

Risk management roles and responsibilities in the Group are organised around the three lines of defence scheme:

- The first line of defence consists of **Business** (business lines) whose task is to take risk and capital aspects into consideration when making all business decisions, within the risk appetite set for the Group.
- The second line of defence, mainly **Risk** (risk management area), **IT**, **Security** and **Compliance** function, is responsible for determining framework and guidelines concerning managing individual risks, supporting Business in their implementation as well as supervising the control functions and risk exposure. To ensure that the Business is supported and supervised in an objective manner, the second line functions act independently of the Business.
- The third line of defence is **Internal Audit**, ensuring independent assessment of activities connected with risk management performed by the first and the second line of defence.

Pillars of risk management

Risk management framework in mBank Group rests on **three pillars concept**:

- **Customer Focus** which means striving to understand and balance specific needs of the Risk's various stakeholders (Business, Management Board, Supervisory Board, shareholders, regulatory authorities).
- **One Risk** understood as an integrated approach to risk management and responsibility towards the clients for all types of risk defined in the Risk Catalogue of mBank Group.
- **Risk vs Rate of Return** perspective understood as a support for the business decision-making process based on the long-term relationship between risk and the rate of return, avoiding tail risks.

Vision of Risk

We take advantage of the opportunities in a dynamically changing environment, using innovative methods of risk management.

Bearing in mind the bank's efficiency and safety, we create value for the customer in a partner dialogue with the business.

Mission of Risk

The risk management area is actively involved in the implementation of initiatives and activities undertaken as part of the implementation of the mBank Group strategy. This support is organized around five challenges facing the risk management area in the coming years:

- **Empathy** understood in the risk management area as an active adaptation of risk management to the changing needs of various customer groups.
- Promoting the experience of **mobility**.
- **Efficiency** understood as: measuring, improving and automating risk processes in the culture of Lean; shaping - through a partner dialogue - the risk appetite that ensures a safe and profitable balance sheet of the bank.

- **Engaged employees.** This challenge is realized through building a work environment which fosters innovation, attracts, retains and develops employees with knowledge of business and risk management, curious to find solutions and openly communicating.
- **Technological advantage,** which means implementation of risk management based on a common integrated data platform (CDL) and searching for technological solutions enabling innovative risk management.

Key changes in the risk area in 2017

The risk control and management process in the mBank Group is subject to continuous improvement with emphasis on the improvement of customer-oriented integrated risk management.

Selected activities carried out in 2017 are described below:

- Establishment of the Investment Banking Committee. The tasks performed by the Committee are described under Note 3.3.1.
- The IFRS 9 implementation project was continued. The IFRS 9 standard has been in force since January 2018. The mBank Group completed key project work including the implementation of all critical databases and calculators to the extent necessary for the application of the new standard from January 1, 2018. The project will be continued in 2018 in the scope of other changes and adaptations in IT systems. More information about the project were included under Note 2.30.
- Risk appetite was defined for the subsequent planning horizon with special attention paid to 2018. Conclusions from analyses and discussions on potential impact on the Group of several issues identified during the managerial dialogue with particular emphasis on the package of non-financial risks, were taken into account while formulating risk appetite.
- The Limit Book was updated and limits for 2018 were set. Limits for new LAB measures (which replaced previously used ANL measures) were introduced within liquidity limits.
- Review and update of the Risk Management Strategy of the mBank Group and the other strategies for managing particular risks (credit risk in the corporate and the retail areas, market risk, liquidity risk, operational risk and reputational risk).
- Implementation of the Concentration Risk Management Strategy of mBank Group. The strategy, defining the framework for managing concentration risk using the existing system of limits and stress tests, was approved by the Management Board and the Supervisory Board of the Bank.
- The internal capital adequacy assessment process (ICAAP) and the internal liquidity adequacy assessment process (ILAAP) were reviewed. The results of the reviews were presented to the Management Board and the Supervisory Board.
- Periodic risk inventory process was carried out resulting in the update of the Risk Catalogue of mBank Group. The process was carried out in accordance with the modified rules (as a result of ICAAP review). The key change consisted in inclusion in the Catalogue of all risks identified in the Group's operations (previously the Catalogue included the list of material risks).
- Programme of continuous increase of work efficiency based on the Lean Management rules was continued. Further processes in the risk management area are reviewed and streamlined using the lean philosophy and tools. The purpose of the programme is to allow the growing number of tasks accompanying business growth and increasing number of regulatory requirements without the need to significantly increase resources and to reallocate resources from the streamlined operating areas to the areas where resources need to be increased due to the realized projects or growing scope of tasks.

3.3.3 Internal capital adequacy assessment process (ICAAP)

The mBank Group adjusts the own funds to the level and type of risk, the mBank Group is exposed to, and to the nature, the scale and the complexity of its operations. For that purpose, the Internal Capital Adequacy Assessment Process (ICAAP) is implemented in the mBank Group. The aim of this process is to maintain own funds at the level adequate to the profile and the level of risk in the mBank Group's operations.

The internal capital adequacy assessment process in mBank Group includes:

- risk inventory in the mBank Group,
- estimation of internal capital for coverage of risk,
- capital aggregation,
- stress tests,
- setting limits on the utilization of capital resources,
- planning and allocation of capital,
- monitoring consisting in a permanent identification of risk involved in mBank Group operations and analysis of the level of capital for risk coverage.

The process is reviewed by the Bank's Management Board and supervised by the Supervisory Board of the Bank on a regular basis.

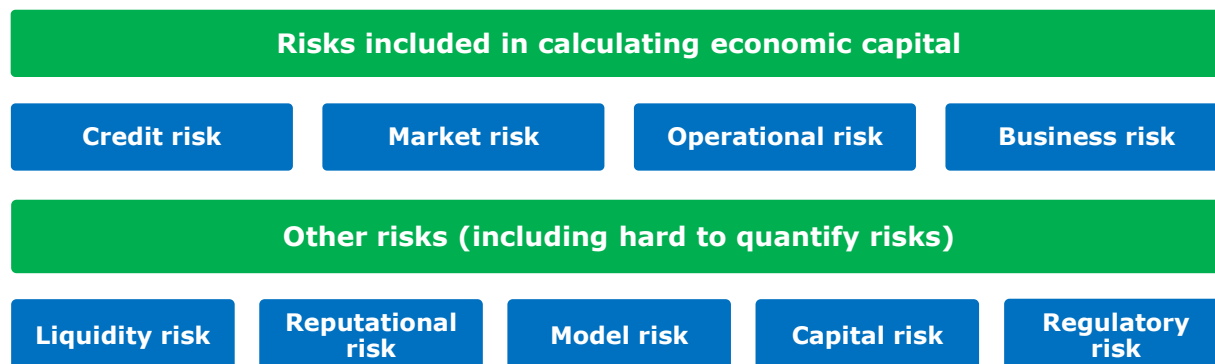
Material risks in mBank Group's operations

The Management Board is taking activities for ensuring that the Group manages all material risks arising from the implementation of adopted business strategy.

Material risks identified in the Group's operations as a result of the risk inventory process based on rules stipulated within ICAAP are classified to one of the two groups:

- the first group consists of risks included in the process of calculating economic capital;
- the second group comprises other risks (including hard to quantify risks) which are managed through adequate processes. In addition, in accordance with the ICAAP rules in force in the Group, capital buffer to cover other risks (including hard to quantify risks) may be estimated.

The following risks were recognized as material for the Group as at 31 December 2017:



Internal capital

Internal capital is the amount of capital estimated by the Bank and required to cover material risks identified in the mBank Group's operations. Internal capital is the total of:

- the economic capital to cover risks included in economic capital calculation,
- capital necessary to cover other risks (including hard to quantify risks).

The economic capital is measured by means of quantitative methods which make it possible to adequately reflect the risk level.

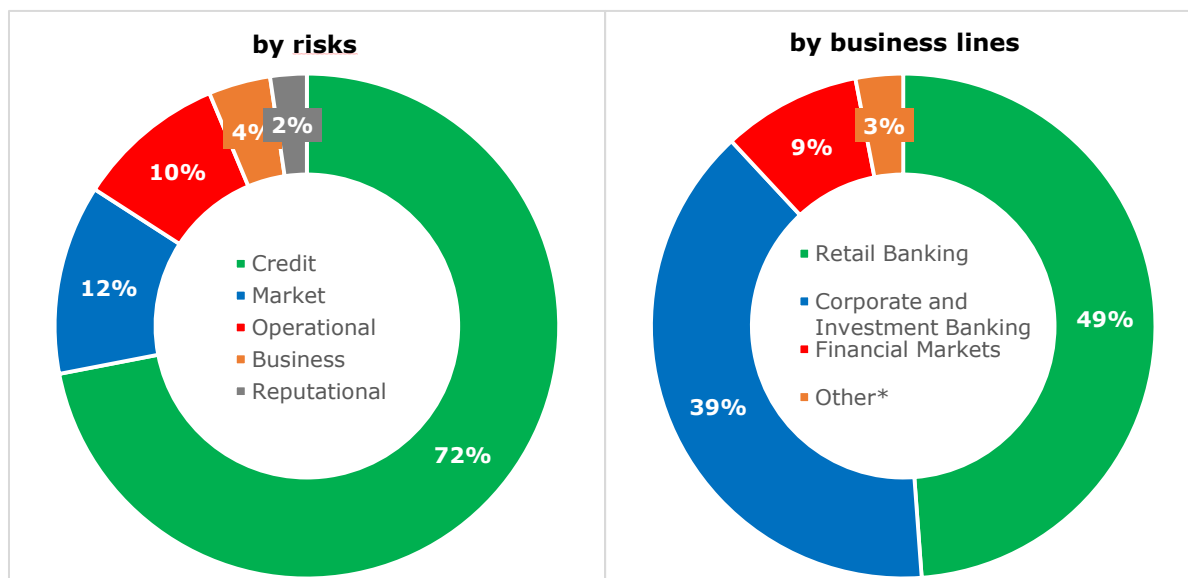
In 2017 (similarly as in 2016), the mBank calculated the economic capital at the 99.91% confidence level over a one-year time horizon, for all risk types. Diversification between different risks was not included while calculating the total of economic capital.

In accordance with internal regulations, the decision concerning the amount of capital for coverage of other risks (including hard to quantify risks) is taken by the Capital Management Committee. In 2017 the Bank maintained capital to cover reputational risk.

Structure of internal capital and total capital requirement

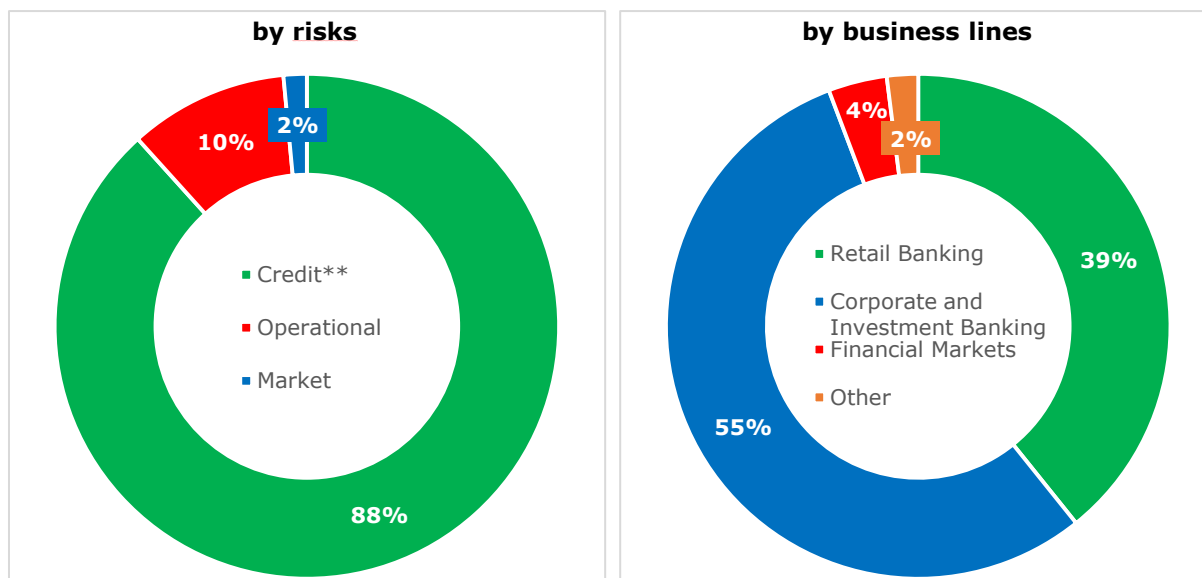
The charts below present the structure of internal capital and the total capital requirements of mBank Group as of 31.12.2017 by risks and business lines.

Structure of internal capital of mBank Group as of 31.12.2017



*Capital for coverage of hard to quantify risks (reputational risk) is not allocated to business lines. Reputational risk is included in „Other“ on the chart presenting internal capital structure by business lines.

Structure of total capital requirement of mBank Group as of 31.12.2017



**The item presenting "Credit" risk includes also supervisory floor for AIRB portfolio of mBank retail microenterprises mortgage loan portfolio.

Higher share of market risk in the structure of internal capital (compared to the share in the structure of total capital requirement) results from the fact that the model of economic capital for market risk includes additional risk factors, which (in accordance with the current methodology) do not generate capital requirement (primarily interest rate risk of the banking book and credit spread on the portfolio of Treasury securities in the banking book).

Significantly lower share of internal capital assigned to the Corporate and Investment Banking (compared to the share of this business line in the structure of total capital requirement) results from the diversification effect recognized in the model of economic capital for credit risk. The opposite effect in the case of the Retail Banking stems from taking into account the horizon of mortgage products' maturity (particularly housing loans) in the model of economic capital for credit risk (versus lack of maturity adjustment in regulatory risk weight).

3.3.4 Risk appetite

Risk appetite is defined within the mBank Group as the maximum risk, in terms of both amount and structure, which the Group is willing and able to incur in pursuing its business objectives under going concern scenario. Risk appetite resulting from the available capital and funding base is the starting point in the Group's risk management, and thus impacts the budgeting process and the capital allocation process.

Risk appetite management framework

The process of risk appetite management embedded within the Group is presented on the diagram below.



Risk appetite is based on assessment of the Group risk profile and risk capacity in the perspective of:

- capital,
- funding,
- non-financial risks,
- Risk Adjusted Performance Measures.

Risk appetite is the starting point for an ongoing dialogue about the risk profile within the organization. During the strategic discussions, the Management Board outlines directions for the development of the Group and particular business lines. The formulated general statements assure the foundation for ongoing dialogue between management and the Board, which materializes in the form of portfolio-specific statements. During the central (Top-down) and business general planning process stages risk appetite statements undergo further decomposition into key metrics and targets, which are then cascaded down into the organization during the business operating phase of planning (Bottom-up). Documentation of risk appetite and its monitoring activates appropriate control mechanism for protecting the Group's goals.

Capital buffers

Risk appetite is determined below the risk capacity set by the required standards on capital adequacy and liquidity set in European and Polish regulations in order to ensure that the Group survives in the case of negative changes in the Group or in its environment thereby providing the ability to assure risk bearing capacity. Level of funding sources and capital position of the Group, both regulatory and internal capital is taken into consideration while defining the risk capacity and risk appetite. The Bank maintains capital and liquid assets on the levels ensuring to meet regulatory requirements under normal and realistic stress conditions.

mBank Group's Risk appetite covers all significant risks and key risk concentrations embedded in its business strategy by setting appropriate capital buffers necessary in case of materialization of selected risk factors related to existing portfolios and planned business and addressing new regulatory requirements as well as potential negative macroeconomic changes.

Risk Bearing Capacity

Risk bearing capacity is expressed in terms of capital and funding resources available for allocation so as to ensure safety in normal scenario and risk scenario. The maximum risk that mBank Group is willing and able to incur, while accepting existential threats resulting from mBank Group business strategy, is subject to the following conditions:

- adequate economic risk-bearing capacity must be ensured (limits must be ensured in normal conditions),
- the internal floor set for regulatory capital ratios must be observed,
- financial liquidity and adequate structural liquidity of the Group must be ensured.

The approach of mBank Group to the assessment and control of mBank Group risk bearing capacity covers internal and regulatory requirements.

Risk limit system

To ensure effective allocation of the risk appetite the mBank Group applies a risk limit system. The structure of limits translates the risk appetite into specific constraints on risks incurred in the Group's activity. The concept of limit structure and limit management process is described in the document "Limit book. Rules for limitation of risk in mBank S.A. Group" accepted by the Supervisory Board. Accepted limit values are presented in the document "Limit Book - limit register". In order to ensure its safe functioning apart from limits the Group applies monitoring action triggers and early warning indices.

3.3.5 Stress tests within ICAAP and ILAAP

Stress tests are an essential component of the ICAAP and ILAAP used for managing the Bank and the Group and for capital and liquidity planning. Stress tests allow an assessment of the Group's resistance in the context of extreme, yet plausible scenarios of external and internal events.

The **integrated stress tests** are conducted assuming scenario of unfavourable economic conditions that may adversely affect the Bank's financial situation in at least a full two-year time horizon (for liquidity risk - in one-year horizon). The risk scenario, i.e. the most probable (in at least a full two-year time horizon) scenario of negative deviations from the base scenario, expressed in terms of macroeconomic and financial ratios is common for all risk types, and is aligned with the corresponding scenario accepted by the consolidating entity. The scenario may include idiosyncratic events.

The integrated macroeconomic scenario allows for a comprehensive analysis of all the risk types covered by internal capital and analysis of its impact on the capital adequacy and liquidity of the Bank and the Group.

The stress test results include the following measures:

- 1/ stressed economic capital (includes capital for credit risk, market risk, operational risk and business risk),
- 2/ regulatory capital ratios,
- 3/ stressed potential risk coverage (RCP) and own funds,
- 4/ the liquidity measures (internal and supervisory) under stress conditions.

The internal capital under stress scenario is defined as a product of calculation performed in line with the current methodology of internal capital calculation but on the basis of input parameters typical for stress conditions.

Macroeconomic stress scenarios are updated and analysed on quarterly basis or ad hoc, if needed. Based on the stress scenarios the resulting internal capital demand as well as negative financial effects of the adverse economic scenario materialized in risk coverage potential are simulated. The macroeconomic stress scenario results are included in the Group's risk bearing capacity (RBC) analysis on a monthly basis.

The Group and the Bank carry out so called **reverse stress tests**, the goal of which is to identify events potentially leading to unviability of the Bank and the Group. Reverse stress tests are used for the verification of capital and liquidity contingency plans of the Group and are applied for making strategic decisions concerning the acceptable risk profile of the Group. Reverse stress tests are conducted in inverse mode to classic stress tests (from effect to causes) and serve as their complement. Reverse stress tests are an additional element of the analysis of the Bank's and the Group's robustness to negative macroeconomic and idiosyncratic factors.

3.3.6 Capital planning

Required capital and liquidity planning

Stage I (central planning, i.e. *Top-Down*) and Stage II (business general planning)

Those stages of capital and liquidity planning take the form of the strategic dialog between the Management Board, Risk, Finance and Business, following which the desired directions of business development are determined to support the realization of the business goals of the mBank Group.

The Group plans business activities and related risk appetite within constraints imposed by regulatory requirements which have to be satisfied under both normal and stress conditions.

In view of the above, the planned changes in the size and structure of the Group's business activities, as well as anticipated regulatory changes are taken into account in estimating the required capital during the planning process. The required capital is estimated using risk parameters reflecting macroeconomic expectations assumed in planning process and taking into consideration intended changes in the methodology (including re-parameterization of risk pricing models).

Based on the strategic directions, the available capital is compared with the demand for capital (resulting from business development and stress test results). Should the capital required to achieve business goals of the Group be greater than the capital available for allocation, then the said business goals need to be revised.

In terms of liquidity risk, the estimations are made of both regulatory measures and internal liquidity measures including stress tests, and in this respect the adequacy of planned liquidity buffer of the Bank and the Group is analyzed. Should the achieved results exceed the levels assumed in the risk appetite and limits, then business goals need to be revised.

After determining the strategic directions of development it is analyzed what key risk concentrations are identified in the current and planned risk profile. For the purposes of determining the buffers and limits the Management Board decide on the acceptable level of risk factors to which the Group is susceptible through identified concentrations. Key risk concentrations are identified based on the reverse stress test analysis. Capital targets are set taking into account the capital needs arising from the potential materialization of key risk factors recognized in reverse stress test procedure and fixed at the levels accepted as corresponding with targeted risk tolerance. Impact of the risk factors on capital position of the Group is determined through appropriate stress test calculations.

The process of setting strategic financial targets is accompanied by strategic allocation of capital resources to individual business areas taking into account longer-term return on capital.

Stage III (business operational planning, i.e. *Bottom-up*)

At this stage the capital needed is clarified in order to determine an efficient capital allocation at lower levels.

In each business line partial plans based on accepted macroeconomic assumptions, financial targets and the assessment of business growth potential are worked out.

In order to determine an acceptable risk profile from the capital consumption perspective, the forecasted volumes (partial plans) and resulting demand for regulatory and economic capital are compared, in an iterative process, with available resources and strategic guidelines.

In terms of liquidity risk, the estimations are made of both regulatory measures and internal liquidity measures including stress tests, and in this respect the adequacy of planned liquidity buffer of the Bank and the Group is analyzed. Should the achieved results exceed the levels assumed in the risk appetite and limits, then business goals need to be revised.

