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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 2016 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 2016 and Management Board Report for the year 2016 are not the part of mBank S.A. Group Consolidated Financial Statements.

Type of risk	Information	Location of information for 2016		
		Annual Report of mBank Group		Disclosures regarding capital adequacy
		Management Board Report	Consolidated Financial Statements	
General information	Location of risk management disclosures	-	p. 40	p. 3
	Glossary of terms	-	p. 41	-
	External environment – regulatory standards	-	p. 42	-
Principles of risk management	Division of responsibilities in the risk management process	-	p. 43	-
	Risk culture	-	p. 47	-
	The risk management process documentation	-	p. 49	-
	Internal capital adequacy assessment process (ICAAP)	-	p. 50	p. 27
	Risk appetite	-	p. 53	-
	Stress tests within ICAAP	-	p. 54	p. 29
	Capital planning	-	p. 54	p. 9
Credit risk	Organization of risk management	p. 59	p. 55	-
	Credit policy	p. 63	p. 57	-
	Collaterals accepted	-	p. 57	p. 63, 66
	Rating system	-	p. 59	-
	Monitoring and validation of models	-	p. 59	-
	Calculating impairment charges and provisions	p. 64	p. 60	p. 69
	mBank Group forbearance policy	-	p. 63	-
	Counterparty risk that arises from derivative transactions	-	p. 68	-
	Concentration risk	-	p. 70	p. 68
Market risk	The strategy of market risk	-	p. 72	-
	Tools and measures	p. 69	p. 73	-
	Risk measurement	p. 70	p. 74	-
	Interest rate risk in the banking book	p. 71	p. 78	-
	Currency risk		p. 77	-
Liquidity risk and funding	Strategy of liquidity risk	p. 73	p. 81	-
	The measurement, limiting and reporting the liquidity risk	p. 74	p. 84	-
	Funding sources	-	p. 86	-
Operational risk	Tools and measures	-	p. 89	p. 80
	Operational losses	-	p. 90	-

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	Compliance risk	-	p. 90	-
Other risks	Business risk	-	p. 91	-
	Model risk	-	p. 91	-
	Reputational risk	-	p. 92	-
	Capital risk	-	p. 93	-
Capital adequacy		p. 76	p. 166	p. 9
Leverage ratio		p. 79, 94, 95	p. 41, 42, 166	p. 58

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 in case of default.

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 – statistically **Expected Loss** in case of default.

ICAAP – Internal Capital Adequacy Assessment Process.

Internal capital (IC) – the amount of capital estimated by the Bank required to cover unexpected loss arising from all 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 loss resulting from the 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 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:

- 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 2016 – 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 January 1, 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 January 1, 2014 without harmonisation with national laws.

Leverage ratio

In October 2014, the European Parliament approved the delegated act, in force since 2015, introducing modifications to the calculation of the leverage ratio. Bank implemented necessary changes regarding calculation of the leverage ratio. However in light of the guidelines from European and Polish regulator prudential reporting with regard to leverage ratio based on provisions of the delegated act was implemented in Poland beginning from September 2016. Before that date reporting was carried out based on CRR provisions and Bank calculated leverage ratio both under CRR provisions and under updated provisions of the delegated act.

Liquidity measures

In October 2015, came into force the Commission Delegated Regulation (EU) No 2015/61 of October 10, 2014 to supplement Regulation (EU) 575/2013. Bank reports to KNF calculations of LCR with implemented changes according to mentioned delegated regulation starting from reporting date as 31st October 2015 using special forms designed by KNF. However, the Bank reported to the NBP until September 30, 2016 according to standards set in 2014. Since the September 2016 report Bank reports according to the standard compliant to Commission Delegated Regulation (EU) No. 2015/61 of October 10, 2014.

In terms of the NSFR Bank reports to NBP according to standards set by EBA in 2014, as well as to the KNF in a form of a dedicated questionnaire.