On the basis of the operational phase of planning, the Funding Strategy of mBank Group is prepared and approved by the Bank's Management Board. The Strategy presents ways to provide funding in particular currencies needed for the planned development of the Group's assets. The strategy is prepared for normal conditions but also includes estimate of liquidity measures for crisis conditions.

Limits supporting capital plan

Annually updated limits are set to ensure adequate use of available resources in order to achieve business targets. Multilevel limit structure aims to ensure that risk appetite is translated into specific constraints put on risks of the Group's activities in different business areas.

Available capital base

The final effect of the planning process is determination of target level of regulatory (own funds) and economic (RCP) capital base needed to cover risk concentrations of the current and planned activities, expressed by total regulatory capital requirement and total internal capital.

3.4. Credit risk

3.4.1 Organization of risk management

The mBank Group actively manages credit risk in order to optimise the level of profit in terms of return on risk. Analysis of the risk in the Group operations is continuous. For the purpose of identification and monitoring of credit risk, uniform credit risk management rules are applied across the Bank's structure and its subsidiaries; they are based, among others, on separation of the credit risk assessment function and the sales function at all levels up to the Management Board. A similar approach is applied to administration of credit risk exposures as this function is performed in the risk area and the operating area and is independent from sales functions. The model of Group-wide risk management assumes participation in the process of the Bank's risk management area organizational units as well as the Credit Committee of the mBank Group (KKG). The segregation of responsibilities in the process of credit risk management is as follows:

- **Credit Processes and Retail Risk Assessment Department (DPK)** is responsible for ensuring effectiveness and security of lending and post-sale service, including monitoring in respect of retail products on the Polish market and preventing extortion and fraud in the area of retail and corporate banking, as well as developing the methodology in this respect.
- **Retail Risk Management Department (DZR)** is responsible for management of credit risk and other risks in mBank's retail banking and its main operational responsibility is supervision over the automated credit process. Furthermore, DZR develops rules of credit risk rating, calculating creditworthiness of retail clients and other components of credit policy submitted for the approval by the Retail Banking Risk Committee. Solutions applied on the Polish market are also adapted in foreign branches (in the Czech Republic and Slovakia). The DZR is also responsible for implementing the assessment principles in the tools supporting the credit decision-making process, reports on the quality of the credit portfolio, and monitors the quality of data used in the risk rating process. To the extent permitted by external regulations DZR participates in the risk management process of the subsidiaries having credit risk bearing retail products in the offer.
- **Retail Debt Restructuring and Collection Department (DWD)** is responsible for ensuring the execution of processes of recovering the Bank's receivables arising from granted retail loans for Polish market, cohesion and completeness of internal regulations and the reporting environment in debt collection related with credit products. Activity of the area is focused on handling soft collection processes, restructuring process, collection after termination of the credit agreement, including judicial and enforcement proceedings and debt sale transaction of NPL.
- **Corporate Risk Assessment Department (DOR)** is responsible for management of the quality of the corporate loans portfolio of the Bank and subsidiaries of mBank Group including exposures under restructuring. The DOR's key functions include: decision-making or participation in decision-making concerning performing and non-performing loans, including their impact on operational risk, reputational risk, liquidity risk and for capital requirements and return on invested capital; analysis, evaluation and control of credit risk of countries, banks, international financial institutions and non-financial clients of the Bank and the Group subsidiaries in the corporate and investment banking area; control of credit risk limits imposed on countries, banks, international financial institutions; the management of the credit risk provisions in the Bank's corporate and investment banking area.
- **Processes and Risk Measurement Department (DPR)** responsible for: development of corporate credit risk strategy and policies, as well as cross-sectional portfolio analyses including industry ones; preparation of reports and statements in particular for supervisory authorities and the Bank's governing bodies; development and implementation of the corporate credit process principles and monitoring its effectiveness; administration of applications supporting the corporate credit process; development and quality control of rating models for retail and corporate customers and financial institutions in the Bank and mBank Group subsidiaries; verification of real estate and movables provided by customers for collateral in terms of their value, liquidity and attractiveness.

- **Integrated Risk and Capital Management Department (DKR)** is responsible for: developing methodology and calculating capital requirement for credit risk; calculating portfolio credit provisions of the Bank and economic capital for credit risk; conducting stress tests in the area of credit risk (provisions, capital requirement, economic capital); coordinating and participating in the process of determining credit risk appetite; preparation of reports and information on credit risk (provisions, capital requirement, economic capital, stress tests) for the Bank's authorities and for consolidated supervision purposes.
- **Validation Unit** is responsible for organizing the process of managing models applied for credit risk management and evaluation as well as validating such models.

Decision-making for credit exposures in the corporate area. Credit decisions are consistent with the accepted rules set in the Corporate Risk Policy. Levels of decision-making competences are determined by a decision-making matrix. The determination of level of decision-making authority for credit decision is based on EL-rating and total exposure on client/group of affiliated entities. The total exposure includes also exposures on the client/group of affiliated entities in the mBank Group subsidiaries.

Decision-making for credit exposures in the retail banking area. Due to a profile of retail banking clients, the accepted amount of exposure per client and standardisation of products offered to those clients, the credit decision-making process differs from that applied to corporate clients. The decision-making process is automated to a large extent, both in terms of acquiring data on the borrower from internal and external data sources, and in terms of risk assessment by means of scoring techniques and standardised decision-making criteria. The tasks, which are not automated concern mainly the verification of credit documentation and potential derogations when a decision is made with the escalation to the decision-making level in accordance with the applicable rules. In addition, in case of mortgage loans, the value of the collateral is established (internally or with the use of external appraisal report) and its compliance with the binding credit policy including acceptable LTV is assessed. These functions are performed by operating units located within the Credit Processes and Retail Risk Assessment Department and the Processes and Risk Measurement Department in complete separation from sales functions.

3.4.2 Credit Policy

mBank manages credit risk based on supervisory requirements and market best practices. Credit policies, established separately for retail banking and corporate banking, play the key role in the credit risk management process. Credit policies include e.g.:

- target customer groups,
- minimum acceptable ratings' levels defined by the expected loss value,
- criteria for acceptance of financed subjects and collaterals,
- rules for mitigating concentration risk,
- rules for selected industries and customers segments.

3.4.3 Collateral accepted

Collateral accepted in the process of granting credit products. The collateral is an important part of the credit policy. The primary role of collateral is to reduce the credit risk of the transaction and provide the Bank with a realistic opportunity to repay receivables. In making a decision about granting a credit risk bearing product, the Bank strives to obtain collateral adequate to the accepted risk. The Bank accepts collateral only upon its assessment and provided it meets the condition of no significant correlation between the credibility of the debtor and the collateral value. Specific types of collateral that are required depend on the risk bearing product, the tenor of the transaction and the risk of the client. The most common collateral accepted are:

- mortgage on real estate,
- cession of receivables (cession of rights),
- registered pledge,
- monetary deposit,
- guarantee deposit or cash blocked,
- guarantees and warranties
- transfer of ownership to vehicle.

The value of fixed assets taken as collateral (other than vehicles) is determined on the basis of a valuation prepared by a licensed expert. Valuations submitted to the Bank is verified by a team of specialists located in the risk management area, that verifies the correctness of the market value assumptions and assesses the liquidity of the collateral. Each collateral is monitored.

In the corporate banking area, in the case of collateral on fixed assets or financial assets, the final value of collateral is brought to a most realistic value (MRV) using Empirical Coverage Factor (ECF), which reflects the pessimistic variant of debt recovery from the collateral through forced sale. Personal collateral is assessed taking into account the financial standing of provider. The Bank assigns the risk parameter PSW (which is an equivalent of Most Realistic Value for fixed assets collateral). In cases when PD parameter of the collateral provider is equal or worse than PD parameter of the debtor, then PSW parameter is zero.

The Bank implemented a dedicated collateral policy in the area of corporate banking in December 2017. The most important elements of this policy are:

- indication of collateral preferred and unrecommended,
- recommendations regarding the requirements of collateral in specific situations,
- frequency of collateral monitoring,
- Bank's approach to collateral with MRV parameter equal to zero.

Collateral accepted for transactions in derivative instruments. The Bank manages the risk of derivative instruments. Credit exposures arising from concluded derivative transactions are managed as a part of clients' general credit limits, taking into account potential impact of changes in market parameters on the value of the exposure. Existing master agreements with contractors obligate the Bank to monitor the value of exposure to the client on a daily basis and provide for additional collateral against the exposure to be contributed by the client if the exposure value increases or the limit is exceeded. In case of default, the master agreements provide for early settlement of the transaction with the client. mBank applies an Early Warning Process in order to monitor the usage of limits on derivatives and enables the Bank's quick reaction if client's open transaction nears the maximum limit. Moreover, taking into consideration credit risk related to a derivative limit granted to a specific client, the Bank may apply additional collaterals from standard catalogue of collaterals of credit risk-bearing products.

Collateral on securities resulting from buy-sell-back transactions. The Bank accepts collateral in the form of securities in connection with the buy-sell-back transactions concluded. Depending on the agreement such collateral may be sold or repledged.

Collaterals accepted by the mBank Group subsidiaries. The mBank Group subsidiaries accept various forms of legal collateral of credit risk-bearing products. Their list depends on the specific nature of activities, type of offered products and transaction risk.

mBank Hipoteczny applies mortgage on the financed real estate as the basic collateral. Additional collateral may include bills of exchange or civil surety by the borrowing company's owners, as well as pledge on shares in the borrower's company. Loan insurance in an insurance company approved by the Bank may be accepted for a period necessary to effectively set up collateral.

mLeasing applies types of collateral that are most similar to those of mBank. It accepts both standard personal collateral: bill of exchange and civil surety, letters of comfort, guarantees, assuming the debt, debt take over, and tangible collateral: mortgage, registered liens, transfer of ownership of collateral, transfer of receivables and cession of receivables and rights to an insurance policy, and deposits.

mFactoring accepts only highly liquid collateral. Apart from own blank bills of exchange, these are mainly bill of exchange surety of the owners of the customer's company, cession of receivables from bank accounts (mainly those maintained by mBank), insurance of receivables, cession of rights from insurance policies in respect of receivables, concluded by customers. In the case of providing services to several companies belonging to one group, a customary form of collateral is a power of attorney to perform cross-settlement of agreements concluded with the particular companies.

3.4.4 Rating system

The rating system is a key element of the credit risk management process in the **corporate banking area**. It consists of two main elements:

- customer rating (PD-rating) – describing the probability of default (PD),

- credit rating (EL-rating) – describing expected loss (EL) and taking into consideration both customer risk (PD) and transaction risk (LGD, Loss Given Default – loss resulting from default). EL can be described as $PD \times LGD$. EL indicator is used mainly at the credit decision-making stage.

The rating produces relative credit risk measures, both as percentages (PD%, EL%) and on a conventional scale from 1.0 to 6.5 (PD-rating, EL-rating) for corporations (sales over PLN 50 million) and SMEs (sales below PLN 50 million). PD rating calculation is a strictly defined process, which comprises seven steps including: financial analysis of annual reports, financial analysis of interim figures, assessment of timeliness of presenting financial statements, analysis of qualitative risks, warning indicators, level of integration of the debtor's group, and additional discretionary criteria. Credit rating based on expected loss (EL) is created by combining customer risk rating and transaction risk rating, which results from the value of exposure (EAD, Exposure at Default) and the character and coverage with collateral for transactions concluded with the client (LGD). LGD, described as % of EAD, is a function of possibly executed value of tangible and financial collateral and depends on the type and the value of the collateral, the type of transaction and the ratio of recovery from sources other than collateral.

The rating system generates the borrower's probability of default directly in the form of a PD ratio, expressed as a percentage (continuous scale). Rating classes are calculated on the basis of procedures of dividing percentage PD into groups based on geometric stepladder. In external reporting, the Bank maps the internal PD rating scale onto external ratings. The table below presents the mapping system.

Sub-portfolio	1				2			3		4				5			6	7		8	
PD-Rating	1.0 - 1.2	1.4	1.6	1.8	2	2.2	2.4 - 2.6	2.8	3	3.2 - 3.4	3.6	3.8	4	4.2 - 4.6	4.8	5	5.2 - 5.4	5.6 - 5.8	No rating	6.1 - 6.5	
S&P	AAA	AA+	AA, AA-	A+, A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B+	B	B-	B-	CCC+	CCC till CC	n/a	D	
	Investment Grade								Non-Investment Grade										Default		

The following models comprised by the rating system are used in the **retail banking area**:

- Loss Given Default (LGD) model, which covers the entire retail portfolio. In the model, loss is defined as a function dependent on the level of recovery from clients' own payments and possible value of collateral using real estate collected in enforcement procedures,
- Credit Conversion Factor (CCF) model, which covers the entire retail banking portfolio. The model is based on historical data. The Credit Conversion Factor is an integral part of EAD model,
- PD model with a modular structure, which integrates application and behavioural models in the retail banking area as well as models which use Credit Information Bureau (BIK) data.

All mBank Group subsidiaries, whose operations are burdened with credit risk, before concluding an agreement and upon its performance, apply a monitoring process to estimate the risk using rating systems applied by the mBank Group. Rating systems that are used by the Group subsidiaries are due to the nature of their business; at the same time the factoring and leasing companies use the PD-rating of the customer, and the leasing company applies additionally credit rating (EL-rating). A rating based on supervisory measures (slotting approach) is applied in the case of mortgage loans and real estate leasing.

3.4.5 Monitoring and validation of models

All models of risk parameters applied in mBank and in the Group subsidiaries, including, i.a. scoring models, PD models, LGD models and CCF models are subject to detailed and annual monitoring by modelling units and are validated by the mBank's independent Validation Unit.

The monitoring includes tests to check discriminatory power of individual models or their components, stability over time, the materiality of individual deviations of empirical values from theoretical values and the impact on portfolio parameters. In case of identification of some mismatches, the modelling unit recalibrates the respective models.

Reports on the performed monitoring/backtests are presented to the model users and the independent Validation Unit.

Validation

Validation is an internal, complex process of independent and objective assessment of model operation, which is consistent with the Recommendation W requirements and - in case of the AIRB

method - meets the supervisory guidelines set out in the CRR. The validation rules are set out in general in the Model Management Policy and described in details in other mBank's internal regulations. The validation covers models directly and indirectly used in the assessment of capital adequacy under the AIRB approach and other models indicated in the Model List maintained in mBank.

In case of AIRB models there is assured an independence of Validation Unit in the organizational structures of the Bank or the Group's subsidiary in relation to the units involved in the model's construction/maintenance, i.e. the model owner and users. The Validation Unit is responsible for the validation in mBank.

The scope of validation performed by the Validation Unit covers the assessment of:

- models,
- model implementation,
- their application process.

Depending on the materiality and complexity of the model, as well as the type of validation task to be performed, the validation may be advanced (covers both quantitative and qualitative elements) or basic (mainly focused on the quantitative analyses and selected qualitative elements). The validation results are documented in the validation report containing, in particular, an assessment used for the purpose of approving the model, and recommendations, if any, in the form of precautionary and remedial actions, about the irregularities found.

Validation tasks are performed in accordance with the annual validation plan. Both validation plan and the results of performed validation tasks are approved by the Model Risk Committee.

IRB Method Change Policy

The Bank implemented the IRB Method Change Policy approved by the Management Board. The Policy contains internal rules for the change management within the IRB approach, based on the supervisory guidelines and taking into account the organizational specifics of the Bank. The Policy specifies the stages of the change management process, defines roles and responsibilities, describes in details the rules of classification of changes, in particular classification criteria based on the guidelines published by the European Central Bank.

3.4.6 Calculating impairment charges and provisions

The method of calculating impairment charges and provisions is consistent with the International Financial Reporting Standards.

In order to assess if the impairment loss has occurred, identification of credit exposures with premises for impairment is carried out.

3.4.6.1 Impairment triggers - corporate portfolio

Loss events were divided into definite ('hard') loss events of which occurrence requires the client to be classified into the default category, and indefinite ('soft') loss events of which occurrence may imply that there is a need to classify the client into the default category. Credit analyst assesses additionally whether the event impacted adversely the obligor's creditworthiness. Indefinite loss events have been introduced in order to signal situations that may increase the credit risk of the debtor, which may result in the loss of the debtor's ability to repay loan to the Bank.

The list of definite loss events:

1. The number of days past due is above 90 days (14 days in the case of banks) and the overdue amount exceeds PLN 3 000.
2. The Bank has sold exposures with a significant economic loss related to the decrease of the debtor creditworthiness.
3. The Bank performed enforced restructuring of the exposure, which resulted in the change of the loan/transaction service schedule due to the lack of possibility of the obligor to meet his obligations under loan/transaction agreement, as initially stipulated, which resulted in:
 - a) remitting part of these obligations, or
 - b) postponing the repayment of the substantial part of the principal, interest or (if it refers to) commission; provided that the lack of approval for restructuring would cause more than 90 calendar days delay in repayment of substantial part of the obligation.

4. Filing by the Bank, the parent or subsidiary entity of the Bank a bankruptcy motion against debtor or filing similar motion in respect of credit obligations of the debtor towards the Bank, the parent or subsidiary entity of the Bank.
5. Bankruptcy of debtor or acquiring by him a similar legal protection resulting in his evasion of or delay in repayment of credit obligations towards the Bank, the parent or subsidiary entity of the Bank.
6. Termination of part or whole credit agreement by the Bank and the beginning of restructuring/collection procedures.
7. Client's fraud.
8. Bank expects a loss on a client's exposure.

In case of identification of indefinite loss events there is no obligation to classify into the default category. Indefinite loss events are complementary to definite loss events. Defining separately the conditions for indefinite loss events for particular types of entities aims at reflecting specificity of particular types of entities in identification of loss events.

3.4.6.2 Impairment triggers - retail receivables

In the Bank's retail banking in Poland, a debtor-oriented approach, including all exposures of the customers, is applied for identification of impairment triggers. Transactional approach, in which each exposure is analyzed independently, is applied in the foreign branches.

The main impairment trigger is delay in repayment, which is identified in different ways depending on the abovementioned approach. In the retail banking in Poland, impairment trigger is identified, when the total of all customer's exposures past due more than 30 days exceeds PLN 500 and the eldest delay exceeds 90 days.

In the Czech and Slovak branches, an individual exposure is considered impaired when the overdue amount exceeds CZK 3 000 or EUR 120, respectively, while the delay is more than 90 days.

Additionally, the following events are treated as impairment triggers in all branches:

- a. enforced restructuring of debt,
- b. bankruptcy of debtor,
- c. recognition of the contract as fraudulent,
- d. sale of the exposure with considerable economic loss,
- e. uncollectable status of debt,
- f. payout of low downpayment insurance.

3.4.6.3 Calculation of impairment losses and provisions - corporate portfolio

The classification of customers to default portfolio and calculation of impairment write-offs is as follows:

- a) identifying impairment indicator on individual basis (loss events) and if they exist, classifying a customer to a default category;
- b) estimating future cash flows both from collateral and from repayments by a customer;
- c) calculating impairment losses taking into account the current amount of estimated future recovery discounted at the effective interest rate;
- d) booking of impairment losses and provisions.

In the case of customers with evidence for impairment, a comparison of the carrying value of the gross credit exposure with the value of estimated future cash flows, discounted at the original effective interest rate is made. An impairment is recognized when the discounted value of future cash flows is lower than the gross carrying amount. This results in the impairment charge for balance sheet credit exposure and/or provision for off-balance sheet credit exposure.

3.4.6.4 Calculation of IBNR provision for portfolio with no evidence for impairment - corporate portfolio

The amount of provision is an estimate of incurred loss and is assumed at the expected level of exposure at the impairment date, considering the book value of loss (in percentage terms) and the probability of default.

The probability of disclosure of a loss is modelled using logistic regression based on financial indicators and qualitative data on financed entity. The model is calibrated on the internal data, comprising a several years' period of observation of the corporate portfolio. On the basis of the

existing monitoring period, the average period between the loss event occurrence and the possibility of its identification by the Bank (loss identification period "LIP") is estimated. Therefore, calculations are being performed on the basis of loss identification period horizon for probability of default obtained via scaling the original 12-month PD-rating coming from the corporate PD model. The value of incurred loss is assumed at the level of the expected value of exposure in case of default (EAD) multiplied by PD and LGD.

In the opinion of the Management Board, the profile of the corporate rating system as a model sensitive to changes in economic cycle (Point-in-Time) as well as recognition of interim financial data and warning indicators as rating assessment drivers should ensure adequate reflection of the amounts of the calculated portfolio provision to the changing market environment.

3.4.6.5 Calculation of impairment losses and provisions - retail portfolio

In the retail area, impairment charges and provisions are determined for the portfolio exposure both with evidence for impairment and with no evidence for impairment. For the purpose of measuring impairment in the retail area, the Bank applies two approaches for determining credit risk parameters. In the case of the Polish market, the Bank applies parameters analogous to those derived from the AIRB methodology (advanced internal ratings based approach for calculating capital requirement for credit risk), after necessary adjustments aimed at elimination of differences between AIRB and IAS-39. In the case of the Czech and Slovak markets, risk parameters are estimated based on migration matrices.

12-month loss identification period (LIP) based on the current internal data on banking processes and abilities to detect the incurred losses is applied in the retail area to estimate the probability of default.

3.4.6.6 Provision coverage of individual sub-portfolios

The table below shows the percentage of the Group's balance sheet and off-balance sheet items relating to loans and advances, guarantees and letters of credit to individuals, corporate entities an public sector and the coverage of the exposure with impairment provision for each of the Bank's internal rating categories (the description of rating model is included in Note 3.4.4).