Recommendations of the KNF

In 2016, Recommendation W of the KNF concerning model risk management in banks was implemented. The recommendation sets standards for the process of model risk management, including the principles for building models and assessing their performance, while ensuring proper solutions within corporate governance. The aim of the recommendation is to establish supervisory expectations in terms of efficient process of model risk management, in particular the determination of the bank's tolerance for this type of risk as well as limiting the banking sector's exposure to model risk.

In May 2016, the KNF issued the updated Recommendation C concerning concentration risk management (which replaced the Recommendation C on exposure concentration risk management issued by the banking supervision in 2002). The updated recommendation defines the principles of identification, measurement, monitoring and limiting concentration risk and applies to banks since January 1, 2017.

3.3. Principles of risk management

3.3.1 Division of responsibilities in the risk management process

1. **Supervisory Board,** through its **Risk Committee,** exercises constant supervision of the Bank's operations in the risk taking area, which includes among others approving the Risk Management Strategy of the Group and supervising its execution.

2. **Management Board of the Bank** accepts the Risk Management Strategy of the Group and is responsible for establishing and implementing the principles of managing individual risk types and for their coherence with the Strategy. Moreover, the Management Board defines the organisational structure of the Bank, ensuring the separation of roles, and allocates the tasks and responsibility to individual units.

   The Management Board undertakes activities aiming at assuring that the Bank conducts a policy enabling a management of all types of risks essential for the Bank's operations and has procedures to this extent, in particular including responsibility for preparing and introducing written strategies and procedures to the extent of: internal control system, risk management system, internal capital assessment, capital management and capital planning.

3. **Chief Risk Officer** is responsible for integrated management of the risk and capital 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 (according to internal regulations) risks models and limits, and for processes of managing the risk of the retail credit portfolio and corporate portfolio.

4. **Committees:**

   a/ **Business and Risk Forum** is a formal decision and communication platform for the risk management area and organizational units in particular business lines of the Group.

   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.

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

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

- credit risk policies,
- processes and tools for risk assessment,
- credit risk limitation system,
- assessing the quality and profitability of portfolio of exposures,
- liquidity risk issues such as methodology and limits.

The Bank's internal rules define specific competencies and tasks of the committees constituting the Business and Risk Forum.

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

- approves new and modified models as well as changes thereto and makes decision about resignation from using a model,
- decides about the scope of using group models and external models, including central models, in banking processes,
- recommends model risk tolerance level to the Management Board and the Supervisory Board,
- makes final decision about confirming significance assigned to the model,
- approves precautionary and remedial measures indicated in the results of monitoring,
- approves the validation timetable and the outcome of individual model validations.

Model Risk Committee ensures an adequate level of independence of individual participants of the model risk management process and allows for avoiding conflicts of interest among them. Moreover, it ensures possibility for the Validating Unit to issue binding recommendations of 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,
- the 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 decisions on debt conversion into shares, stocks, etc. as well as decisions on taking over properties in return for debts (applies to the bank).

f/ **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.

g/ **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.

h/ **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:

**organisational unit developing integral structures of foreign branches at mBank S.A.*

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.

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.

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.

Corporate Risk Processes 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 industrial 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),
- settlement and accounting of structured finance and mezzanine transactions and collection operations,
- verification of value, liquidity and attractiveness of real estate and movables provided for collateral of loans, and analysis of investments financed by the Bank.

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.

Financial Markets Risk Department:

- identifying, measuring controlling and monitoring of market risk, interest rate risk of the banking book, liquidity risk and counterparty risk,
- developing methods for measuring market risk, interest rate risk of the banking book, liquidity risk and counterparty risk,
- developing methods for valuations of financial instruments,
- valuation and control of transactions and analysis of P&L of front-office units,
- content management of front-office systems and risk measure system,
- controlling of Bank's contributions to WIBID/WIBOR fixing.

Integrated Risk and Capital Management Department:

- integration of risk and capital management within the ICAAP,
- control of capital adequacy and risk bearing capacity as well as planning and limiting risk capital,
- formulation of risk appetite and coordination of the process of determining strategic risk limits,
- integration of risk valuation (economic capital, reserves, stress tests),
- integration of control of non-financial risks (including operational risk) and Internal Control System Self-assessment (ICS),
- integration of model management and validation of quantitative models.