Sub-portfolio	31.12.2017		31.12.2016	
	Exposure (%)	Provision coverage (%)	Exposure (%)	Provision coverage (%)
1	9.93	0.01	11.76	0.01
2	30.77	0.04	30.43	0.04
3	18.78	0.13	17.31	0.16
4	18.21	0.33	17.36	0.32
5	6.02	0.86	5.17	0.83
6	0.59	1.53	0.32	1.83
7	1.49	3.61	1.12	2.94
8	8.87	0.05	9.63	0.07
other *)	1.49	0.05	2.47	0.04
Default category	3.85	56.26	4.43	54.04
Total	100.00	2.38	100.00	2.58

*) "other" applies to subsidiaries which do not use similar systems as mBank S.A.

As at 31 December 2017, 40.70% of the loans and advances portfolio for balance sheet and off-balance sheet exposures is categorized in the top two grades of the internal rating system (42.19% as of 31 December 2016).

A distribution of share of exposures for non-default portfolios remained without significant changes compared to 2016. The share of provision coverage for default portfolio slightly increased (from 53.92% to 56.26%).

3.4.6.7 Repossessed collateral

The Group classifies repossessed collaterals as assets repossessed for debts and measures them in accordance with the adopted accounting policies described in paragraph 2.22. Assets repossessed for debts classified as assets held for sale will be put up for sale on an appropriate market and sold at the soonest possible date. The process of selling collaterals repossessed by the Bank is arranged

in line with the policies and procedures specified by the Debt Restructuring and Collection Department and the Retail Debt Restructuring and Collection Department for individual types of repossessed collaterals.

The policy of the companies of the Group is to sell repossessed assets or - in the case of leases - lease them out again to another customer. Cases in which the repossessed collateral is used for own needs are rare – such a step must be economically justified and reflect the Group companies' urgent need, and must at each time be approved by their Management Boards. In 2017 and 2016, the Group did not have any repossessed collaterals that were difficult to sell. As at 31 December 2017, value of repossessed collaterals was PLN 23 540 thousand (31 December 2016: PLN 6 588 thousand) included mainly real estate which constitute collaterals for mortgage loans and leasing assets. The value of repossessed collaterals was included in the item inventories (Note 28).

3.4.7. mBank Group Forbearance Policy

Definition

The mBank Group's forbearance policy is a set of activities relating to renegotiation and restructuring of terms of loan agreements which is defined by internal regulations.

The Group offers forbearance to assist customers, who are temporarily in financial distress and are unable to meet their original contractual repayment terms, through agreements with less restrictive terms of repayment, without which financial difficulties would prevent satisfactory repayment under the original terms and conditions of the contract. These agreements may be initiated by the customer or the Group entities and include e.g. debt restructuring, changes of repayments schedule and capital and/or interest repayments deferrals.

The Group does not consider loans with modified terms as falling under the forbearance policy in the case when changes result from the customer's application and there are no current or anticipated customer's financial difficulties, and, in addition, modifications of the contract meet the criteria of decision-making policy for a healthy portfolio.

The type of concession offered should be appropriate to the nature and the expected duration of the customer's financial distress. Financing entity's belief in the customer's willingness and ability to repay the loan is necessary to conclude an agreement. Prior to granting a concession, an assessment of its impact on improving customer's ability to repay the loan is carried out.

The Group renegotiates loan agreements with customers in financial difficulties to maximise possibility of receivables repayment and minimise the risk of default (situation when client fails to fulfil his contractual obligation).

Exposures with modified terms and conditions under forbearance policy (hereinafter - forbore exposures) are subject to regulatory and internal reporting.

Instruments used

The Group maintains open communication with clients in order to detect any financial difficulties as early as possible and to know the reasons of such difficulties. In case of retail customers with temporary financial difficulties forbearance solutions focus on temporary reductions of contractual payments in form of capital repayments suspension with only interest repayments kept.

For customers under long term financial distress extension of contractual repayment schedule may be offered which can include instalments reduction.

In case of debt refinancing, as a rule, client is reclassified into the default category.

For the corporate clients in financial distress, as part of the business support process, the Group offers concessions, starting from participating in debt standstills and finishing on debt restructuring agreements. Debt restructuring agreements may improve Group's security by replacing open financing (overdraft) with factoring or invoice discount and they can waive or ease covenants (additional conditions included in the primary agreement), if it represents optimal strategy for client's business continuity.

The following list does not exhaust all possible actions that are subject to forbearance, but it includes the most common:

- Loan increase,
- Change of scheduled repayments,

- Maturity extension/extension of loan duration,
- Restructuring (medium or long term refinancing),
- Capitalization of interest,
- Interest deferrals,
- Principal deferrals,
- Covenant waiver,
- Standstills.

Risk management

Forbearance measures have been an integral part of Group's risk management area for many years. Forborne portfolios are subject to regular review and reporting to the area management. The effectiveness of undertaken actions, regularity of restructured transactions' service in respect of types of product and client's segment are subject to assessment. The risk analysis of retail forborne portfolio is based on portfolio approach and corporate portfolio analysis is based on individual approach.

In corporate banking, for every bank's exposures on debtors with recognized loss event impairment test is performed. Recognition of impairment results in debtor being taken over by the specialised unit dedicated to restructuring. All loans granted to clients being under restructuring have the forborne status. Non-default debtors – not impaired, who received the concession (forbearance measures), are subject to close monitoring (Watch List – WL) by all units involved in the loan granting process. Their financial situation is subject to close monitoring and they are under constant review to establish whether any of impairment indicators had materialised.

The Group does not use dedicated models to determine level of portfolio provision and special-purpose provision for forborne portfolio.

Forborne exit conditions – corporate banking area

The Group ceases to recognise the product as forborne if all of the following conditions are met:

- debtor financial situation's analysis showed improvement and the exposure has been recognised as performing,
- at least two years after recognising exposure as performing have passed (probation period),
- for at least 12 months period significant and regular capital or interest payments have been made since the date of recognising the exposure as performing,
- none of the debtor exposures is overdue more than 30 days at the end of reporting period.

Forborne exit conditions – retail banking area

The Bank ceases to recognise the contract as forborne when all of the following conditions are met:

- the contract is recognised as performing – including contract reclassified from the non-performing category,
- at least two years after recognising exposure as performing have passed or the contract was not recognized as non-performing when the forbearance measures were granted,
- at least from the middle of the probation period (i.e. two years from classifying the contract as forborne) regular capital or interest payments were made (lack of significant delays in repayment longer than 31 days),
- none of the debtor's exposures are overdue more than 31 days and at the same time no amount exceeds PLN 500 at the end of the probation period,
- an analysis of the financial situation of the debtor based on the client's rating was performed, and the cut-off point for each segment is as follows:

Mortgage loans for private individuals (ML OF)	3.4
Mortgage loans for microenterprises (ML MF)	4.4
Non-mortgage loans for private individuals (NML OF)	4.4
Non-mortgage loans for microenterprises (NML MF)	4.0

The result of customer analysis with worse rating than the above is negative.

Portfolio characteristics

Due to the extension of the forbearance exposition in 2017, including the exposure arising from receivables from credit and financial institutions, the comparative data for 2016 was updated.

The table below presents changes in the carrying value of the forborne exposures in 2017

31.12.2017	Gross carrying amount	Of which defaulted	Provisions created	Net value
As at 31.12.2016	1 890 715	1 017 499	454 071	1 436 644
Outputs	(1 210 500)	(413 551)	(132 982)	(1 077 518)
New forbearance	1 270 258	450 520	224 190	1 046 068
Changes on existing loans	(9 459)	(5 096)	29 885	(39 344)
As at 31.12.2017	1 941 014	1 049 372	575 164	1 365 850

The table below presents changes in the carrying value of the forborne exposures in 2016

31.12.2016	Gross carrying amount	Of which defaulted	Provisions created	Net value
As at 31.12.2015	2 206 911	1 327 795	656 609	1 550 302
Outputs	(614 261)	(539 674)	(303 088)	(311 173)
New forbearance	360 639	253 275	70 953	289 686
Changes on existing loans	(62 574)	(23 897)	29 597	(92 171)
As at 31.12.2016	1 890 715	1 017 499	454 071	1 436 644

Forbearance portfolio as at 31 December 2017

31.12.2017	Gross carrying amount	Of which defaulted	Provisions created	Net value
Loans and advances to banks	292	291	291	1
Loans and advances to customers, including:	1 940 722	1 049 081	574 873	1 365 849
Loans to individuals:	1 030 980	290 445	118 359	912 621
- Current accounts	120 044	12 496	6 754	113 290
- Term loans, including:	910 936	277 949	111 605	799 331
housing and mortgage loans	740 838	172 015	67 894	672 944
Loans to corporate clients:	909 742	758 636	456 514	453 228
corporate & institutional enterprises	296 589	242 555	171 224	125 365
medium & small enterprises	613 153	516 081	285 290	327 863
Loans and advances to public sector	-	-	-	-
Total	1 941 014	1 049 372	575 164	1 365 850

Forbearance portfolio as at 31 December 2016

31.12.2016	Gross carrying amount	Of which defaulted	Provisions created	Net value
Loans and advances to banks	412	403	403	9
Loans and advances to customers, including:	1 890 302	1 017 096	453 668	1 436 634
Loans to individuals:	793 913	215 094	82 988	710 925
- Current accounts	48 261	7 739	3 134	45 127
- Term loans, including:	745 652	207 355	79 854	665 798
housing and mortgage loans	624 017	142 537	49 878	574 139
Loans to corporate clients:	1 096 389	802 002	370 680	725 709
corporate & institutional enterprises	363 919	258 838	83 926	279 993
medium & small enterprises	732 470	543 164	286 754	445 716
Loans and advances to public sector	-	-	-	-
Total	1 890 714	1 017 499	454 071	1 436 643

The share of credit forborne portfolio constitutes 2.22% (2016: 2.24%) of the whole portfolio. The 54% of forborne portfolio is defaulted (2016: 54%). This portfolio is covered in 55% by the special-purpose provision (2016: 45%) and furthermore the risk of the lack of payment is mitigated by collaterals taken in the nominal amount of PLN 1.14 billion (2016: PLN 1.29 billion).

Forborne exposures by type of concession as at 31 December 2017

31.12.2017 Type of concession	Gross carrying amount	Of which defaulted	Provisions created	Net value
Refinancing	77 984	64 773	31 904	46 080
Modification of terms and conditions	1 863 030	984 600	543 260	1 319 770
Total	1 941 014	1 049 373	575 164	1 365 850

Forborne exposures by type of concession as at 31 December 2016

31.12.2016 Type of concession	Gross carrying amount	Of which defaulted	Provisions created	Net value
Refinancing	178 884	100 785	42 135	136 749
Modification of terms and conditions	1 711 831	916 714	411 936	1 299 895
Total	1 890 715	1 017 499	454 071	1 436 644

Forborne exposures by geographical breakdown as at 31 December 2017

31.12.2017	Gross carrying amount	Of which defaulted	Provisions created	Net value
Poland	1 700 168	808 526	394 377	1 305 791
Other countries	240 846	240 846	180 787	60 059
Total	1 941 014	1 049 372	575 164	1 365 850

Forborne exposures by geographical breakdown as at 31 December 2016

31.12.2016	Gross carrying amount	Of which defaulted	Provisions created	Net value
Poland	1 609 552	735 336	240 707	1 368 845
Other countries	281 163	281 163	213 364	67 799
Total	1 890 715	1 016 499	454 071	1 436 644

Forborne, not impaired exposures by period of overdue as 31 December 2017

31.12.2017 Overdue period	Gross carrying amount	Of which defaulted	Provisions created	Net value
Not past due	753 272	24 293	3 540	749 732
Past due less than 30 days	136 476	5 044	2 715	133 761
Past due 31 - 90 days	29 836	2 008	865	28 971
Past due over 90 days	12 626	12 623	216	12 410
Total	932 210	43 968	7 336	924 874

Forborne, not impaired exposures by period of overdue as 31 December 2016

31.12.2016 Overdue period	Gross carrying amount	Of which defaulted	Provisions created	Net value
Not past due	762 765	37 313	3 023	759 742
Past due less than 30 days	116 796	1 642	2 428	114 368
Past due 31 - 90 days	27 763	3 093	905	26 858
Past due over 90 days	2 698	2 684	30	2 668
Total	910 022	44 732	6 386	903 636

Forborne, impaired exposures by period of overdue as at 31 December 2017

31.12.2017 Overdue period	Gross carrying amount	Of which defaulted	Provisions created	Net value
Not past due	242 960	240 283	83 439	159 521
Past due less than 30 days	47 996	47 988	16 777	31 219
Past due 31 - 90 days	30 532	29 817	11 601	18 931
Past due over 90 days	687 316	687 316	456 011	231 305
Total	1 008 804	1 005 404	567 828	440 976

Forborne, impaired exposures by period of overdue as at 31 December 2016

31.12.2016 Overdue period	Gross carrying amount	Of which defaulted	Provisions created	Net value
Not past due	195 580	188 879	42 438	153 142
Past due less than 30 days	71 446	70 621	8 622	62 824
Past due 31 - 90 days	29 784	29 384	12 065	17 719
Past due over 90 days	683 883	683 883	384 560	299 323
Total	980 693	972 767	447 685	533 008

The tables below present forborne exposures in particular sectors according to the new sector division based on the chain value concept introduced in January 2017, where under one single sector have been focused entities operating activities related to a given market (suppliers, manufacturers, vendors). Data as at 31 December 2016 was adjusted accordingly and presented in a new breakdown according to the classification binding in the Group.

Forborne exposures by the industry as at 31 December 2017

31.12.2017 Sectors	Gross carrying amount	Of which defaulted	Provisions created	Net value
Financial sector	617	617	313	304
Food sector	32 666	28 551	14 995	17 671
Construction	111 640	84 689	33 031	78 609
Chemicals and plastic products	52 259	16 274	15 213	37 046
Wood, furniture and paper products	226 180	226 180	173 581	52 599
Scientific and technical activities	11 723	11 723	8 235	3 488
Electronics	77	77	77	-
Power, power and heating distribution	16 569	16 569	11 471	5 098
Pharmacy	2 012	2 012	2 012	-
Retail trade	5 550	5 550	2 214	3 336
Wholesale trade	30 435	30 435	24 398	6 037
Hotels and restaurants	9 173	2 173	505	8 668
Information and communication	15 032	15 032	13 462	1 570
IT	615	615	391	224
Arts, entertainment and recreation	33 925	33 925	25 559	8 366
Construction materials	2 136	2 136	107	2 029
Media	463	212	230	233
Metals	15 363	15 363	11 451	3 912
Motorisation	12 421	6 421	5 064	7 357
Human health	941	941	47	894
Household customers	1 053 120	311 384	124 749	928 371
Fuels	3 509	3 509	3 442	67
Other manufacturing activity	16 656	4 343	1 927	14 729
Real estate	260 959	220 191	97 403	163 556
Agriculture, forestry and fishing	5 687	5 687	4 644	1 043
Associations and organizations	252	-	2	250
Textiles and wearing apparel	2 165	669	96	2 069
Transport and logistics	2 699	2 699	254	2 445
Services	370	370	157	213
Unclassified	15 800	1 025	134	15 666
Total	1 941 014	1 049 372	575 164	1 365 850

Forborne exposures by the industry as at 31 December 2016

31.12.2016 Sectors	Gross carrying amount	Of which defaulted	Provisions created	Net value
Financial sector	725	718	422	303
Food sector	10 658	6 114	994	9 664
Construction	92 330	79 316	6 960	85 370
Chemicals and plastic products	5 853	2 335	966	4 887
Wood, furniture and paper products	220 020	220 020	164 364	55 656
Scientific and technical activities	5 053	5 053	699	4 354
Electronics	59 298	-	65	59 233
Power, power and heating distribution	2 109	2 109	660	1 449
Pharmacy	25	25	25	-
Retail trade	3 421	3 421	673	2 748
Wholesale trade	33 938	30 698	26 485	7 453
Hotels and restaurants	51 364	43 950	2 461	48 903
Information and communication	15 062	15 062	13 626	1 436
IT	497	497	201	296
Arts, entertainment and recreation	49 597	49 597	37 345	12 253
Construction materials	2 528	2 528	128	2 400
Media	405	402	303	102
Metals	42 380	16 120	12 208	30 172
Motorisation	14 581	7 816	6 054	8 527
Human health	2 744	2 744	264	2 480
Household customers	815 308	230 562	90 300	725 008
Other manufacturing activity	19 597	10 202	9 479	10 118
Real estate	386 805	245 687	73 188	313 617
Agriculture, forestry and fishing	4 014	4 014	3 483	531
Associations and organizations	3	3	3	-
Textiles and wearing apparel	881	881	44	837
Transport and logistics	6 057	3 024	576	5 481
Services	34 179	34 178	1 723	32 456
Unclassified	11 282	422	372	10 910
Total	1 890 715	1 017 499	454 071	1 436 644

3.4.8 Counterparty risk that arises from derivatives transactions

The credit exposure on mBank portfolio is calculated as the sum of the replacement cost for each transaction (which is its current net present value - NPV) and its estimated future potential exposure (Add-on). Moreover bank uses credit mitigation techniques such as netting and collateralization. Therefore netting is taken into account if there are close-out netting agreements in place, whereas CSA (Credit Support Annex) agreements are required to collateralise the exposure. CSAs allow for variation margin to be called if current valuation of the client portfolio exceeds the predefined level (threshold). Therefore, credit exposure of the derivatives portfolio is adjusted appropriately based on whether the collateral is paid or received and in accordance with the binding agreements between Bank and counterparty. For the purpose of the counterparty risk calculation only positive NPV at the portfolio level is taken into account.

Credit exposure control is performed through an integrated system and in real time. In particular the level of the allocated credit exposure limit usage is monitored and checked intraday. Credit exposure limits on derivatives are subject to limit decomposition into different products and maturities. In case of central counterparties (CCP) additionally posted types of collateral (initial margin, default fund) have been taken into account.

The decomposition of the mBank credit exposure of the derivatives portfolio based on the counterparty type is as follows:

- 51.8% banks,
- 8.0% central counterparties (CCP),

- 28.6% corporates,
- 11.5% financial institutions,
- 0.1% others.

The decomposition of the mBank credit exposure of the derivatives portfolio based on client type is as follows:

Client type	Credit exposure 2017 (PLN m)	Credit exposure 2016 (PLN m)
Bank CSA	1 211	1 267
Bank uncollateralized	4	93
CCP	188	1 242
Corpo collateralized	(2)	(8)
Corpo limit	675	794
Non-Bank Financial Institution	269	324
Private Banking	-	-

Compared to the end of 2016 there was a significant decrease in credit exposure with central counterparties (PLN 188 million in 2017 against PLN 1 242 million in 2016), mainly as a result of the modification of CCP credit exposure calculation methodology (NGR approach implemented).

Positive NPV (netting included) and inflows & outflows of the collateral for mBank of the derivatives portfolio has been depicted below:

(PLN m)	Banks*		CCP*		Corporates and others			
					CSA	w/o CSA	CSA	w/o CSA
	2017	2016	2017	2016	2017		2016	
NPV	29.55	56.31	4.27	0.07	3.26	162.30	-	321.96
collateral	84.00	50.00	(124.86)	(71.60)	-	56.68	-	41.06

*collateral presents paid/received initial margin

In order to reflect credit risk embedded in derivative instruments, the Group uses correction to fair value that takes into account the element of credit risk of the counterparty. Write off due to credit risk of contractor is based on expected loss until maturity of the contract and is calculated at the level of Bank in accordance with the adopted CVA/DVA methodology. The amount of the correction is then allocated to individual transactions. The value of this correction is included in income statement in net trading income.

The table below presents the percentage of derivatives with the correction due to credit risk of the counterparty, which constitute the component of financial assets in the total carrying value for each of the Group's internal rating categories (the rating model is described under Note 3.4.4).

Sub-portfolio	31.12.2017		31.12.2016	
	Fair value %	Provision coverage (%)	Fair value %	Provision coverage (%)
1	28.99	0.17	46.95	0.11
2	49.07	0.09	31.00	0.18
3	11.62	1.18	6.39	2.70
4	6.52	0.45	12.78	0.50
5	1.05	0.67	1.21	2.58
6	0.01	0.18	0.07	1.42
7	0.58	1.08	1.32	0.54
8	1.99	0.18	0.09	-
Default category	0.17	0.29	0.19	2.02
Total	100.00	0.27	100.00	0.39

3.5. Debt Instruments: treasury bonds and other eligible debt securities

31 December 2017	Trading securities			Investment debt securities	Total
Rating	Government bonds	Treasury bills	Other debt securities		
AAA	-	-	2 717	3 134 954	3 137 671
AA- to AA+	-	-	5 000	11 522	16 522
A- to A+	1 232 515	-	14 681	27 152 710	28 399 906
BBB+ to BBB-	-	-	200 897	1 287 840	1 488 737
BB+ to BB-	-	-	61 712	301 725	363 437
B+ to B-	-	-	5 908	95 122	101 030
Lower than B-	-	-	-	-	-
Unrated	-	-	478	73 201	73 679
Total	1 232 515	-	291 393	32 057 074	33 580 982

31 December 2016	Trading securities			Investment debt securities	Total
Rating	Government bonds	Treasury bills	Other debt securities		
AAA	-	-	2 884	1 987 820	1 990 704
AA- to AA+	-	-	-	-	-
A- to A+	3 503 029	-	-	28 519 753	32 022 782
BBB+ to BBB-	-	-	83 867	372 290	456 157
BB+ to BB-	-	-	144 822	340 024	484 846
B+ to B-	-	-	21 395	21 601	42 996
Lower than B-	-	-	-	-	-
Unrated	-	-	40 460	85 764	126 224
Total	3 503 029	-	293 428	31 327 252	35 123 709

93.96% of the investments in debt securities is rated at least on A- credit rating (31 December 2016: 96.84%).

Information about impairment allowance for investment equity securities occurs under Note 23.

3.6. Concentration of assets, liabilities and off-balance sheet items

Geographic concentration risk

In order to actively manage the risk of concentration by country, the Group:

- complies with the formal procedures aimed at identifying, measurement and monitoring this risk,
- complies with the formal limits mitigating the risk by country and the procedures to be followed when the limits are exceeded,
- uses a management reporting system, which enables monitoring the risk level by country and supports the decision-making process related to management,
- maintains contacts with a selected group of the largest banks with good ratings, which are active in handling foreign transactions. On some markets, where the risk is difficult to estimate, the Group avails itself of the services of its foreign correspondent banks, e.g. Commerzbank, and insurance in the Export Credit Insurance Corporation ('KUKKE'), which covers the economic and political risk.

As at 31 December 2017 there was no substantial level of geographical concentration in the credit portfolio of mBank Group. In terms of exposure relating to countries other than Poland there was no substantial share of impaired exposures.

Sector concentration risk

Monitoring exposures in sectors, defined in line with Polish Classification Economic Activities, is carried out in individual subsidiaries of the Group.

mBank analyses the sector concentration risk in order to build mBank's corporate portfolio in a safe and effective way and manages industrial concentration risk determining industrial limits.

Limiting covers all the sectors in which the Bank's exposure exceeds 5% of the total amount of corporate exposures at the end of a given reporting period and sectors indicated by the Corporate and Investment Banking Risk Committee (KRK).

The Bank set industrial limits on a level not higher than:

- 12% of the gross loan portfolio in the prior reporting period for low risk sectors,
- 10% of the gross loan portfolio in the prior reporting period for medium risk sectors,
- 7% of the gross loan portfolio in the prior reporting period for high risk sectors.

In the case when the utilisation of the limit exceeds 90%, activities preventing the exceeding of limits are implemented; decision in this regard shall be taken by the KRK.

The table below presents the structure of concentration of mBank S.A. Group's exposures in particular sectors according to the new sector division based on the chain value concept introduced in January 2017, where under one single sector have been focused entities operating activities related to a given market (suppliers, manufacturers, vendors). Data as at 31 December 2016 was adjusted accordingly and presented in a new breakdown according to the classification binding in the Group.

The structure of concentration of carrying amounts of exposure of mBank Group:

No.	Sectors	Principal exposure (in PLN thousand)	%	Principal exposure (in PLN thousand)	%
		31.12.2017		31.12.2016	
1.	Household customers	48 142 786	55.09	48 949 829	57.87
2.	Real estate	5 949 824	6.81	6 082 294	7.19
3.	Construction	4 111 639	4.71	3 814 574	4.51
4.	Food sector	2 489 925	2.85	2 323 053	2.75
5.	Transport and logistics	2 306 225	2.64	2 074 745	2.45
6.	Metals	2 099 826	2.40	1 941 590	2.30
7.	Motorisation	1 958 338	2.24	1 516 123	1.79
8.	Construction materials	1 661 265	1.90	1 178 707	1.39
9.	Wood, furniture and paper products	1 504 274	1.72	1 212 920	1.43
10.	Chemicals and plastic products	1 476 802	1.69	1 276 245	1.51
11.	Scientific and technical activities	1 192 750	1.36	688 975	0.81
12.	Wholesale trade	1 181 227	1.35	976 637	1.15
13.	Fuels	1 049 079	1.20	1 002 124	1.18
14.	Rental and leasing activities	1 033 389	1.18	1 213 395	1.43
15.	Financial activities	923 673	1.06	249 696	0.30
16.	Power, power and heating distribution	885 455	1.01	1 294 717	1.53
17.	Retail trade	850 512	0.97	894 650	1.06
18.	Information and communication	769 810	0.88	785 461	0.93
19.	Public administration	724 179	0.83	909 234	1.08
20.	Hotels and restaurants	663 620	0.76	728 771	0.86
21.	Services	626 703	0.72	471 301	0.56
22.	Textiles and wearing apparel	547 283	0.63	492 531	0.58
23.	Agriculture, forestry and fishing	544 444	0.62	391 489	0.46
24.	IT	484 017	0.55	205 974	0.24
25.	Other manufacturing activity	466 358	0.53	441 558	0.52
26.	Human health	454 995	0.52	385 791	0.46
27.	Municipal services	430 137	0.49	412 509	0.49
28.	Media	416 144	0.48	460 466	0.54
29.	Pharmaceutical products	304 448	0.35	255 425	0.30
30.	Household equipment	287 422	0.33	183 302	0.22
31.	Electronics	241 998	0.28	229 589	0.28
32.	Arts, entertainment and recreation	236 857	0.27	326 472	0.39
33.	Education and scientific research	125 835	0.14	136 654	0.16
34.	Mining	76 631	0.09	69 282	0.08

As at 31 December 2017, the total exposure of the Group in the above sectors (excluding household customers) amounts to 43.56% of the credit portfolio (31 December 2016: 40.93%).

The risk of investing in sectors being limited by the Bank, i.e. sectors where the Bank's exposures exceeds 5% of the corporate portfolio as at the end of 2017 was estimated in line with the principles of classification sectors to limitation, accepted by the KRK in January 2017.

The table below presents the risk of limited sectors as at the end of 2017 and 2016 (where the risk was determined in line with internal rules in force till the end of 2016).

No.	Sectors	31.12.2017	31.12.2016
1.	Financial sector	low	medium
2.	Fuels	medium	medium
3.	Food sector	medium	medium
4.	Construction	high	medium
5.	Motorisation	medium	medium
6.	Metals	medium	high

Large exposures concentration risk

The purpose of management of the large exposures concentration risk is an ongoing monitoring of the level of limits set by the CRR Regulation. In order to ensure safety against the risk of exceeding the regulatory limits in mBank:

- internal limits, lower than those specified in the CRR Regulation, are set,
- daily monitoring of large exposures is carried out and the participants of the lending and investment processes are immediately informed in the case of internal limits exceeding.

These activities have a direct impact on the Bank's decisions concerning new exposures and the increase of existing exposures.

mBank pays particular attention to the correct identification of the scale of risk of significant credit exposures defined in the Bank's internal regulations. In the case of exceeding specified amount of exposure/limit to a customer/group of affiliated customers identified as bulk risk, the financing requires additional decision of the Bank's Management Board irrespective of the PD-rating and the decision-making level.

The Bank monitors exposures considered a large exposure limit i.e. exposures after taking into account the effect of the credit risk mitigation (in accordance with art. 401-403 CRR Regulation) and exemptions (art. 390 paragraph 6, Art. 400, Art. 493, paragraph 3 of CRR Regulation), which are equal or exceed 10% of the eligible capital. At the end of 2017 there was no exposure in line with the above definition.

The Credit Committee of mBank Group is responsible for the supervision over risk concentration and large exposures at the level of mBank subsidiaries.

3.7. Market risk

3.7.1 Organisation of market risk management

In the process of organisation of the market risk management, the Bank follows requirements resulting from the law and supervisory recommendations, in particular the PFSA Recommendations (among others A, C, G and I) and the EBA guidelines, concerning market risk management.

The fundamental principle applied in the organisation of the market risk management in the Bank is the separation of the market risk control and monitoring functions from the functions related to opening and keeping open market risk positions. Monitoring and controlling of the market risk is performed by the Integrated Risk and Capital Management Department (DKR) under supervision of the Vice-president of the Management Board (CRO), while the market risk positions are operationally managed by the Financial Markets Department (DFM), the Own Transactions Division in Brokerage Bureau (BM_WTW) and the Treasury Department (DS) reporting to the Vice-president of the Management Board – Head of Financial Markets.

The Debt Securities Issue Department (DCM) is responsible for debt instruments issuance and managing of non-government debt securities in the banking book. Moreover, the investment positions sensitive to market risk factors (e.g. prices of shares listed on the WSE) and positions in non-government debt securities are managed in the Structured and Mezzanine Finance Department (DFS). DCM and DFS are operating in the Corporate & Investment Banking area.

Market risk management is performed in a single process by the Integrated Risk and Capital Management Department (DKR), which is responsible for measurement of exposures to market risk

of the Bank's front-office units portfolios by the use of market risk measures: Value at Risk (VaR) and stress tests. DKR is responsible for control of utilisation of the limits for these risk measures established by the Management Board and the Financial Markets Risk Committee (KRF) and provides daily and periodical reporting on the market risk exposure to managers of the Bank's front-office units, to the Financial Markets Risk Committee, and directly to the CRO. DKR develops also methodologies for market risk measurement, pre-settlement counterparty risk of derivative transactions and establishes valuation models for financial instruments. The models risk management process is under supervision of the Model Risk Committee.

Moreover, the Integrated Risk and Capital Management Department is responsible for calculation and reconciliation of financial results on transactions carried out by the front-office units and provides daily valuation of financial instruments to the Finance Area. The valuation of derivative transactions with the Bank's clients is also delivered to the business units responsible for managing clients (Corporate and Investment Banking area). Valuations prepared by DKR are the basis for managing collaterals for concluded transactions on derivative instruments.

DKR is responsible for the administration of the front-office IT systems, i.e. administration of users' access rights to the systems, parameterization in the systems of financial instruments, as well as counterparties and issuers and is responsible for market data input to the systems. DKR monitors utilization of counterparty limits (pre-settlement, settlement, issuer and country risk limits) and escalates if limits are exceeded. Moreover, DKR verifies the market conformity of the transactions concluded by the front-office units and supervises the process of modification and deletion of deals in the front-office systems.

3.7.2 Tools and measures

In the course of Bank's operations, the mBank is exposed to market risk, which is defined as a risk resulting from unfavourable change of the current valuation of financial instruments in the Bank's portfolios due to changes of the market risk factors, in particular interest rates, foreign exchange rates, stock share prices and indices, implied volatilities of relevant options and credit spreads.

mBank identifies market risk on the trading book positions valued at fair value (either directly to market prices or via models) and as such may lead to losses reported in Bank's financial results. Furthermore, the Bank assigns market risk to its banking positions independently of the accounting rules of calculating financial results on these positions. In particular, in order to reflect the interest rate risk of the retail and corporate banking products with unspecified interest revaluation dates or rates administered by the Bank, the Bank uses the so-called replicating portfolio models. The Bank presents active approach to capital management which resulted in case of market risk measurements in capital modelling within 5-year investment horizon. Market risk measures applicable to interest rate banking book positions are based on net present value (NPV) models.

Exposure to market risk is quantified by:

- measurement of the Value at Risk (VaR),
- measurement of expected loss under condition that this loss exceeds Value at Risk (ES – Expected Shortfall),
- measurement of the Value at Risk in stressed conditions (Stressed VaR),
- measurement of economic capital to cover market risk,
- stress tests scenario analyses.

The Value at Risk (VaR) is calculated using historical method on a daily basis for a 1-day and a 10-day holding period and a 95%, 97.5% and 99% confidence level. In this method, historical data concerning risk factors for last 254 business days are taken into consideration. In case of Value at Risk in stressed conditions the calculation is analogous to Value at Risk calculation, but the only difference is in time of stressed conditions, which is marked out on the basis of 9-year series of Value at Risk based on following 12-months windows of risk factors changes from last 10 years. In 2017 it was a year which ended up in June 2009. This period is verified at least once a year.

The VaR methodology takes into account the following risk factors:

- interest rates (including tenor basis risk and cross-currency basis risk),
- foreign exchange rates,
- shares prices and equity indices and its volatilities,

- credit spreads (to the extent reflecting market fluctuations of debt instruments prices, reflecting credit spread for corporate bonds, and spread between government yield curve and swap curve - for government bonds).

The expected loss under condition that it exceeds Value at Risk (ES) is calculated on the basis of daily VaR calculation as the average of six worst losses.

The economic capital for market risk is a capital to cover losses in the course of one year coming from changes in valuation of financial instruments which built Bank's portfolios and resulting from changes of prices and values of market parameters.

Stress tests are additional measures of market risk, supplementing the measurement of the Value at Risk, which show the hypothetical changes in the current valuation of the Bank's portfolios, which would take place as a result of realisation of the so-called stress scenarios – i.e. market situations at which the risk factors would reach specified extreme values, assuming static portfolio.

Stress tests consist of two parts: standard stress tests designated for standard risk factors: currency exchange rates, interest rates, stock prices and their volatility, as well as a stress test, which involves changes in credit spreads. In this way, there was addressed among others, the need for covering in stress tests analysis the independent effect of basis risk (the spread between interest rates on government bonds and IRS), which the Bank is exposed to, due to maintaining a portfolio of Treasury bonds.

Market risk, in particular interest rate risk of the banking book is also quantified by calculation of the Earnings at Risk (EaR) measure for the banking portfolio, which is described in chapter concerning interest rate risk.

In order to mitigate market risk exposure by decisions of the Supervisory Board (with respect to the mBank Group portfolio), the Management Board (with respect to the mBank portfolio) and the Financial Markets Risk Committee (with respect to the business lines portfolios) limits on VaR at 97,5% confidence level for a 1-day holding period and stress tests limits are established.

3.7.3 Risk measurement

Value at Risk, Expected Shortfall

In 2017, Bank's market risk exposure, as measured by the Value at Risk (VaR, for a 1-day holding period, at 97.5% confidence level), was in relation to the established limits on moderate level. The average utilisation of VaR limit for the Financial Markets Department (DFM), whose positions consist of trading book portfolios, amounted to 28% (PLN 1.6 million), for the Own Transactions Division in Brokerage Bureau (BM_WTW) 12% (PLN 0.1 million), while for the Treasury Department (DS), whose positions are classified solely to the banking book, it was 43% (PLN 18.1 million) for the positions without capital modelling and 37% (PLN 15.7 million) for the positions with capital modelling.

The average utilization of VaR limit for the Debt Securities Issue Department (DCM) is 29% (PLN 0.5 million). The average utilisation of the VaR limit for the position of the Structured and Mezzanine Finance Department (DFS) accounted for 25% (PLN 13.9 thousand).

In 2017, the VaR figures for mBank's portfolio were driven mainly by portfolios of instruments sensitive to interest rates and separated credit spread – the banking book T-bonds portfolios managed by the Treasury Department and the trading book portfolios and interest rate exchange positions managed by the Financial Markets Department.

The DFM portfolios of instruments sensitive to changes in exchange rates like FX transactions, currency options, as well as the exposure of BM_WTW to equity price risk and risk of implied volatility of options traded on the Warsaw Stock Exchange, had a relatively low impact on the Bank's risk profile.

The decrease of Value-at-Risk was caused in 2017 mainly by decrement of interest rates and diminishing of their volatility, as well as shortening of average maturity of the Treasury bonds portfolio.

mBank VaR and ES

The table below presents VaR and Expected Shortfall statistics for the Bank's portfolio:

PLN 000's	2017				2016			
	31.12.2017	Mean	Maximum	Minimum	31.12.2016	Mean	Maximum	Minimum
VaR IR	9 423	9 970	15 641	5 281	12 903	13 721	18 454	11 042
VaR FX	545	360	870	138	772	547	816	351
VaR EQ	53	140	1 151	15	199	214	791	62
VaR CS	11 441	13 980	23 320	10 431	21 249	27 172	30 150	19 856
VaR	14 038	18 685	34 560	13 429	28 037	35 306	40 726	27 124
ES	24 433	29 842	43 970	23 124	42 093	42 983	49 041	38 046

VaR IR – interest rate risk (without separated spread rate)

VaR FX – currency risk

VaR EQ – equity risk

VaR CS – credit spread risk

VaR and ES of mBank Group

The main sources of market risk of the mBank Group are the Bank's positions. The tables below show VaR statistics (at 97.5% confidence level for a 1-day holding period) and Expected Shortfall for the mBank Group (i.e. mBank, mBank Hipoteczny, mLeasing) in 2017 for individual members of the Group in which market risk positions were identified and Value at Risk measure decomposition to the VaRs corresponding to the main risk factor types – interest rate risk (VaR IR), foreign exchange risk (VaR FX), equity prices risk (VaR EQ) and credit spread risk (VaR CS).

The table below presents VaR as of the end of 2017:

PLN 000's	mBank Group	mBank	mBH	mLeasing
VaR IR Mean	10 072	9 970	82	101
VaR FX Mean	362	360	20	19
VaR EQ mean	140	140	0	0
VaR CS Mean	14 282	13 980	358	0
VaR Mean	18 965	18 685	358	101
VaR Maximum	35 076	34 560	493	232
VaR Minimum	13 527	13 429	227	28
VaR	14 472	14 038	408	29

The table below presents VaR as of the end of 2016.

PLN 000's	mBank Group	mBank	mBH	mLeasing
VaR IR Mean	14 143	13 721	187	278
VaR FX Mean	558	547	29	17
VaR EQ mean	224	214	0	0
VaR CS Mean	27 352	27 172	197	0
VaR Mean	35 879	35 306	330	273
VaR Maximum	41 393	40 726	770	339
VaR Minimum	27 515	27 124	100	192
VaR	28 438	28 037	459	212

The values of Expected Shortfall as of the end of 2017 are presented in table below.

PLN 000's	mBank Group	mBank	mBH	mLeasing
ES mean	30 393	29 842	588	139
ES max	44 807	43 970	746	311
ES min	23 459	23 124	381	37
ES (31.12.2017)	25 104	24 433	720	37

For comparison, the values of Expected Shortfall as of the end of 2016 are presented in table below.

PLN 000's	mBank Group	mBank	mBH	mLeasing
ES średni	43 508	42 983	426	335
ES max	49 923	49 041	936	398
ES min	38 769	38 046	117	256
ES (31.12.2016)	42 779	42 093	612	273

Stressed Value at Risk

The Value at Risk in stressed conditions is an observed measure. The table below presents statistics of this measure for mBank for 2017 and for 2016:

PLN 000's	2017				2016			
	31.12.2017	Mean	Maximum	Minimum	31.12.2016	Mean	Maximum	Minimum
Stressed VaR IR	41 214	39 289	48 768	27 827	45 288	43 671	50 339	36 293
Stressed VaR FX	313	1 002	3 000	258	2 339	1 363	2 655	576
Stressed VaR EQ	188	315	2 720	22	422	342	1 495	2
Stressed VaR CS	81 534	82 007	91 849	73 903	87 930	87 516	96 278	74 731
Stressed VaR	112 531	112 242	124 823	101 868	124 833	119 771	130 662	105 462

The table below presents statistics of this measure for mBank Group for 2017.

PLN 000's	mBank Group	mBank	mBH	mLeasing
Stressed VaR IR	40 247	39 289	556	449
Stressed VaR FX	1 030	1 002	94	81
Stressed VaR EQ	315	315	0	0
Stressed VaR CS	83 846	82 007	2 073	0
Stressed VaR Mean	115 215	112 242	2 231	443
Stressed VaR Maximum	128 100	124 823	2 947	776
Stressed VaR Minimum	103 958	101 868	1 809	196
Stressed VaR	114 627	112 531	2 551	344

The table below presents statistics of this measure for mBank Group for 2016.

PLN 000's	mBank Group	mBank	mBH	mLeasing
Stressed VaR IR	45 394	43 671	763	757
Stressed VaR FX	1 371	1 363	96	54
Stressed VaR EQ	347	342	0	0
Stressed VaR CS	88 045	87 516	686	0
Stressed VaR Mean	121 382	119 771	1 295	745
Stressed VaR Maximum	133 795	130 662	2 400	924
Stressed VaR Minimum	106 046	105 462	381	628
Stressed VaR	128 079	124 833	2 241	731

Economic capital for market risk

The average utilisation of limit on economic capital for market risk for the mBank Group in 2017 amounted to 53% (PLN 689.8 million). The average level of economic capital for mBank was equal to PLN 673.2 million. As of end of 2017 the economic capital for market risk for the mBank Group was PLN 514.7 million, and for mBank was PLN 500.8 million. For comparison, at the end of 2016 values of these measures were PLN 783.0 million and PLN 767.3 million, respectively.

Stress testing

The average utilisation of stress test limits for the mBank Group in 2017 was 59% (PLN 791.9 million) for portfolio without capital modelling and 61% (PLN 870.4 million) for portfolio including capital modelling.

Average utilisation of stress test limits in mBank in 2017 amounted to 56% (PLN 773.6 million) for portfolio without capital modelling.

The average utilisation of the stress test limits in 2017 for the Treasury Department portfolio without capital modelling was 66% (PLN 670.4 million) and 72% (PLN 753.1 million) including capital modelling. For the DFM portfolio the average utilisation was 32% (PLN 81.4 million), for the BM_WTW portfolio 13% (PLN 1.0 million), for the DCM portfolio 59% (PLN 38.4 million) and for the DFS portfolio 26% (PLN 376 thousand). The most significant part of the presented stress test values constitutes credit spread stress test for government bonds portfolio because stress test scenarios include a scenario in which credit spreads increase on average by 100 bps.