Projects and Risk Architecture Management 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.

Foreign Branches Risk Department:

- supporting the credit risk assessment process and taking part in the decision making process regarding credits in the Bank's foreign branches,
- credits managing/settling in the Bank's foreign branches,
- handling the vindication process in the Bank's foreign branches.

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 (business risk, capital risk, reputational risk, legal risk, IT systems risk, personnel and organisational risk, security risk and compliance 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

Lines of defence

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

- The first line of defence consists of **Business** (business lines) responsible for risk and capital management. The task of the Business is to take risk and capital into account in all their decisions and within the boundaries of risk appetite defined for the Group.
- The second line of defence where **Risk** (risk management area), **IT**, **Security and Compliance** are major players, assists the Business by creating risk management strategy for each risk and appropriate policies that give guidance to the Business while taking risk minded decisions. The main goal for the second line of defence is to support the Business with the implementation of the strategies and policies and to supervise control functions within the Group and risk exposure.
- The third line of defence is **Internal Audit**, ensuring independent assessment of the first and the second lines of defence.

Pillars of risk management

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

- **Customer Focus** – striving to understand and balance specific needs of the Risk's diverse stakeholders (Business, Management Board, Supervisory Board, shareholders, regulators).
- **One Risk** understood as an integrated approach to risk management and responsibility to the clients for all risks (defined in Risk Catalogue of mBank Group).
- **Risk vs Rate of Return** perspective – supporting business decision-making process on the basis of long-term relationship between risk and 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 actions undertaken while realization of the new strategy of the mBank Group. This support is organized around five challenges facing the risk management area in the coming years:

- **Empathy** understood at the risk area as active adaptation of risk management to the changing needs of different groups of customers.
- Promoting the experience of **mobility**.
- **Efficiency** understood as: measuring, improving and automating Risk processes in the Lean culture; shaping - through a partner dialogue - risk appetite ensuring safe and profitable balance sheet of the bank.
- **Engaged employees**. This pillar will be developed by building a work environment which fosters innovation; attracts, maintains and develops employees with knowledge of business and risk management, curious to find solutions and openly communicating.
- **Technological advantage**, which means the implementation of risk management based on a common integrated data platform (CDL) and the search for technological solutions enabling innovative risk management.

Key changes in the risk area in 2016

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 projects being implemented in 2016 are described below:

- **Internal Control System Self-assessment (ICS)**

  Implementation of the Internal Control System Self-assessment was completed in mBank Group subsidiaries. In the Bank, the Self-assessment was implemented in 2015. Thus, the process covers the whole activity of the Group. Self-assessment process is carried out on an annual basis. It aims at a comprehensive assessment of operational risk through: identification of material operational risks, inventory of control mechanisms dedicated to mitigate those risks, assessment of adequacy and effectiveness of control mechanisms, and assessment of the risk level and the development and implementation of the necessary plans of remedial measures.

- **Adaptation works to the requirements of Recommendation W** concerning model risk management in banks (published in July 2015 by the KNF were completed. The works aimed at:

  - development of principles of models' classification and model risk measurement and monitoring in line with regulatory requirements,
  - implementation of the required reporting system concerning model risk at different levels of the organization,
  - supplementing the existing models' management process, particularly in the field of documentation, with elements indicated in the Recommendation.

  The abovementioned works resulted, among others, in the update of Model Management Policy, which was supplemented with provisions addressing requirements of the Recommendation W and in the defining of model risk tolerance level. The updated Policy, as well as the model risk tolerance level, was approved by the Management Board and the Supervisory Board of the Bank. In addition, the Model Risk Committee, the recipient, among others, of management information concerning model risk was appointed.

- **Policy regarding developers** – "Credit policy of financing residential developers projects by mBank Group" was adopted. It is another common policy at the Group level; the first common policy was the policy regarding financing commercial real estate. In the course of the dialogue with the Business, a framework for the risk appetite and development of acquisition in this market was determined, particularly definition of residential developer's project was developed, risks were identified and their mitigants were introduced, as well as the limit for the portfolio of residential developers' projects.