The table below presents utilisation of stress test for the mBank Group (without capital modelling) in 2017 in comparison to 2016:

PLN million	2017				2016			
	31.12.2017	Mean	Maximum	Minimum	31.12.2016	Mean	Maximum	Minimum
Base ST	146	89	155	11	102	87	125	26
CS ST	713	703	782	635	767	710	798	639
Total ST	859	792	903	655	869	797	914	679

Base stress test – standard stress test

CS stress test – stress test for credit spread scenarios

Total stress test – total stress test (sum of standard stress test and stress test for credit spread scenarios).

3.8. Currency risk

The Group is exposed to changes in currency exchange rates due to its financial assets and liabilities other than PLN. The following tables present the exposure of the Group to currency risk at 31 December 2017 and 31 December 2016. The tables below present assets and liabilities of the Group at balance sheet carrying amount, for each currency.

31.12.2017	PLN	EUR	USD	CHF	CZK	Other	Total
ASSETS							
Cash and balances with the Central Bank	3 955 115	1 840 180	35 783	5 515	1 526 714	21 562	7 384 869
Loans and advances to banks	642 863	365 538	323 855	534	318 219	56 713	1 707 722
Trading securities	1 525 255	127	-	-	-	-	1 525 382
Derivative financial instruments	792 631	289 876	47 193	103 836	2 767	-	1 236 303
Loans and advances to customers	50 299 494	14 410 799	931 536	15 199 692	3 526 422	107 901	84 475 844
Investment securities	30 545 940	993 919	46 538	-	558 302	-	32 144 699
Investments in associates	28 680	-	-	-	-	-	28 680
Non-current assets held for sale	42 134	-	-	-	-	-	42 134
Intangible assets	709 728	424	-	-	490	-	710 642
Tangible fixed assets	748 413	3 917	-	-	6 408	-	758 738
Other assets, including tax assets	1 311 808	56 971	187	76	39 962	2	1 409 006
Total assets	90 602 061	17 961 751	1 385 092	15 309 653	5 979 284	186 178	131 424 019
LIABILITIES							
Amounts due to the Central Bank	-	-	-	-	-	-	-
Amounts due to other banks	1 239 963	945 114	208 789	2 678 686	245	554	5 073 351
Derivative financial instruments	923 153	137 728	29 784	-	4 700	-	1 095 365
Amounts due to customers	64 798 748	15 870 717	2 823 129	988 224	6 518 347	496 862	91 496 027
Debt securities in issue	4 415 349	8 393 395	-	1 432 306	81 802	-	14 322 852
Hedge accounting adjustments related to fair value of hedged items - debt securities in issue	-	43 336	-	1 518	-	-	44 854
Other liabilities including tax liabilities	2 354 529	160 899	125 946	3 788	91 402	14 332	2 750 896
Provisions	144 229	45 196	331	303	916	-	190 975
Subordinated liabilities	1 264 006	-	-	894 137	-	-	2 158 143
Total liabilities	75 139 977	25 596 385	3 187 979	5 998 962	6 697 412	511 748	117 132 463
Net on-balance sheet position	15 462 084	(7 634 634)	(1 802 887)	9 310 691	(718 128)	(325 570)	14 291 556
Loan commitments and other granted financial commitments	24 784 734	2 420 351	518 899	-	437 605	-	28 161 589
Guarantees, banker's acceptances, documentary and commercial letters of credit	5 180 569	7 588 032	660 512	1 424 294	86 497	33 148	14 973 052

31.12.2016	PLN	EUR	USD	CHF	CZK	Other	Total
ASSETS							
Cash and balances with the Central Bank	5 828 681	2 276 894	30 065	8 197	996 597	23 847	9 164 281
Loans and advances to banks	1 980 646	656 428	271 818	9 008	86 170	78 785	3 082 855
Trading securities	3 800 634	-	-	-	-	-	3 800 634
Derivative financial instruments	1 284 798	386 238	34 762	90 807	2 199	10 043	1 808 847
Loans and advances to customers	42 951 808	14 866 150	1 460 161	19 086 645	3 246 761	151 752	81 763 277
Investment securities	29 705 654	941 402	38 392	-	707 904	-	31 393 352
Intangible assets	581 632	388	-	-	643	-	582 663
Tangible fixed assets	746 192	5 283	-	-	5 896	-	757 371
Other assets, including tax assets	1 312 910	45 631	1 382	485	29 811	3	1 390 222
Total assets	88 192 955	19 178 414	1 836 580	19 195 142	5 075 981	264 430	133 743 502
LIABILITIES							
Amounts due to the Central Bank	-	-	-	-	-	-	-
Amounts due to other banks	1 197 354	895 929	211 975	6 181 492	-	3	8 486 753
Derivative financial instruments	1 349 787	210 152	29 249	-	-	10 078	1 599 266
Amounts due to customers	65 662 053	16 448 676	2 343 112	641 887	5 714 824	607 410	91 417 962
Debt securities in issue	3 365 898	8 385 687	-	826 810	81 994	-	12 660 389
Hedge accounting adjustments related to fair value of hedged items - debt securities in issue	-	104 050	-	12 414	407	-	116 871
Other liabilities including tax liabilities	2 029 261	105 629	78 685	5 232	59 241	6 949	2 284 997
Provisions	173 113	7 939	698	349	654	1	182 754
Subordinated liabilities	1 263 940	-	-	2 679 409	-	-	3 943 349
Total liabilities	75 041 406	26 158 062	2 663 719	10 347 593	5 857 120	624 441	120 692 341
Net on-balance sheet position	13 151 549	(6 979 648)	(827 139)	8 847 549	(781 139)	(360 011)	13 051 161
Loan commitments and other granted financial commitments	19 765 074	2 093 193	461 548	338	366 855	5 183	22 692 191
Guarantees, banker's acceptances, documentary and commercial letters of credit	4 439 452	1 236 242	182 679	-	2 766	20 307	5 881 446

3.9. Interest rate risk

mBank S.A.

In the process of management of interest rate risk in the banking book, the risk monitoring and control functions are performed by the Integrated Risk and Capital Management Department supervised by the Vice-president of the Management Board (CRO), whereas the operational management of risk positions takes place in the Treasury Department supervised by the Vice-president of the Management Board, Head of Financial Markets. Hereby Bank ensures independence of risk measurement, monitoring and control functions from operational activity creating the Bank's positions.

Interest rate risk of the banking book is the risk resulting from the exposure of the Bank's interest income and capital to the adverse impact of interest rates movements. Following recommendations of the Polish Financial Supervisory Authority (KNF), in particular Recommendation G, and EBA guidelines (EBA/GL/2015/08) from 5 October 2015 on the management of interest rate risk arising from non-trading activities the Bank monitors the banking book structure in terms of repricing risk, basis risk, yield curve risk and customer option risk.

The basic measures used to control interest rate risk in the banking book are:

- the repricing gap (the difference between assets, liabilities and off-balance sheet banking book positions, measured in defined repricing buckets, based on repricing date of the interest rate sensitive products), and
- the net interest income exposed to risk (EaR - Earnings at Risk – a potential decrease of interest income in a 1-year horizon due to unfavourable changes of the market interest rates. The measure assumes constant volume and structure of banking book, unchangeable construction of interest rate, constant interest margin and parallel shift of the yield curve. EaR is calculated for 5 main currencies - PLN, CHF, EUR, CZK, USD).

The mBank Group has set BPV (basis point value +1bp) limit for the total mBank Group exposure for interest rates for tenors above 20 years and above 30 years. As of end of 2017 utilisation of these limit for tenors above 20 years was equal to 0.8% (PLN 0.8 thousand), and limit for tenors above 30 years was zero and has not been exceeded.

Moreover, the Bank conducts also stress test analyses to estimate the impact of adverse interest rate movements on the net interest income and the economic value of the banking book portfolio. Interest rate risk of the banking book is also quantified by the market risk measures: Value at Risk (VaR) and stress tests.

For the banking portfolio the admissible level of exposure to interest rate risk is restricted by MAT limits (management action triggers) for repricing gap and market risk limits imposed on the Value at Risk (VaR) and stress tests. The utilisation of all those limits is monitored and controlled on a daily basis.

Interest income subject to risk

As of 31 December 2017 and 31 December 2016, a sudden, permanent and unfavourable shift of the market interest rates by 100 basis points for all maturities would reduce the annual interest income within 12 months following the year-end date (EaR) by the following amounts:

(PLN mln)	2017				2016			
	31.12.2017	Mean	Maximum	Minimum	31.12.2016	Mean	Maximum	Minimum
PLN	186.0	137.4	254.3	86.8	171.8	78.3	180.0	34.7
USD	14.9	13.6	17.9	8.6	9.3	7.5	13.8	1.2
EUR	84.9	94.1	113.1	67.3	64.9	70.6	142.3	50.2
CHF	0.0	0.0	0.1	0.0	0.0	4.1	21.6	0.0
CZK	12.0	4.8	12.0	2.2	3.1	4.1	7.5	2.4

To calculate these values, the Bank assumed that the structure of financial assets and liabilities disclosed in the financial statements for above presented dates would be fixed over the course of the year and the Bank would not take any activities to change related exposure to the interest rate risk. In these calculation the Bank included positions with modelled repricing period in accordance with replicating portfolios methodology.

Stress tests

The Bank conducts also calculations of the changes in the economic value of the banking book portfolio having the nature of stress test scenarios. The change of the economic value of the banking book portfolio being a result of the conducted stress test, which assumes a scenarios of the unfavourable interest rates shift by 200 basis points of the yield curve for a given currency, amounted to PLN 511.7 million at the end of 2017 (at the end of 2016: PLN 658.1 million). When calculating these values no correlation between currencies and no possibility of dropping clients interest rates below 0 are assumed.

The debt securities portfolio in PLN (money bills, Polish Treasury bills and bonds) constitutes the significant position priced at fair value in banking book portfolio. The risk of the interest rate changes in this portfolio is also calculated using the stress test methodology (described above in p. 3.7). The methodology includes scenarios of changes of market interest rates and credit spread, which in case of treasury debt securities may reflect basis risk (spread changes between the government curve and swap curve).

mBank Hipoteczny S.A.

Repricing date misfit gap and interest earnings at risk (EaR) based on the former are the key interest rate risk measures at mBank Hipoteczny S.A.

A sudden, lasting and disadvantageous change of market interest rates by 100 basis points for all maturities would result in decrease in the annual interest income by the following amounts:

EaR (PLN 000's)	31.12.2017	31.12.2016
for position expressed in PLN	7 061	5 732
for position expressed in USD	8	3
for position expressed in EUR	99	772

To calculate these values, there was assumed that the structure of financial assets and liabilities disclosed in the financial statements as at 31 December 2017 and 31 December 2016 would be fixed and the Bank would not take any measures to change related exposure to interest rate change risk.

mLeasing Sp. z o.o.

Market risk means a potential loss caused by disadvantageous changes of market prices or parameters affected by market prices. The Company is exposed to risk arising from open currency

positions and non-adjustment of products charged with the interest rate risk within the scope of maturity and/or revaluation periods.

The Company applies a global measure to measure the value of bank portfolio exposed to currency and interest rate risk, namely VAR (Value at Risk). This is a synthetic measure of currency and interest rate risk.

The sum of VAR of interest rate and VAR of exchange rate constitutes the global VAR of the Company. VAR of the interest rate risk presents the impact of interest rate changes on the value of the Company's portfolio. VAR of exchange rate risk presents the impact of changes of exchange rates on estimation of items of balance-sheet assets and liabilities until the date of their revaluation (change of interest).

Pursuant to the decision of the Risk Committee of mBank SA concerning the rules of monitoring the level of market risk in subsidiaries belonging to the mBank Group, mBank provides indicated values of risk measures for the portfolio of mLeasing.

The amount of VAR (97.5% confidence level, holding period 1 day) cannot exceed the basic VAR limit for mLeasing applied by mBank SA in a given period (PLN 1 million at the end of 2015).

The table below presents VAR values as at 31.12.2017 and 31.12.2016, calculated using the parameters specified above.

PLN 000's	VaR	
	31.12.2017	31.12.2016
Interest rate risk	23	207
Currency risk	6	5
Total VaR	29	212

mBank S.A. Group interest rate risk

The following tables present the Group's exposure to interest rate risk. The tables present the Group's financial instruments at carrying amounts, categorised by the earlier of contractual repricing or maturity dates.

31.12.2017	Up to 1 month	1-3 months	3-12 months	1-5 years	More than 5 years	Non-interest bearing	Total
ASSETS							
Cash and balances with the Central Bank	2 888 934	-	-	-	-	4 495 935	7 384 869
Loans and advances to banks	1 300 282	118 425	64 370	6	-	224 639	1 707 722
Trading and investment securities	9 137 833	281 041	7 895 131	15 011 524	1 256 357	116 875	33 698 761
Loans and advances to customers	56 181 146	20 538 664	3 683 266	2 951 682	70 481	1 050 605	84 475 844
Other assets and derivative financial instruments	254 902	228 340	281 201	362 325	46 043	833 560	2 006 371
Total assets	69 763 097	21 166 470	11 923 968	18 325 537	1 372 881	6 721 614	129 273 567
LIABILITIES							
Amounts due to the Central Bank	-	-	-	-	-	-	-
Amounts due to other banks	2 476 116	2 529 076	62 564	-	-	5 595	5 073 351
Amounts due to customers	77 407 652	8 746 621	6 129 472	(804 121)	(147 308)	163 711	91 496 027
Debt securities in issue	901 119	3 501 630	1 714 294	6 960 025	1 245 784	-	14 322 852
Subordinated liabilities	1 371 849	285 627	500 667	-	-	-	2 158 143
Other liabilities and derivative financial instruments	239 940	208 302	354 754	297 700	20 516	2 545 283	3 666 495
Total liabilities	82 396 676	15 271 256	8 761 751	6 453 604	1 118 992	2 714 589	116 716 868
Total interest repricing gap	(12 633 579)	5 895 214	3 162 217	11 871 933	253 889		

31.12.2016	Up to 1 month	1-3 months	3-12 months	1-5 years	More than 5 years	Non-interest bearing	Total
ASSETS							
Cash and balances with the Central Bank	2 785 777	-	-	-	-	6 378 504	9 164 281
Loans and advances to banks	2 799 230	45 974	54 617	-	-	183 034	3 082 855
Trading and investment securities	9 592 263	301 557	3 418 204	20 835 269	980 593	66 100	35 193 986
Loans and advances to customers	59 237 924	15 495 698	3 837 415	2 827 716	21 099	343 425	81 763 277
Other assets and derivative financial instruments	285 088	357 374	501 965	426 719	54 179	1 031 678	2 657 003
Total assets	74 700 282	16 200 603	7 812 201	24 089 704	1 055 871	8 002 741	131 861 402
LIABILITIES							
Amounts due to the Central Bank	-	-	-	-	-	-	-
Amounts due to other banks	3 538 050	4 947 423	-	-	-	1 280	8 486 753
Amounts due to customers	74 151 303	9 896 991	5 925 878	1 054 478	171 284	218 028	91 417 962
Debt securities in issue	1 225 139	1 853 415	1 155 470	7 885 228	541 137	-	12 660 389
Subordinated liabilities	1 465 581	1 977 101	500 667	-	-	-	3 943 349
Other liabilities and derivative financial instruments	339 827	306 309	569 860	357 572	50 642	2 153 846	3 778 056
Total liabilities	80 719 900	18 981 239	8 151 875	9 297 278	763 063	2 373 154	120 286 509
Total interest repricing gap	(6 019 618)	(2 780 636)	(339 674)	14 792 426	292 808		

3.10. Liquidity risk

Sources of liquidity risk

The liquidity risk is understood as the risk of failure to fund assets and meet payment obligations arising from balance sheet and off-balance sheet items owed by the Bank in a timely manner and at a market price.

The reasons for liquidity risk may appear with respect to assets, liabilities and off-balance sheet liabilities and receivables.

As regards to assets, their main sources of liquidity risk are market liquidity risk and untimely repayments of loans. Market liquidity risk is a threat of complete or partial impossibility of liquidating the assets held, or the possibility of selling these assets only at an unfavourable price. It is covered in liquidity analysis by taking conservative assumptions regarding the liquidity of assets (Liquidity Reserves in particular) and capacity for their liquidation reflected in liquidation profile. For this reason in a market crisis scenario and combined scenario it is assumed to use lombard credit and repo transactions offered by NBP collateralized by eligible securities taking into account adequate haircuts applied by NBP. Risk of untimely loans repayments is connected with rapid materialization of credit risk related to the market of the retail or commercial real estate.

As regards to liabilities, the risks posed by funding and withdrawal of funds by the clients are the most common source of the liquidity risk. The former is a type of risk in terms of which, should the crisis occur, funding can be acquired only at a higher price, and in an extreme situation, it is not possible to acquire funding or renew existing. The latter is a type of threat associated with uncertainty as to the behaviour of clients whose decisions (for instance, about withdrawal of deposited funds) may weaken the Bank's ability to service its current financial obligations.

A source of risk for off-balance sheet liabilities is a risk posed by clients' behaviour and unexpected drawdown of granted lines. It also concerns the use of intraday and overdraft lines by custody and corporate clients. Materialisation of such a risk may be experienced as severe especially in the case of high concentration of commitments. In respect of derivative transactions concluded with CSA agreements (Credit Support Annex) or settled by CCP, liquidity risk can materialize in consequence of adverse and severe changes in market conditions resulting in sudden decrease in valuation of derivative instruments and related to necessity of pledging the collateral.

Daily operations of the Bank require settlements of various payment operations. Such activity generates high level of liquidity needs during a business day. Intraday liquidity facility (technical credit) on a systemic level is offered by NBP to allow for undisturbed flow of cash in the banking system. In order to use the facility the Bank maintains adequate portfolio of eligible securities.

Taking into account the mBank Group the liquidity risk is also identified as a possibility of unexpected growth in significant liquidity needs of subsidiaries of mBank. In line with the decision of the Bank's Management Board of 25 November 2014 a centralised approach to the management of the Group's financing was introduced in order to increase the effectiveness of the used liquidity resources and to ensure better tenor match of financing with assets. Subsidiaries are financed through the agency of DS, the exceptions are mBank Hipoteczny and mLeasing, which additionally obtain funding on the market through the issue of covered bonds (mBank Hipoteczny) and through issuance of short-term debt securities (mBank Hipoteczny and mLeasing). The risk of unexpected growth in significant liquidity needs of the subsidiaries of mBank may occur as a result of e.g. no

possibility of obtaining external financing (mBank Hipoteczny and mLeasing) or unexpected increase in materialisation of credit risk.

Liquidity risk may appear as a result of usage of inappropriate models in liquidity analysis (e.g. deposit base stable part model), which may lead to underestimation of liquidity risk. It is monitored by verification and back-testing models pursuant to the Model Management Policy.

Organization of risk management

In order to ensure that the liquidity risk management process is effective, the Management Board of the Bank lies down an adequate organizational structure and delegates powers to dedicated units and Committees. Liquidity risk management is conducted based on three lines of defence. The existing process covers the liquidity risk management area at both the strategic and operational level (I line of defence), the liquidity risk measurement and control area (II line of defence) and Internal Audit (III line of defence) performing independent assessment of the first and second line of defence.

Liquidity risk management aims at ensuring and maintaining the Bank's and the Group's ability to fulfil both current and future liabilities taking into account the cost of liquidity. The liquidity management process consists of procedures that aim at identification, measurement, controlling, monitoring, reducing and defining the acceptable level of exposure to risks. This process can be divided into two main elements in the operational sense: the part involving all forms of liquidity management and the part of controlling and monitoring liquidity risk. The Assets and Liabilities Management Committee of the mBank Group (ALCO), the Financial Markets Risk Committee and the Management Board of the Bank are responsible for liquidity management on the strategic level. Below mentioned organisational units are responsible for liquidity management and control.

- **Treasury Department (DS)** - I line of defence, performs treasury functions for the Bank and is responsible for providing necessary funds for settlements in the Bank's accounts within the scope of intraday liquidity risk management, implementing strategic recommendations made by the Assets and Liabilities Management Committee of the mBank Group (ALCO), calibrating the structure of the future cash flows within the limits imposed by the Supervisory Board, the Management Board and the Financial Markets Risk Committee, maintaining adequate liquidity reserves to secure liquidity within the limits imposed by the Supervisory Board, the Management Board and the Financial Markets Risk Committee. The Treasury Department is supported in these functions by the Financial Institutions Department, in relation to funding from domestic and foreign banks and international financial institutions, and the Financial Markets Department, in relation to issues of the Bank's debt securities. Moreover DS is responsible for monitoring liquidity risk and financing of subsidiaries of the mBank Group in terms of compliance with internal documentation of the Bank, participating as an observer on behalf of the Bank in ALCO meetings of the subsidiaries of the mBank Group (in particular mBank Hipoteczny S.A.).
- **Financial Markets Settlement and Services Department (DOF)** - I line of defence, is responsible for the operational supervision over correctness of cash flows in the accounts.
- **Custody Services Department (DCU)** - I line of defence, acts in the scope of settlements of transactions on securities.
- **Integrated Risk and Capital Management Department (DKR)** - II line of defence, is in charge of controlling and monitoring liquidity risk of the Bank on the strategic level and reporting to the Vice-president of the Management Board - Chief Risk Officer, the Financial Markets Risk Committee and the Assets and Liabilities Management Committee of the mBank Group (ALCO). The Department monitors financial liquidity on a daily basis using methods based on cash flow analysis. Liquidity risk measurement is based on the regulatory model and the internal model, which has been established taking into consideration the specific character of the Bank, the volatility of the deposit base, the level of funding concentration and the projected development of particular portfolios.
- **Internal Audit Department (DAW)** - III line of defence, performs independent assessment of the first and second line of defence.

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The objective of liquidity risk management is to ensure and maintain the Bank's ability to fulfil both current and future commitments. The Bank achieves this objective by diversifying stable funding sources in terms of clients' groups (from whom acquires deposits), products and currencies groups, and at the same time, optimizes its balance sheet in terms of profitability. Long-term activities of

mBank in this scope are carried out taking into account conditions on funding capacity and business profitability.

In 2017, the liquidity situation was monitored and kept at a level adequate to the Bank's needs by adjusting the deposit base and securing additional funding sources depending on the development of lending activity and other funding needs.

The internal liquidity adequacy assessment process (ILAAP)

In order to review the liquidity risk management system in the Bank and the Group, the ILAAP process was developed. As part of this process all elements of the liquidity risk management system are subject to review including:

- Liquidity risk management strategy,
- Stress tests,
- Liquidity contingency plan,
- Liquidity buffer,
- Intraday liquidity risk management,
- Early warning system,
- Identification and measurement of liquidity risk,
- Reporting system.

The review is performed annually. The conclusions of the conducted review are presented to the Financial Markets Risk Committee, the Management Board and the Supervisory Board and serve for further improvement and development of the liquidity risk management.

Tools and measures used in measuring liquidity risk

As part of liquidity risk management, a range of risk measures are being analysed. The basic measure is mismatch gap. It covers all the assets, liabilities and off-balance sheet items of the Bank in all currencies and time-bands set by the Bank. In 2017, the Bank held liquidity surplus, adequate to the Bank's business activity and current market situation, in the form of a portfolio of liquid treasury and money market securities that may be pledged or sold at any time without any considerable loss in value.

In accordance with KNF Resolution No. 386/2008 on establishing liquidity measures binding on banks, the Bank calculates the supervisory liquidity measures. In 2017, the supervisory limits on short-term and long-term liquidity measures were not exceeded. Moreover, in line with the Resolution, the Bank conducts an in-depth analysis of long-term liquidity and sets internal limits (management action triggers) on involvement in long-term assets. Relevant analysis of the stability and structure of the funding sources, including the core and concentration level of term deposits and current accounts are performed. Additionally, the Bank analyses the variability of the balance sheet and off-balance sheet items, in particular the open credit line facilities and current account and overdrafts limits utilisation.

The ongoing analysis covers not only liquidity under normal conditions, but also on the assumption of a potential liquidity loss. In order to determine the Bank's resistance to major unfavourable events, the Bank conducts scenario analyses covering extreme assumptions on the operation of financial markets, behavioural events relative to the Bank's clients and both mentioned factors combined.

For this purpose three stress test scenarios were performed (until 5 December 2017) on regular basis: ANL Stress reflecting idiosyncratic crisis, ANL Stress Market reflecting market wide crisis and ANL Stress Combined combining two aforementioned scenarios.

Main assumptions in ANL Stress scenario:

- outflow of customer deposits,
- materialization of undrawn commitments,
- sale of liquid securities in the market in estimated amounts,
- use of central bank secured lending for unsold amount of liquid securities.

Main assumptions in ANL Stress Market scenario:

- outflow of customer deposits,
- materialization of undrawn commitments,
- inability to sell Liquidity Reserves in the securities market,
- use of central bank secured lending for unsold amount of liquid securities

ANL Stress Combined combined the assumptions behind ANL Stress and ANL Stress Market scenarios.

From 6 December 2017, a new methodology for measuring the liquidity gap (LAB) was implemented at the Bank and the Group level, including normal conditions scenario LAB Base Case, stress scenarios subject to limits:

- LAB Bank Stress (short-term) – short-term scenario (up to 2 weeks) of the idiosyncratic stress,
- LAB Market Stress (long-term) – long-term scenario (up to 2 months) of the market crisis,
- LAB Combined Stress I – combined stress scenario that presents the effects of the simultaneous occurrence of short-term idiosyncratic stress and long-term market related stress,

as well as stress scenarios which are not limited:

- LAB Bank Stress (long-term),
- LAB Market Stress (short-term),
- LAB Combined Stress II.

In addition a reverse stress test for liquidity risk is performed in the Bank on annual basis and an intraday liquidity crisis scenario on a monthly basis.

Liquidity stress tests are used in the Bank for operational management of liquidity risk and are reported to the Financial Markets Risk Committee, the Assets and Liabilities Committee of the mBank Group (ALCO) as well as the Supervisory Board of the Bank. In addition, the scenarios used in Bank's Contingency Plan are consistent with those used in liquidity stress testing.

The Bank has also adequate procedures in case mBank is threatened with financial liquidity loss. Base on severity of risk factors and the degree of the threat of financial loss relevant actions are defined either in the Contingency Plan in case of a threat of losing financial liquidity by mBank Group (Contingency Plan) or in the Recovery Plan of mBank Group (Recovery Plan).

Execution of the strategy of ensuring liquidity of the Bank consists in active management of the balance sheet structure of future cash flows and keeping liquidity reserves adequate to the liquidity needs, resulting from the activity and structure of the balance sheet of the Bank, obligations to subsidiaries and the current market situation as well as the demand for liquid assets, resulting from the conducted stress tests. For this purpose the Bank keeps a surplus of liquid and unencumbered assets constituting the Liquidity Reserves, for which there is a possibility of pledging, transaction on repo market or selling at any time without significant loss in value. Liquidity Reserves were composed of the Polish Government debt securities in PLN and EUR, bills issued by the National Bank of Poland in PLN and the Czech Republic's Government debt securities in CZK. Values of these Reserves amounted to:

Value of Liquidity Reserves (in PLN million)	
31.12.2017	31.12.2016
25 727	25 034

In the Group the Liquidity Reserves are held also by mBank Hipoteczny S.A. Both mBank S.A. and mBank Hipoteczny S.A. are subject to compliance with the same regulatory measures imposed on banks. Liquidity Reserves of mBank Hipoteczny S.A. were composed of the Polish Government debt securities in PLN and bills issued by the National Bank of Poland in PLN and amounted to:

Value of Liquidity Reserves (in PLN million)	
31.12.2017	31.12.2016
1 074	1 023

In order to support the process of liquidity risk management, a system of early warnings indicators and recovery indicators was developed in the Bank. It is composed of indicators monitoring the level of regulatory and internal limits and additionally, indicators monitoring significant changes of market factors, as well as changes in the Bank's balance sheet structure. Exceedance of thresholds by defined indicators may be a trigger for the launch of the Contingency Plan or the Recovery Plan.

Due to the use by the Bank of FX swap and CIRS instruments to convert surpluses in local currencies into foreign currencies, internal limits are in place on the use of these instruments. Moreover, in order to limit the concentration in FX swaps, the amounts obtained in such transactions are monitored in monthly time bands up to 1 year.

Other measures of liquidity risk are calculated and reported in the Bank as follows:

- concentration of funding sources,
- stability of deposit base,
- early withdrawals of deposits,
- ratio of long-term funding for the real estate market.

The Bank includes product's liquidity in its liquidity risk management framework. It is reflected in terms of measuring market liquidity of Treasury bonds, which make up Liquidity Reserves. The analysis is performed on monthly basis and takes account of market liquidity determinants such as: market turnover, order book depth, purchase/sale transaction spread and issue volume. The measurement of market liquidity is reflected in internal liquidity measures, where the scenario structure provides for liquidating the Treasury bonds held by the Bank in line with market trading in particular series of bonds. A similar check is carried out in the context of the market potential of pledging particular bond series.

The measurement, limiting and reporting the liquidity risk

At the Bank, there is a reporting process of liquidity risk. It covers both daily information delivery to entities engaged in operational management of liquidity risk and entities controlling liquidity risk management on operational level, as well as regular reporting to higher management levels for the purpose of making strategic decisions on liquidity risk.

Daily reporting covers:

- regulatory measures,
- liquidity gaps for mBank, the mBank Group and the material subsidiaries from liquidity risk perspective with the utilization of limits imposed on these measures,
- intraday liquidity,
- other internal liquidity risk measures.

Weekly reporting covers:

- early warnings indicators (EWI).

Monthly reporting covers:

- regulatory measures and internal liquidity measures to the Management Board members and Financial Markets Risk Committee (KRF),
- regulatory measures, internal liquidity measures and forecasts of liquidity measures based on business development forecasts to the Assets and Liabilities Committee of the mBank Group (ALCO).

Regulatory measures and internal liquidity measures are reported on a quarterly basis to the mBank's Supervisory Board.

For the purpose of current monitoring of liquidity, the Bank establishes values of realistic, cumulated gap of cash flows. The realistic gap is calculated on the basis of contractual cash flows (Note 3.10.1). Mainly cash flows in portfolios of non-banking customers' deposits, overdrafts and term loans are amended. In the calculation of the liquidity measures the Bank takes into account the possibilities of raising the funds by selling or pledging the debt securities from Bank's Liquidity Reserves.

In the LAB methodology, the LAB Base Case measure is the primary management measure and it is also used for limiting the liquidity gap in particular foreign currencies. This function in the ANL methodology was performed by ANL Bank Stress.

Value of realistic, cumulative gap of cash flows misfit (in PLN million)				
Time range	gap ANL Bank Stress- 5.12.2017		gap ANL Bank Stress - 31.12.2016	
	bucket	cumulative	bucket	cumulative
up to 1 working day	6 264	6 264	8 024	8 024
up to 3 working days	6 592	12 856	7 421	15 445
up to 7 calendar days	(451)	12 405	380	15 825
up to 15 calendar days	(1 083)	11 322	(838)	14 987
up to 1 month	1 236	12 558	2 605	17 592
up to 2 months	(408)	12 150	1 003	18 595
up to 3 months	388	12 538	(993)	17 602
up to 4 months	61	12 599	139	17 741
up to 5 months	153	12 752	133	17 874
up to 6 months	244	12 996	88	17 962
up to 7 months	384	13 380	197	18 159
up to 8 months	(45)	13 335	181	18 340
up to 9 months	(379)	12 956	118	18 458
up to 10 months	(1 338)	11 618	(797)	17 661
up to 11 months	250	11 868	182	17 843
up to 12 months	110	11 978	(1 998)	15 845

Value of realistic, cumulative gap of cash flows misfit (in PLN million)		
Time range	gap LAB Base Case- 31.12.2017	
	bucket	cumulative
up to 1 working day	19 464	19 464
up to 3 working days	519	19 983
up to 7 calendar days	(2 311)	17 672
up to 15 calendar days	(154)	17 518
up to 1 month	1 799	19 317
up to 2 months	(2 167)	17 150
up to 3 months	(761)	16 389
up to 4 months	(620)	15 769
up to 5 months	(227)	15 542
up to 6 months	(428)	15 114
up to 7 months	230	15 344
up to 8 months	(429)	14 915
up to 9 months	(1 136)	13 779
up to 10 months	(1 577)	12 202
up to 11 months	(437)	11 765
up to 12 months	(361)	11 404

The above values should be interpreted as liquidity surplus/deficit in relevant time buckets. Due to the positive dynamics of loans activity (PLN 4.9 billion - the exchange rate of 31 December 2017 used in calculations) exceeding the dynamics of non-banking term deposits and current accounts (PLN 1.8 billion - the exchange rate of 31 December 2017 used in calculations) the decrease in the level of liquidity as of the end of 2017 has been noticed.

In 2017 the indebtedness towards main shareholder, Commerzbank A.G, decreased as a result of repayment of CHF 750 million borrowings. Simultaneously, in the cumulated cash flow gap as of the end of 2017 the outstanding debt owed to Commerzbank to be repaid in 2018 is included in the amount of CHF 750 million.

Liquidity gap methodology contains an additional component, which is aimed at preparing the Bank for significant changes in foreign exchange rates, resulting in negative valuation of CIRS and FX swap transactions and thus generating liquidity needs stemming from the necessity to supplement collateral with the counterparties (position value as of the end of 2017 - PLN 1 417 million).

Moreover the Bank calculates the amount of additional collateral requirement resulting from signed agreements with the counterparties that the Bank would have to deliver in case of potential rating downgrade. As of 31 December 2017 Bank would not have to post additional collateral.

In 2017 Bank's liquidity remained at a safe level which was reflected in surplus of liquid assets over short-term liabilities according to ANL/LAB in various scenarios and supervisory liquidity measures.

ANL/LAB cash flows gaps mismatch in terms up to 1 month and up to 1 year within 2017 and values of regulatory measures M1–M4 and LCR are presented in the following table:

Measure*	2017			
	31.12.2017	Mean	Maximum	Minimum
ANL Base 1M**	14 947	17 188	22 210	13 373
ANL Base 1Y**	14 396	15 965	21 137	12 518
ANL Stress 1M**	12 529	14 602	19 471	10 992
ANL Stress 1Y**	11 978	13 380	18 398	10 138
ANL Market 1M**	9 702	13 230	18 278	8 064
ANL Combined 1M**	8 858	12 330	17 324	7 243
LAB Base Case 1M***	19 317	16 233	19 317	13 607
LAB Base Case 1Y***	11 404	11 331	12 426	10 134
LAB Bank Stress 1M***	13 057	11 240	13 133	9 512
LAB Market Stress 1M***	16 571	14 550	16 632	12 973
LAB Combined Stress 1M***	12 533	10 951	12 660	9 637
M1	12 867	12 881	17 995	9 658
M2	1.35	1.37	1.60	1.23
M3	4.52	4.71	4.93	4.29
M4	1.39	1.39	1.43	1.36
LCR	165%	178%	239%	142%

* ANL, LAB and M1 measures are shown in PLN million, M2, M3, M4 and LCR are relative measures presented as a decimal.

** The value as of 5th December 2017. Mean, maximum and minimum are calculated for period until 5th December 2017.

*** Mean, maximum and minimum are calculated for period starting from 6th December 2017.

Short-term liquidity supervisory measures (M1, M2) in 2017 remained on safe level with a minimum value of PLN 9.7 billion (M1) above the limit of 0. The long-term coverage ratios (M3, M4) are characterized by high stability on safe level, above minimum established by regulatory authority equal to 1. In particular, M3 oscillated between 4.29 and 4.93 in 2017, whereas M4 between 1.36 and 1.43. The LCR measure remained on safe level, significantly exceeding 100%.

Funding sources

The strategic assumptions concerning the diversification of funding sources and profitable structure of the balance sheet are reflected in the financial plan of the mBank Group defined by selected measures, e.g. L/D ratio (Loans to Deposits). The Bank measures a specific relation of loans to deposits in order to maintain a stable structure of its balance sheet. In 2017 the L/D ratio slightly changed from 73.1% to 73.9% for the Bank and from 89.4% to 92.3% for the Group. The Bank aims at building a stable deposit base by offering to clients deposit and investment products, regular and specific-purpose savings offerings, as well as operating deposits of the subsidiaries. Funds acquired from the Bank's clients constitute the major funding source for the business activity along with the portfolio of long-term loans from banks (with maturities over 1 year), in particular from Commerzbank (Note 29). The loans together with subordinated loans (Note 32) are the core funding source for the portfolio of mortgage loans in CHF. According to the suspension of granting new mortgage loans in CHF, Bank's receivables in this currency have been decreasing successively along with loans repayments. The funds obtained from the repayment of the mentioned loans are used to reduce the Bank's debt in CHF owed to the mBank's main shareholder. In 2017 the debt to Commerzbank AG was reduced by CHF 750 million - repayment of borrowings.

Moreover, in order to acquire funding (also in foreign currencies) the Bank uses mid-term and long-term instruments, including credit line facilities within Commerzbank Group and on the international market (outstanding loans from EBI as of the end of 2017 – equivalent of PLN 4.1 billion) as well as FX swap and CIRS transactions. In 2017 the Bank recorded increase in net liabilities due to FX swap and CIRS transactions in CHF.

In the Group except mBank, access to external funding have only mBank Hipoteczny via issuance of mortgage covered bonds and short-term debt securities and mLeasing via short-term debt securities.

When making funding-related decisions, in order to match the term structure of its funding sources with the structure of long-term assets, the Group takes into consideration the supervisory liquidity measures and limits, as well as the internal liquidity risk limits.

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Liquidity risk in the mBank Group is generated mainly by mBank's items. Nevertheless, liquidity risk level in the mBank Group subsidiaries, where liquidity risk was deemed significant, is also a subject to monitoring. In the subsidiaries generating the greatest liquidity risk (mHipoteczny and mLeasing) the Bank monitors the level of liquidity risk on a daily basis. The data provided by these companies allow for reporting contractual cash-flow mismatch as well as calculation of a realistic cash-flows mismatch based of ANL model until 05.12.2017 as well as LAB model since 06.12.2017 and modelling assumptions for selected products according to risk profiles, funding possibilities and products specificity of the subsidiary. The levels of realistic, cumulative cash-flow mismatch in the mBank Group is presented in the following table:

Value of realistic, cumulative gap of cash flows misfit (in PLN million)				
Time range	gap ANL Bank Stress- 5.12.2017		gap ANL Bank Stress - 31.12.2016	
	bucket	cumulative	bucket	cumulative
up to 1 working day	8 728	8 728	8 968	8 968
up to 3 working days	6 802	15 530	8 224	17 192
up to 7 calendar days	(453)	15 077	324	17 516
up to 15 calendar days	(1 313)	13 764	(901)	16 615
up to 1 month	1 078	14 842	2 551	19 166
up to 2 months	(869)	13 973	1 022	20 188
up to 3 months	198	14 171	(1 181)	19 007
up to 4 months	76	14 247	33	19 040
up to 5 months	159	14 406	193	19 233
up to 6 months	238	14 644	41	19 274
up to 7 months	445	15 089	243	19 517
up to 8 months	5	15 094	226	19 743
up to 9 months	(424)	14 670	135	19 878
up to 10 months	(1 333)	13 337	(845)	19 033
up to 11 months	318	13 655	230	19 263
up to 12 months	152	13 807	(2 093)	17 170

Value of realistic, cumulative gap of cash flows misfit (in PLN million)		
Time range	gap LAB Base Case- 31.12.2017	
	bucket	cumulative
up to 1 working day	21 132	21 132
up to 3 working days	809	21 941
up to 7 calendar days	(2 247)	19 694
up to 15 calendar days	(456)	19 238
up to 1 month	1 696	20 934
up to 2 months	(1 835)	19 099
up to 3 months	(755)	18 344
up to 4 months	(353)	17 991
up to 5 months	(335)	17 656
up to 6 months	61	17 717
up to 7 months	400	18 117
up to 8 months	(181)	17 936
up to 9 months	(981)	16 955
up to 10 months	(1 398)	15 557
up to 11 months	(42)	15 515
up to 12 months	(178)	15 337

ANL/LAB gaps mismatch in terms up to 1 month and up to 1 year within 2017 and supervisory liquidity measure LCR on Group level are presented in the following table:

Measure*	2017			
	31.12.2017	Mean	Maximum	Minimum
ANL Stress 1M**	14 699	16 351	21 169	12 947
ANL Stress 1Y**	13 807	14 712	19 690	11 538
LAB Base Case 1M***	20 934	17 791	20 934	15 617
LAB Base Case 1Y***	15 337	14 716	16 666	10 039
LAB Bank Stress 1M***	14 674	12 847	14 853	10 879
LAB Market Stress 1M***	18 188	15 923	18 352	13 783
LAB Combined Stress 1M***	14 150	12 325	14 380	10 475
LCR Group	191%	190%	244%	161%

* ANL, LAB measures are shown in PLN million.

** The value as of 5th December 2017. Mean, maximum and minimum are calculated for period until 5th December 2017.

*** Mean, maximum and minimum are calculated for period starting from 6th December 2017.

For other subsidiaries, due to lower total assets and simpler amounts products, the process of monitoring has been worked out based on two criteria: the size of the balance sheet and, if the subsidiary is covered by LCR measure for the Group in accordance with Commission Delegated Regulation (EU) No 2015/61 of October 10, 2014, its share in total outflows. In case of exceedance of imposed thresholds, the decision is made on the possible inclusion of the subsidiary into the liquidity risk management system.

3.10.1 Cash flows from transactions in non-derivative financial instruments

The table below shows cash flows the Group is required to settle, resulting from financial liabilities. The cash flows have been presented as at the year-end date, categorised by the remaining contractual maturities. The amounts denominated in foreign currencies were converted to Polish zloty at the average rate of exchange announced by the National Bank of Poland at the year-end date. The amounts disclosed in maturity dates analysis are undiscounted contractual cash flows.