- Continuation of the program – launched in 2015 - of continuous increase of effectiveness of work in the risk management area based on the principles of **Lean Management** with an emphasis on implementing a culture of responsibility and mechanisms for continuous improvement of processes. The aim of the program is to enable the absorption of the increasing number of tasks resulting from the growth of business and increasing regulatory requirements, without necessity to enlarge significantly the available resources.

- The Bank carried out **IFRS 9 implementation project**, including, among others, analytical work in assessing the impact of IFRS 9 on the methodology for calculation of provisions in the Group; implementation of the necessary changes was also started. More information about the project were included under Note 2.33.

3.3.3 The risk management process documentation

The risk management process implemented in mBank and mBank Group is documented. The key documents are described below.

Strategies and policies:

- **Risk Management Strategy of the mBank Group**

  The document, developed in connection with the development strategy and the multi-year plan of the mBank Group, defines the risk appetite within the Group, including key quantitative and qualitative risk guidelines, as well as existential threats lying beyond its scope.

- **Corporate Credit Risk Management Strategy in mBank Group**

  The document describes issues connected with credit risk in the corporate and investment banking area: defines risk appetite level and general principles of corporate credit risk management and limitation in the Group.

- **Retail Credit Risk Management Strategy in mBank Group**

  The document defines general, directional guidelines regarding credit risk management in the retail banking area, including such issues as: formal organization and responsibility for credit risk management, risk appetite, general guidelines for the functioning credit processes, decision-making models and reporting systems.

- **Operational Risk Management Strategy in mBank Group**

  The document describes the principles and components of operational risk management in mBank Group, including the following issues: organization and responsibility for operational risk management, operational risk profile and appetite, methods and tools for operational risk control.

- **Market Risk Management Strategy of mBank Group**

  The document describes key issues concerning market risk management in the Group: specifies conditions influencing market risk profile, defines market risk appetite and provides framework of market risk management in the Group by determining organisation, roles and responsibilities, defining market risk management process as well as attitude to the market risk management in the Group subsidiaries.

- **Liquidity Risk Management Strategy of mBank Group**

  The document describes key issues concerning liquidity risk management in the Group: specifies conditions influencing liquidity risk profile, defines liquidity risk appetite and provides framework of liquidity risk management in the Group by determining organisation, roles and responsibilities, defining liquidity risk management process as well as attitude to the liquidity risk management in the Group subsidiaries.

- **Reputational Risk Management Strategy in mBank Group**

  The document specifies the principles and components of reputational risk management, including, in particular, the issues of reputational risk profile as well as organization and methods of reputational risk management.

- **Capital Management Policy of mBank Group**

  The Policy specifies organization of capital management, including the main aims, principles and methods of capital management process as well as the Group's strategic objectives in the capital area.

- **Compliance Policy in mBank S.A.**

  The document stipulates a set of procedures and organisational rules that the Bank fulfils to comply with the requirements of Polish law and compliance rules of the Commerzbank Group, without prejudice to the provisions of Polish law, as well as a set of the basic rules of conduct for the Bank's employees and main processes of compliance risk identification that allows to manage compliance risk on all levels of the Bank's organisation.

- **Model Management Policy**

  The document determines the participants and the framework for model management process, including issues related to the development of models in mBank Group, their approval, implementation, validation, monitoring, implementation of changes and the associated reporting process.

Limit system:

- **Limit Book. Rules for limitation of risk in mBank Group**

  The document contains a description of the system of limits, which are widely used in managing and controlling risk all over the mBank Group and ensures fine application of the risk appetite to the certain risk limiting in the particular areas, and guarantees fulfilling the regulatory requirements.

Stress tests:

- **Book of stress tests. Rules for stress testing in mBank Group**

  The document defines participants and the framework for stress testing, including aspects concerning: the creation of stress scenarios and their approval, carrying out stress tests and the use of their results as well as their integration into the risk management process.