Liabilities (by contractual maturity dates) as at 31.12.2017

	Up to 1 month	1-3 months	3-12 months	1-5 years	Over 5 years	Total
Amounts due to the Central Bank	-	-	-	-	-	-
Amounts due to other banks	3 273 438	1 281 417	1 678 135	545 232	-	6 778 222
Amounts due to customers	76 572 571	6 795 738	4 018 099	3 293 933	1 613 293	92 293 634
Debt securities in issue	391 490	572 488	1 526 684	10 726 205	2 779 220	15 996 087
Subordinated liabilities	33 470	335	34 842	198 636	2 235 613	2 502 896
Other liabilities	1 673 239	6 924	292 787	-	-	1 972 950
Total liabilities	81 944 208	8 656 902	7 550 547	14 764 006	6 628 126	119 543 789

Assets (by remaining contractual maturity dates) as at 31.12.2017

	Up to 1 month	1-3 months	3-12 months	1-5 years	Over 5 years	Total
Total assets	21 943 941	6 542 134	23 527 892	54 331 121	43 047 865	149 392 953
Net liquidity gap	(60 000 267)	(2 114 768)	15 977 345	39 567 115	36 419 739	29 849 164

Liabilities (by contractual maturity dates) as at 31.12.2016

	Up to 1 month	1-3 months	3-12 months	1-5 years	Over 5 years	Total
Amounts due to the Central Bank	-	-	-	-	-	-
Amounts due to other banks	1 502 129	53 182	3 127 552	3 897 537	-	8 580 400
Amounts due to customers	73 659 555	7 638 904	5 898 982	10 367 203	2 400 626	99 965 270
Debt securities in issue	25 742	20 346	584 774	11 228 472	1 589 222	13 448 556
Subordinated liabilities	34 420	1 649 178	34 768	198 036	2 422 238	4 338 640
Other liabilities	1 331 257	31 009	184 222	9 164	3 504	1 559 156
Total liabilities	76 553 103	9 392 619	9 830 298	25 700 412	6 415 590	127 892 022

Assets (by remaining contractual maturity dates) as at 31.12.2016

	Up to 1 month	1-3 months	3-12 months	1-5 years	Over 5 years	Total
Total assets	22 413 252	6 044 273	20 650 467	66 515 360	46 865 870	162 489 222
Net liquidity gap	(54 139 851)	(3 348 346)	10 820 169	40 814 948	40 450 280	34 597 200

The assets which ensure the payment of all the liabilities and lending commitments comprise cash in hand, cash at the Central Bank, cash in transit and treasury bonds and other eligible bonds; amounts due from banks; loans and advances to customers.

In the normal course of business, some of the loans granted to customers with the contractual repayment date falling due within the year, will be prolonged. Moreover, a part of debt securities, were pledged as collateral for liabilities. The Group could ensure cash for unexpected net outflows

by selling securities and availing itself of other sources of financing, such as the market of securities secured with assets.

3.10.2 Cash flows from derivatives

Derivative financial instruments settled in net amounts

Derivative financial instruments settled in net amounts by the Group comprise:

- Futures,
- Forward Rate Agreements (FRA),
- Options,
- Warrants,
- Interest rate swaps (IRS),
- Cross currency interest rate swaps (CIRS),
- Security forwards.

The table below shows derivative financial liabilities of the Group, which valuation as of end of 2017 was negative, grouped by appropriate remaining maturities as at the balance sheet date and are presented as contractual maturities apart from Other up to 1 month and Futures contracts which are presented as net present value (NPV). The amounts denominated in foreign currencies were converted to Polish zloty at the average rate of exchange announced by the National Bank of Poland at the balance sheet date.

31.12.2017

Derivatives settled on a net basis	Up to 1 month	1-3 months	3-12 months	1-5 years	Over 5 years	Total
Forward Rate Agreements (FRA)	-	-	30	-	-	30
Overnight Index Swaps (OIS)	171	936	119	-	-	1 226
Interest Rate Swaps (IRS)	94 666	181 209	90 808	721 360	128 011	1 216 054
- hedging Interest Rate Swaps	-	572	4 944	38 677	22 579	66 772
Cross Currency Interest Rate Swaps (CIRS)	2 510	(3 853)	(1 234)	(7 170)	-	(9 747)
Options	1 613	2 605	4 291	14 790	(141)	23 158
Futures contracts	-	(1)	-	-	-	(1)
Other	1 130	2 668	2 967	17 498	-	24 263
Total derivatives settled on a net basis	100 090	183 564	96 981	746 478	127 870	1 254 983

31.12.2016

Derivatives settled on a net basis	Up to 1 month	1-3 months	3-12 months	1-5 years	Over 5 years	Total
Forward Rate Agreements (FRA)	2 199	958	3 050	-	-	6 207
Overnight Index Swaps (OIS)	1 174	798	168	-	-	2 140
Interest Rate Swaps (IRS)	84 342	205 915	258 092	887 736	215 548	1 651 633
- hedging Interest Rate Swaps	-	370	2 692	15 446	29 607	48 115
Cross Currency Interest Rate Swaps (CIRS)	22 017	(5 020)	(35 874)	(35 365)	1 331	(52 911)
Options	7 508	502	(5 854)	(4 070)	(120)	(2 034)
Futures contracts	-	(1)	-	-	-	(1)
Other	2 477	6 844	12 605	850	-	22 776
Total derivatives settled on a net basis	119 717	209 996	232 187	849 151	216 759	1 627 810

Derivative financial instruments settled in gross amounts

Derivative financial instruments settled in gross amounts by the Group comprise foreign exchange derivatives: currency forwards and currency swaps.

The table below shows derivative financial liabilities/assets of the Group, which will be settled on a gross basis, grouped by appropriate remaining maturities as at the Balance Sheet date. The amounts denominated in foreign currencies were converted to Polish zloty at the average rate of exchange announced by the National Bank of Poland at the balance sheet date.

31.12.2017

Derivatives settled on a gross basis	Up to 1 month	1-3 months	3-12 months	1-5 years	Over 5 years	Total
Currency derivatives:						
-outflows	19 322 812	5 798 526	3 991 301	1 018 469	-	30 131 108
-inflows	19 304 085	5 762 251	3 978 499	957 840	-	30 002 675

31.12.2016

Derivatives settled on a gross basis	Up to 1 month	1-3 months	3-12 months	1-5 years	Over 5 years	Total
Currency derivatives:						
-outflows	18 477 230	5 981 653	6 121 559	932 698	-	31 513 140
-inflows	18 552 994	6 003 320	6 115 410	915 710	-	31 587 434

The amounts disclosed in the table are undiscounted contractual outflows/inflows.

The amounts presented in the table above are nominal cash flows of currency derivatives, which have not been settled, while the Note 20 shows nominal values of all open derivative transactions.

Detailed data concerning liquidity risk related to off-balance sheet items are presented in the Note 38.

3.11. Operational risk

Operational risk is understood as the risk of loss resulting from a mismatch or unreliability of internal processes, systems, mistakes or activities taken by the employee of the Bank or external events. In accordance with the Risk Catalogue of mBank Group, operational risk includes, in particular, the following sub-categories:

- legal risk,
- IT risk,
- cyber risk,
- compliance risk,
- conduct risk,
- external fraud risk,
- outsourcing risk.

Operational risk does not include reputational risk, however materialisation of operational risk may increase reputational risk.

Organisation of risk management

Operational risk management is performed in mBank and, at the consolidated level, in mBank Group.

The Integrated Risk and Capital Management Department (DKR) is responsible for the measurement, control and monitoring of operational risk level in the Bank and in mBank Group.

Within the scope of its operational risk control function, the DKR closely co-operates with other units and projects within the Bank involved in operational risk, in particular with the Compliance Department, the Legal Department, the Internal Audit Department and the Security Department. The results of operational risk control and monitoring are reported to the Risk Committee of the Supervisory Board, the Management Board of the Bank, the committees of Business and Risk Forum of mBank Group, and the Chief Risk Officer.

While organising the operational risk management process, the Bank takes into account regulatory requirements, which are the starting point for preparation of framework for the operational risk control and management system in the Bank and the Group.

General principle of operational risk management in the Bank is to minimise it that is to reduce the causes of operational events, the probability of their occurrence and the severity of potential consequences. Cost vs benefits analysis is considered while deciding on an acceptable operational risk level.

Tools and measures

Operational risk control and management consists of a set of activities aimed at identifying, monitoring, measurement, assessment, reporting as well as reduction, avoidance, transfer or acceptance of operational risk, the Bank is exposed to in particular areas of its operations. It is based on quantitative and qualitative methods and tools for operational risk control. The tools applied by the Bank intend to cause-oriented operational risk management and focus on bottom-up approach to identify risk.

Qualitative tools are aimed at establishing (within the Bank and the mBank Group) consistent qualitative assessment of internal and external factors affecting the operational risk management process.

The basic qualitative tool is the Internal Control System Self-assessment (ICS) process, which enables to identify and assess the most important operational risks and control mechanisms in the Group, and then to develop and implement necessary corrective action plans.

In addition, in order to control operational risk, mBank collects data about operational risk events and losses of the Group, collects and monitors key risk indicators, and develops and performs operational scenario analyses in order to identify exposure to potential high-severity events. At the same time, the communication with all areas of the Bank (business and support areas) is maintained for the purpose of monitoring and taking preventive actions once the risk of critical events has been signalled in any area.

Operational losses

The vast majority of the Group's operational losses refers to the following business lines (separated in accordance with the CRR Regulation): commercial banking and retail banking.

In terms of losses by risk category, the Group incurs the highest losses in three categories of operational risk: (i) crimes committed by outsiders; (ii) execution, delivery and process management; (iii) customers, products and business practices.

The following table presents the distribution of actual net losses (net of recoveries) by operational risk category, incurred by the mBank Group in 2017:

Operational risk category	Distribution	Value of net losses in relations to the value of gross profit
Crimes committed by outsiders	58.1%	0.53%
Customers, products and business practices	24.5%	0.22%
Execution, delivery and process management	14.1%	0.13%
Other	3.3%	0.03%
Total	100.0%	0.91%

The level of operational risk losses is constantly monitored and regularly reported to the management and Supervisory Board. Monitoring takes place at the level of individual transactions and at the level of the value of total losses. In the case of single operational events with a high loss or a total of losses exceeding the set thresholds, analysis of the causes and development of corrective action plans that will reduce the occurrence of similar losses in the future is required.

3.11.1 Compliance risk

Compliance risk management is realized in mBank, in particular, in accordance with the provisions of the Compliance Policy at mBank S.A. The Policy is a set of guidelines and organisational rules, that the Bank performs fulfilling the requirements of Polish law and taking into account compliance principles applicable in the Commerzbank Group, subject to stipulations of the Polish law. The Policy defines also the basic rules of conduct for the Bank's employees and the main processes of compliance risk identification that allow to manage compliance risk at all levels of the Bank's organisation.

Compliance risk is understood as a consequence of failure to observe the law, internal regulations and standards of conduct adopted by the Bank. Compliance risk management aims to mitigate the risk connected with the Bank's failure to observe and comply with the law, internal regulations, and the standards of conduct adopted by the Bank. Non-compliance of the Bank's operation with internal regulations, mentioned above, is understood as non-compliance of the internal regulations with the generally applicable law and standards of conduct adopted by the Bank, including the failure to implement recommendations issued by the KNF and other supervisory authorities executing their tasks towards financial institutions.

Ensuring compliance of the Bank's internal regulations with the provisions of Polish and international law and with the standards of conduct adopted by the Bank as well as observing internal rules by the Bank's employees is aimed at mitigating compliance risk and eliminating or minimizing the possibility of occurrence of: legal risk, reputational risk, the risk of imposition of sanction and financial losses and the risk resulting from discrepancies in interpretation of the law.

All the Bank employees are responsible for the implementation of compliance risk management process in line with the scope of their duties as well as granted authorisations.

The Compliance Department is responsible for the coordination and supervision of the compliance risk management process. In particular the Compliance Department is:

- developing and implementing guidelines, rules and standard procedures at the Bank in the compliance area, including common standards applicable in the Commerzbank AG Group, subject to stipulations of the Polish legal requirements,
- exercising supervision over the execution of tasks from the compliance area, including advisory and merit-based instruction as well as controlling organisational units of the Bank responsible for their execution,
- exercising supervision, including advisory and merit-based instruction, over implementing common standards of operation in the compliance area within mBank Group by relevant compliance forces in foreign branches and in subsidiaries,
- identifying risks in the compliance area,
- implementing control policies and procedures within the scope of operation of the Compliance Department, to minimise the risks,
- adjusting Compliance Policy at mBank S.A. and internal regulations owned by the Compliance Department, to the changing legal conditions and standards of conduct,
- building a compliance culture especially by preparing professional materials and organising and conducting training sessions for the Bank employees on issues related to compliance processes,
- maintaining ongoing contacts with the unit responsible for compliance in the Commerzbank AG Group in order to agree on the implementation of common standards.

The supervision over the introduction of common principles in the compliance area by the mBank Group entities is exercised in particular on the basis of concluded contracts and additional agreements that specify, among others, reporting obligations of subsidiaries in the compliance area and rules for conducting supervisory visits in those entities, performed by the Bank's authorised organizational units.

Neither the Director nor the employees of the Compliance Department execute processes which are then subject to control by the Compliance Department, are involved in operation which could result in a conflict of interests with their duties performed at the Compliance Department. In particular, their advisory functions with respect to performance of compliance tasks by organisational units cannot be combined with any other consultations provided to those units.

3.12. Business risk

Business risk shall mean the risk of losses resulting from deviations between actual net operating result of the mBank Group and the planned level. The calculation of deviations between actual and planned values is done separately for revenues and costs. Business risk includes, in particular, strategic risk connected with the possibility of occurrence of negative financial consequences as a result of wrong or disadvantageous decisions or their wrong implementation. It is assumed, that the results of the strategic decisions are reflected in deviations between actual operating result and the planned level in one-year horizon.

Business risk is included in the calculation of economic capital of mBank and mBank Group.

Controlling and Management Information Department is responsible for development of methodology and measurement of economic capital for business risk and preparing information on the changes of its level, as well as for the stress testing of business risk.

In order to manage effectively and reduce business risk, the following actions are taken:

- coordination of the planning process by the Controlling and Management Information Department, which includes also verification of the planned data,
- regular analysis of the causes of observed deviations of the actual financial performance of the mBank Group organizational units from the planned level,

- the results of the above analysis are included in the form of comments to the financial results of the Group provided to the Management Board,
- periodic verification of the adopted strategy,
- regular analysis of the competitors' activities.

3.13. Model risk

Model risk is understood as the risk of negative consequences connected with the decisions made on the basis of the output data of models which have been improperly constructed or are improperly administered. Model risk may result in financial losses or in the loss of potential profits, improper business or strategic decisions or negatively influence the bank's reputation.

The following specific subcategories can be distinguished, in particular, in model risk:

- **Data risk** covering: availability, quality, retrieval, processing, aggregation, storage, ensuring sufficient length of time series, feeding models with data.
- **Assumptions/methodology risk** which determines the logic and functionality combined with the goals to be achieved, suitability to actual conditions and methods/tools/techniques used, inclusion of factors affecting the modelling process, dependence between complexity and resilience to overfitting, integration of simplifications with the characteristics of the modelled phenomenon, expert contribution, use of latent elements, stability of estimates with due regard to estimation errors.
- **Models administration risk** connected with the quality of documentation and regulations concerning the model management process, model risk, model implementation and use, information related to the quality of model operation and the process of communicating it, change management, overruling.
- **Risk inextricably linked with the restrictions** connected with modelling a given phenomenon - when aiming to achieve specific effectiveness of model operation, one should first test the susceptibility of a given phenomenon to modelling.
- **Risk of interdependence** - which occurs when estimating the aggregate risk level and results from the reliance on the same sources, construction techniques, assumptions, testing methods and use of other model components as input data on the assumption that the input models are of at least medium significance.

Model risk management is coordinated by the Validation Unit, which performs, in particular, the following tasks:

- develops policies and organizes the process of managing risk models,
- organizes and monitors the process of model risk assessment in the Bank's organizational units and the Group subsidiaries responsible for model development, and ensures consistency of model risk assessment within the Group.

Model risk is managed on a systemic basis by proper internal regulations concerning model and their risk management process, in particular monitoring and validation of models.

The Model Management Policy determines the participants and the framework for model management process, including issues related to the development of models in the Group, their approval, implementation, verification/validation, monitoring, implementation of changes and the associated reporting process. It also defines principles of models' significance classification and model risk measurement and monitoring in line with the requirements of Recommendation W published by the KNF.

An important role in the model and their risk management process is played by the Model Risk Committee, whose functions are described in Note 3.3.1. It recommends, among others, model risk tolerance level, which is finally approved by the Management Board and the Supervisory Board.

3.14. Reputational risk

In today's competitive environment, the reputation of a company is increasingly gaining in importance. Banks, as public trust institutions, are expected not only to be profitable and offer

shareholders an adequate return, but also to be ethical, environmentally friendly, and socially responsible.

The aim of management of reputational risk, defined as a risk resulting from a negative perception of the image of the bank or other member of the group among their stakeholders, is to identify, assess and reduce reputational risk in specific processes in order to protect and strengthen the good name of mBank and mBank Group.

The all Bank's organizational units, foreign branches, and subsidiaries are directly responsible for any reputational risk arising from their own business activities. The key role in reputational risk management is played by the Communication and Marketing Strategy Department, which is in charge of shaping the image and brand of the bank and mBank Group.

Communication and Marketing Strategy Department is responsible for:

- development and realisation of external communication strategy of mBank and mBank Group,
- planning and realisation of marketing activities for business lines, with exclusion of retail banking (where the responsibility rests with the Retail Banking Marketing Department),
- monitoring of activities related to the bank's image, reputation and recognition,
- management of crisis situations which bear the reputational risk for the bank and the mBank Group.

Important roles in the reputational risk management are played by other organizational units of the bank, including Compliance Department and Integrated Risk and Capital Management Department, which is responsible for: development of reputational risk management strategy in cooperation with other organizational units and supervision over the Internal Control System Self-assessment (ICS) including also aspects of reputational risk.

The following tools and methods are used in mBank to monitor and manage reputational risk:

- mBank's values (client-centric organization, simplicity, professionalism, engagement and forward looking), which are the mBank's code used while building either business relations or internal inside of the Group,
- engagement culture survey - perception of mBank by its employees,
- Corporate Social Responsibility: taking responsible action for the benefit of customers, employees, the environment and local communities (including employee volunteer work) and participation in projects of the mBank Foundation,
- monitoring of press publications, comments in the Internet and social media,
- customer satisfaction analysis in retail and corporate banking,
- new product process: reputational risk is one of the aspects analyzed during the new products' implementation process,
- analysis of customers' complaints.

Reputational Risk Management Strategy of mBank Group describes rules and components of reputational risk management, and emphasizes, in particular, such issues as: reputational risk profile as well as organization and methods of reputational risk management.

3.15. Capital risk

Capital risk management is performed in mBank and, at a consolidated level, in mBank Group.

Controlling and Management Information Department is responsible for:

- development of the Capital Management Policy of mBank Group;
- measurement of efficiency of the capital utilization and monitoring return on capital ratios, as well as updating the respective methodology;
- forecasting and planning own funds for the Bank and mBank Group.

Integrated Risk and Capital Management Department is responsible for:

- monitoring of capital adequacy, risk bearing capacity and risk profile of the Group;
- organization of the processes of planning, forecasting and monitoring regulatory and internal capital;
- development of the risk bearing capacity concept and the methodology of limiting regulatory and internal capital;
- sensitivity analyses, stress tests and analyses of influence of new products and new calculation methods for capital adequacy;
- monitoring of regulatory requirements regarding capital adequacy, including the application of AIRB method in calculating capital requirements,
- preparation of reports and information for the statutory bodies of the mBank and for the purposes of consolidated supervision in regards to capital adequacy, risk bearing capacity and risk profile of the Bank and mBank Group.

The Bank applies a capital management process in order to prevent materialization of capital risk, understood as risk resulting from the lack of capital as well as lack of the possibility to achieve sufficient capital adequate to the business activity's risk undertaken by the Bank, required to absorb unexpected losses and meet regulatory requirements assuring further independent acting by the Bank.

The capital management in mBank Group is organised as a process including planning, steering and controlling within the frames of regulatory and internal capital. Within the framework of capital management process, regular monitoring of capital adequacy and effectiveness is conducted, aimed at assurance that adequate and optimum level of capital is maintained in mBank Group. This is supported by conducting analyses and stress testing procedures, designed to provide in depth view on current capital position, as well as its possible development in the future.

The capital management in mBank Group is a multi-level process including all subsidiaries and organisational units whose activity influences the level of own funds requirements as well as the value of internal capital.

The capital management process in mBank Group is documented. The Capital Management Policy constitutes the core documentation in this respect. It is directly linked to the Strategy of mBank Group, Risk Management Strategy, the Multi-year Financial Plan of mBank Group and with the ICAAP documentation.

The underlying assumption of the Capital Management Policy is to ensure effective planning and utilisation of the capital base within the mBank and mBank Group, among others, through determining the Bank's dividend policy. This is provided mainly by applying risk appetite guidelines and developing guidelines to assure sufficient capital to cover risks identified in business activity, as well as defining the organisational framework for the efficient functioning of capital management system.

The Capital Management Policy is based on two fundamental pillars:

- maintenance of optimal level and structure of own funds, assuring capital adequacy above the established minimum requirement (including risk appetite defined by the Management Board) as well as ensuring coverage against all material risks identified in mBank Group's activity,
- effective use of the capital base, guaranteeing achievement of expected returns, including return on regulatory capital and risk adjusted capital.

In addition, the document focuses on capital management in an environment of capital shortage, in particular in case of activation of the capital protection plan.

3.16. Regulatory risk

Regulatory risk, understood as the risk of changes in legal regulations or introduction of new regulations concerning specific area of the Group's activity affecting capital adequacy or liquidity, is addressed by the Group in the framework of the capital and liquidity risk management process. In mBank Group this risk is related, in particular, to the FX mortgage loan portfolio.

3.17. Fair value of assets and liabilities

Fair value is the price that would be received from sale of an asset or paid to transfer a liability in an ordinary transaction between market participants at the measurement date. A fair value measurement assumes that the transaction of selling the asset or transferring a liability occurs either:

- on the main market for the asset or liability,
- in the absence of a main market, for the most advantageous market for the asset or liability.

The main and the most advantageous markets must be both available to the Group.

Following market practices the Group values open positions in financial instruments using either the mark-to-market approach or is applying pricing models well established in market practice (mark-to-model method) which use as inputs market prices or market parameters, and in few cases parameters estimated internally by the Group. All significant open positions in derivatives (currency or interest rates) are valued by marked-to-model using prices observable in the market. Domestic commercial papers are marked to model (by discounting cash flows), which in addition to market interest rate curve uses credit spreads estimated internally.

The Group assumed that the fair value of short-term financial liabilities (less than 1 year) is equal to the balance sheet values of such items.

In addition, the Group assumes that the estimated fair value of financial assets and financial liabilities longer than 1 year is based on discounted cash flows using appropriate interest rates.

The following table presents a summary of balance sheet values and fair values for each group of financial assets and liabilities not recognised in the statement of financial position of the Group at their fair values.

	31.12.2017		31.12.2016	
	Carrying value	Fair value	Carrying value	Fair value
Financial assets				
Loans and advances to banks	1 707 722	1 711 015	3 082 855	3 082 719
Loans and advances to customers	84 475 844	84 604 855	81 763 277	82 530 102
Loans and advances to individuals	46 567 862	47 109 640	47 434 490	48 426 113
current accounts	6 669 099	6 850 427	5 843 990	5 940 407
term loans including:	39 898 763	40 259 213	41 590 500	42 485 706
- housing and mortgage loans	32 136 986	31 978 490	34 853 185	35 033 768
Loans and advances to corporate entities	36 605 346	36 181 447	32 872 882	32 622 886
current accounts	4 975 919	4 881 210	3 934 915	3 855 622
term loans	29 502 709	29 172 938	27 210 974	27 039 979
- corporate & institutional enterprises	5 019 030	4 903 200	5 008 394	4 954 084
- medium & small enterprises	24 483 679	24 269 738	22 202 580	22 085 895
reverse repo / buy sell back transactions	57 119	57 119	56 676	56 676
other	2 069 599	2 070 180	1 670 317	1 670 609
Loans and advances to public sector	995 009	1 006 141	1 227 481	1 252 679
Other receivables	307 627	307 627	228 424	228 424
Financial liabilities				
Amounts due to other banks	5 073 351	5 100 040	8 486 753	8 509 677
Amounts due to customers	91 496 027	91 518 916	91 417 962	91 535 698
Debt securities in issue	14 322 852	14 685 791	12 660 389	12 909 157
Subordinated liabilities	2 158 143	2 137 590	3 943 349	3 853 900

Differences between fair value at the end of 2016 presented in the table above and in the financial statements for 2016 result from the update of the methodology for estimating the fair value of financial assets. Changes in the methodology include, among others, taking into account the costs of capital and liquidity.

The following sections present the key assumptions and methods used by the Group for estimation of the fair values of financial instruments:

Loans and advances to banks and loans and advances to customers. The fair value for loans and advances to banks and loans and advances to customers is calculated as the present value of future cash flows (adjusted by prepayments) using current interest rates, including credit spread, cost of liquidity and cost of capital margin. The level of credit spread was determined based on market quotation of median credit spreads for Moody's rating grade. Attribution of a credit spread to a given credit exposure is based on a mapping between Moody's rating grade and internal rating grades of the Group. To reflect the fact that the Group's exposures are in major part collateralised whereas the median of market quotation is centred around unsecured issues, the Group applied appropriate adjustments.

Available for sale financial assets. Listed available for sale financial instruments held by the Group are valued at fair value. The fair value of debt securities not listed at an active market is calculated using current interest rates taking into account credit spreads for an appropriate issuer.

Financial liabilities. Financial instruments representing liabilities for the Group include the following:

- Contracted borrowings;
- Deposits;
- Issues of debt securities;
- Subordinated liabilities.

The fair value for these financial liabilities with more than 1 year to maturity is based on cash flows discounted from capital and interest rates using discounted factor. For loans received from Commerzbank in CHF, the Group used the curve based on quotations of Commerzbank CDS for exposures in EUR and quotations of issued bonds under EMTN programme in EUR and CHF. For the loans received from European Investment Bank in EUR the Group used the EBI yield curve. With regard to the own issue as part of the EMTN programme the market price of the relevant financial services has been used.

In the case of deposits, the Group has applied the curve constructed on the basis of quotations of interbank market rates as well as FRA and IRS contracts for appropriate currencies and maturities. In case of measurement of subordinated liabilities the Group used curves based on cross-currency basis swap levels taking into account the original spread on subordinated liabilities and their maturities.

In case of covered bonds and other debt securities issued by mBank Hipoteczny, for the purpose of the disclosures swap curves and forecasted initial spreads for certain issues are used.

The Group assumed that the fair values of these instruments with less than 1 year to maturity was equal to the carrying amounts of the instruments.

According to the fair value methodology applied by the Group, financial assets and liabilities are classified as follows:

- Level 1: prices quoted on active markets for the same instrument (without modification);
- Level 2: prices quoted on active markets for the similar instruments or other valuation techniques for which all significant input data are based on observable market data;
- Level 3: valuation methods for which at least one significant input data is not based on observable market data.

The table below presents the fair value hierarchy of financial assets and liabilities measured at fair value in accordance with the assumptions and methods described above, exclusively for disclosure as at 31 December 2017 and 31 December 2016.

31.12.2017	Including:	Level 1	Level 2	Level 3
		Quoted prices in active markets	Valuation techniques based on observable market data	Other valuation techniques
VALUATION ONLY FOR PURPOSES OF DISCLOSURE				
FINANCIAL ASSETS				
Loans and advances to banks	1 711 015	-	-	1 711 015
Loans and advances to customers	84 604 855	-	-	84 604 855
FINANCIAL LIABILITIES				
Amounts due to other banks	5 100 040	-	3 421 029	1 679 011
Amounts due to customers	91 518 916	-	5 020 661	86 498 255
Debt securities in issue	14 685 791	7 801 818	-	6 883 973
Subordinated liabilities	2 137 590	-	2 137 590	-
Total financial assets	86 315 870	-	-	86 315 870
Total financial liabilities	113 442 337	7 801 818	10 579 280	95 061 239
31.12.2016	Including:	Level 1	Level 2	Level 3
		Quoted prices in active markets	Valuation techniques based on observable market data	Other valuation techniques
VALUATION ONLY FOR PURPOSES OF DISCLOSURE				
FINANCIAL ASSETS				
Loans and advances to banks	3 082 719	-	-	3 082 719
Loans and advances to customers	82 530 102	-	-	82 530 102
FINANCIAL LIABILITIES				
Amounts due to other banks	8 509 677	-	6 987 831	1 521 846
Amounts due to customers	91 535 698	-	6 048 113	85 487 585
Debt securities in issue	12 909 157	7 570 459	-	5 338 698
Subordinated liabilities	3 853 900	-	3 853 900	-
Total financial assets	85 612 821	-	-	85 612 821
Total financial liabilities	116 808 432	7 570 459	16 889 844	92 348 129

Level 1

Level 1 includes the fair value of bonds issued by the Bank's subsidiary mFinance France (Note 31). For the purpose of disclosures the Group applied market price of the issued debt securities.

Level 2

Level 2 includes the fair value of long-term loans received from banks, the fair value of long-term deposits placed by customers and the fair value of the loans received from the EIB (Note 30). In addition, at level 2, the Group has presented subordinated liabilities.

The fair value of financial liabilities included in level 2 with more than 1 year to maturity is based on cash flows discounted using interest rates. For received loans in EUR the Bank used the swap curve amended by the spread determined based on observable Commerzbank CDS quotations in EUR for various maturities and a fixed spread which represents the assumed credit spread differential for Bank risk (derived from market quotation of bond issued under the EMTN programme). For the loans in other currencies, the above spreads for EUR were applied and cross currency swaps quotations to EUR. In case of the loans received from European Investment Bank in EUR, the Bank used EIB yield curve and the value of margin which was agreed upon the last contract for a loan. Based on that assumption, the spread of Bank to market swap curve was estimated. In case of deposits the Bank used the curve based on money market rates, as well as FRA contracts and IRS contracts for appropriate currencies and maturities. For debt securities in issue the Bank used the prices directly from the market for these securities. For the purpose of measurement of subordinated liabilities the Bank used obtained primary market spreads of subordinated bonds issued by the Bank and if required corresponding cross-currency basis swap levels for the respective maturities.

Level 3

Level 3 includes:

- (i) the fair value of loans and advances to banks and loans and advances to customers, which is disclosed, as described earlier, based on quotation of median credit spreads for Moody's ratings.
- (ii) the fair value of the mortgage bonds and other debt securities issued by mBank Hipoteczny. For the valuation the Group has applied the technique of estimation of interest flow using swap curve and discounting with the rate amended by credit spread which is obtainable in case of issue depending on currency and maturity of financial instrument.
- (iii) liabilities due to banks and to customers with maturity up to one year, for which the Group assumed that their fair value is equal to the carrying value.
- (iv) the fair value of liabilities due to banks and to customers with maturity exceeding one year, for which were used valuation methods using at least one significant input data not based on observable market data.

The following table presents the hierarchy of fair values of financial assets and liabilities recognised in the statement of financial position of the Group at their fair values.

31.12.2017	Including:	Level 1	Level 2	Level 3
		Quoted prices in active markets	Valuation techniques based on observable market data	Other valuation techniques
RECURRING FAIR VALUE MEASUREMENTS				
FINANCIAL ASSETS				
Trading securities, including:	1 525 382	1 236 546	160	288 676
Debt securities	1 523 908	1 235 232	-	288 676
- government bonds	1 232 515	1 232 515	-	-
- deposit certificates	14 096	-	-	14 096
- banks bonds	98 601	-	-	98 601
- corporate bonds	178 696	2 717	-	175 979
Equity securities	1 474	1 314	160	-
- listed	1 314	1 314	-	-
- unlisted	160	-	160	-
Derivative financial instruments, including:	1 236 303	-	1 236 303	-
Derivative financial instruments held for trading	1 146 956	-	1 146 956	-
- interest rate derivatives	708 582	-	708 582	-
- foreign exchange derivatives	393 723	-	393 723	-
- market risks derivatives	44 651	-	44 651	-
Derivative financial instruments held for hedging	89 347	-	89 347	-
- derivatives designated as fair value hedges	59 652	-	59 652	-
- derivatives designated as cash flow hedges	29 695	-	29 695	-
Investment securities, including:	32 144 699	28 520 206	2 322 914	1 301 579
Debt securities	32 057 074	28 519 220	2 322 914	1 214 940
- government bonds	27 583 694	27 583 694	-	-
- money bills	2 322 914	-	2 322 914	-
- deposit certificates	221 700	-	-	221 700
- banks bonds	204 436	-	-	204 436
- corporate bonds	1 688 420	935 526	-	752 894
- communal bonds	35 910	-	-	35 910
Equity securities	87 625	986	-	86 639
- unlisted	87 625	986	-	86 639
TOTAL FINANCIAL ASSETS	34 906 384	29 756 752	3 559 377	1 590 255

31.12.2017	Including:	Level 1	Level 2	Level 3
		Quoted prices in active markets	Valuation techniques based on observable market data	Other valuation techniques
FINANCIAL LIABILITIES				
Derivative financial instruments, including:	1 095 365	-	1 095 365	-
Derivative financial instruments held for trading	1 069 691	-	1 069 691	-
- interest rate derivatives	658 744	-	658 744	-
- foreign exchange derivatives	376 854	-	376 854	-
- market risks derivatives	34 093	-	34 093	-
Derivative financial instruments held for trading	25 674	-	25 674	-
- derivatives designated as fair value hedges	24 188	-	24 188	-
- derivatives designated as cash flow hedges	1 486	-	1 486	-
Total financial liabilities	1 095 365	-	1 095 365	-
TOTAL RECURRING FAIR VALUE MEASUREMENTS				
FINANCIAL ASSETS	34 906 384	29 756 752	3 559 377	1 590 255
FINANCIAL LIABILITIES	1 095 365	-	1 095 365	-
Assets Measured at Fair Value Based on Level 3 - changes in 2017				
As at the beginning of the period		290 544	901 885	65 261
Total gains and losses for the period:		3 274	(16 036)	3 339
Recognised in profit or loss:		3 274	(7 511)	(4 751)
- Net trading income		3 274	-	-
- Gains less losses from investment securities, investments in subsidiaries and associates		-	(7 511)	(4 751)
Recognised in other comprehensive income:		-	(8 525)	8 090
- Available for sale financial assets		-	(8 525)	8 090
Purchases		1 038 365	478 498	22 636
Redemptions		(222 187)	(106 496)	-
Sales		(7 315 111)	(1 689 984)	(4 500)
Issues		6 493 791	1 647 073	-
Transfers out of Level 3		-	-	(97)
As at the end of the period		288 676	1 214 940	86 639
Transfers between levels in 2017				
	Transfer into level 1	Transfer out of level 1	Transfer into level 2	Transfer out of level 2
Investment securities	97	-	-	-
Equity securities	97	-	-	-

In 2017, one transfer from level 3 to level 1 of the fair value hierarchy took place and concerned a company whose shares were admitted to public trading.

31.12.2016	Including:	Level 1	Level 2	Level 3
		Quoted prices in active markets	Valuation techniques based on observable market data	Other valuation techniques
RECURRING FAIR VALUE MEASUREMENTS				
FINANCIAL ASSETS				
Trading securities, including:	3 800 634	3 509 935	155	290 544
Debt securities	3 796 457	3 505 913	-	290 544
- government bonds	3 503 029	3 503 029	-	
- deposit certificates	16 146	-	-	16 146
- banks bonds	109 904	-	-	109 904
- corporate bonds	167 378	2 884	-	164 494
Equity securities	4 177	4 022	155	-
- listed	4 022	4 022	-	-
- unlisted	155	-	155	-
Derivative financial instruments, including:	1 808 847	-	1 808 847	-
Derivative financial instruments held for trading	1 584 027	-	1 584 027	-
- interest rate derivatives	1 173 304	-	1 173 304	-
- foreign exchange derivatives	369 381	-	369 381	-
- market risks derivatives	41 342	-	41 342	-
Derivative financial instruments held for hedging	224 820	-	224 820	-
- derivatives designated as fair value hedges	196 634	-	196 634	-
- derivatives designated as cash flow hedges	28 186	-	28 186	-
Investment securities, including:	31 393 352	28 610 129	1 816 077	967 146
Debt securities	31 327 252	28 609 290	1 816 077	901 885
- government bonds	28 251 321	28 251 321	-	-
- money bills	1 816 077	-	1 816 077	-
- deposit certificates	50 466	-	-	50 466
- banks bonds	140 880	-	-	140 880
- corporate bonds	1 031 538	357 969	-	673 569
- communal bonds	36 970	-	-	36 970
Equity securities	66 100	839	-	65 261
- unlisted	66 100	839	-	65 261
TOTAL FINANCIAL ASSETS	37 002 833	32 120 064	3 625 079	1 257 690
31.12.2016	Including:	Level 1	Level 2	Level 3
		Quoted prices in active markets	Valuation techniques based on observable market data	Other valuation techniques
FINANCIAL LIABILITIES				
Derivative financial instruments, including:	1 599 266	-	1 599 266	-
Derivative financial instruments held for trading	1 580 737	-	1 580 737	-
- interest rate derivatives	1 195 992	-	1 195 992	-
- foreign exchange derivatives	353 784	-	353 784	-
- market risks derivatives	30 961	-	30 961	-
Derivative financial instruments held for trading	18 529	-	18 529	-
- derivatives designated as fair value hedges	19 485	-	19 485	-
- derivatives designated as cash flow hedges	(956)	-	(956)	-
Total financial liabilities	1 599 266	-	1 599 266	-
TOTAL RECURRING FAIR VALUE MEASUREMENTS				
FINANCIAL ASSETS	37 002 833	32 120 064	3 625 079	1 257 690
FINANCIAL LIABILITIES	1 599 266	-	1 599 266	

Assets Measured at Fair Value Based on Level 3 - changes in 2016	Debt trading securities	Derivative financial instruments	Debt investment securities	Equity investment securities
As at the beginning of the period	371 229	420	816 614	198 624
Total gains and losses for the period:	556	(420)	(12 531)	83 301
Recognised in profit or loss:	556	(420)	-	250 147
- Net trading income	556	(420)	-	7 959
- Gains less losses from investment securities, investments in subsidiaries and associates	-	-	-	242 188
Recognised in other comprehensive income:	-	-	(12 531)	(166 846)
- Available for sale financial assets	-	-	(12 531)	(166 846)
Purchases	1 719 767	-	616 264	5 238
Redemptions	(365 693)	-	-	-
Sales	(4 567 069)	-	(1 110 093)	(221 902)
Issues	3 130 780	-	552 540	-
Settlements	-	-	-	-
Transfers into Level 3	974	-	39 091	-
As at the end of the period	290 544	-	901 885	65 261

Transfers between levels in 2016	Transfer into level 1	Transfer out of level 1	Transfer into level 2	Transfer out of level 2
Trading securities	-	(974)	-	-
Debt securities	-	(974)	-	-
Investment securities	-	(39 091)	-	-
Debt securities	-	(39 091)	-	-

In 2016, there were two transfers from level 1 to level 3 of fair value hierarchy. One transfer resulted from unavailability of market price for communal bonds, and the other from low liquidity of bank bonds.

With regard to financial instruments valued in repetitive way to the fair value classified as level 1 and 2 in hierarchy of fair value, any cases in which transfer between these levels may occur, are monitored by Integrated Risk and Capital Management Department on the basis of internal rules. In case if there is no market price used to a direct valuation for more than 5 working days, the method of valuation is changed, i.e. change from marked-to-market valuation to marked-to-model valuation under the assumption that the valuation model for the respective type of this instrument has been already approved. The return to marked-to-market valuation method takes place after a period of at least 10 working days in which the market price was available on a continuous basis. If there is no market prices for a debt treasury bonds the above terms are respectively 2 and 5 working days.

Level 1

As at 31 December 2017, at level 1 of the fair value hierarchy, the Group has presented the fair value of held for trading government bonds in the amount of PLN 1 232 515 thousand (see Note 19) and the fair value of investment government bonds and treasury bills in the amount of PLN 27 583 694 thousand (see Note 23) (31 December 2016 respectively: PLN 3 503 029 thousand and 28 251 321 thousand). Level 1 includes the fair value of corporate bonds in the amount of PLN 938 243 thousand (31 December 2016 – PLN 360 853 thousand).

In addition, as at 31 December 2017 level 1 includes the value of the registered privileged shares of Giełda Papierów Wartościowych in the amount of PLN 986 thousand (31 December 2016: PLN 839 thousand) and the value of the shares of listed companies in the amount of PLN 1 314 thousand (31 December 2016: PLN 4 022 thousand).

These instruments are classified as level 1 because their valuation is directly derived by applying current market prices quoted on active and liquid financial markets.

Level 2

Level 2 of the fair value hierarchy includes the fair values of bills issued by NBP in the amount of PLN 2 322 914 thousand (31 December 2016: PLN 1 816 077 thousand;), whose valuation is based on a NPV model (discounted future cash flows) fed with interest rate curves generated by transformation of quotations taken directly from active and liquid financial markets.

In addition, the level 2 category includes the valuation of derivative financial instruments borne on models consistent with market standards and practices, using parameters taken directly from the markets (e.g., foreign exchange rates, implied volatilities of fx options, stock prices and indices) or

parameters which transform quotations taken directly from active and liquid financial markets (e.g., interest rate curves).

As at 31 December 2017 and 31 December 2016, level 2 also includes the value of options referencing on the WIG 20 index. For options on WIG 20 index an internal model (based on implied volatility model) using market parameters is applied.

Level 3

Level 3 of the hierarchy presents the fair values of commercial debt securities issued by local banks and companies (bonds and deposit certificates) in the amount of PLN 1 476 706 thousand (31 December 2016: PLN 1 155 459 thousand).

Level 3 includes also the fair value of local government bonds in the amount of PLN 35 910 thousand (31 December 2016 - PLN 36 970 thousand).

The above mentioned debt instruments are classified as level 3 because in addition to parameters which transform quotations taken directly from active and liquid financial markets (interest rate curves), their valuation uses credit spread estimated by the Bank by means of an internal credit risk model and reflecting credit risk of securities issuer. The model uses parameters (e.g., rate of recovery from collateral, rating migrations, default ratio volatilities) which are not observed on active markets and hence were generated by statistical analysis.

Impact of change in credit spreads on the fair value of debt securities classified as level 3 is presented in the table below. The amount reflects change in credit risk in relation to purchase date by the Group.

Issuer	Change of fair value resulting from change in credit risk	
	31.12.2017	31.12.2016
Credit institutions	(286)	(3 402)
Non-financial customers	(6 497)	(6 254)
Total	(6 783)	(9 656)

Moreover, level 3 covers mainly the fair value of equity securities amounting to PLN 86 639 thousand (31 December 2016: PLN 65 261 thousand). As at 31 December 2017, these amount includes the value of preferred stock in Visa Inc. in the amount of PLN 46 538 thousand (31 December 2016 - PLN 38 392 thousand). The other equity securities presented at level 3 have been valued using the market multiples method. The market multiples method, consists of valuating the equity capital of a company by using a relation between the market values of the own equity capital or market values of the total capital invested in comparable companies (goodwill) and selected economic and financial figures.