ICAAP documentation:

- **Internal Capital Adequacy Assessment Process (ICAAP) in the mBank Group – Governing Principles**

  The document describes the internal capital adequacy assessment process (including the Risk Bearing Capacity concept) and the course of its individual components.

- **Document describing the rules for estimating capital for hard to quantify risks**
- **The concept of Risk Coverage Potential (RCP)**

3.3.4 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 ICAAP (Internal Capital Adequacy Assessment Process) was 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 is composed of six stages implemented by organizational units of mBank and the mBank Group subsidiaries.

The process includes:

- risk inventory in the mBank Group,
- estimation of internal capital for coverage of risk,
- capital aggregation,
- stress tests,
- planning and allocation of economic capital to business lines and the Group subsidiaries,
- 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 Management Board of the Bank and supervised by the Supervisory Board of the Bank on a regular basis.

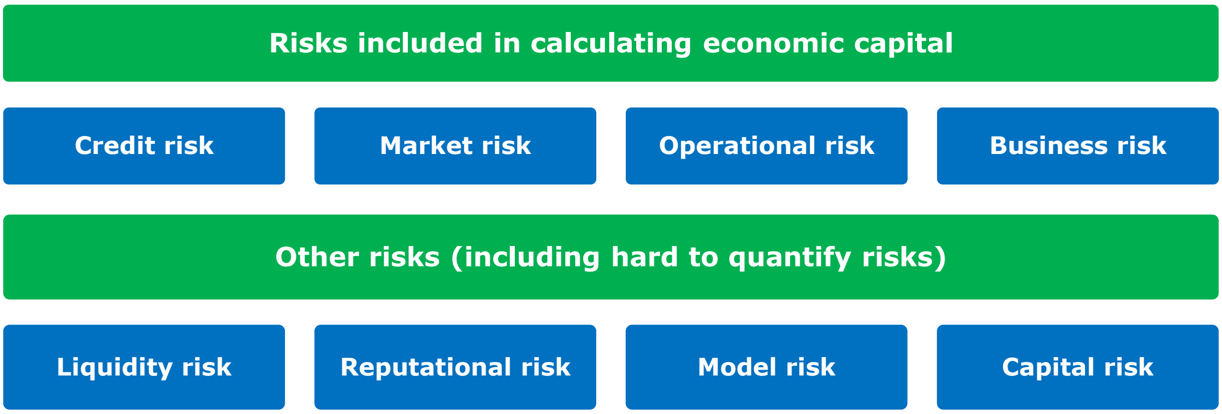
Material risks in mBank Group's operations

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 may be estimated.

The following risks were recognized as material for the Group as at 31 December 2016:



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.

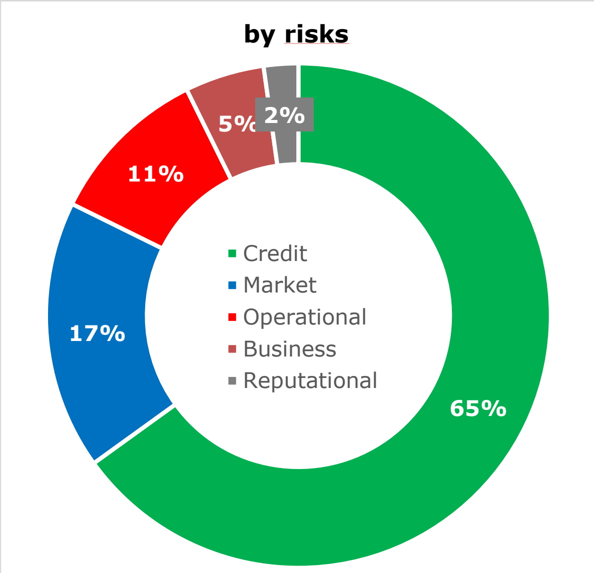
In 2016 (similarly as in 2015), the mBank calculated the economic capital at the 99.91% confidence level over a one-year time horizon, for all risk types. Diversification between different risks was not included while calculating the total of economic capital.

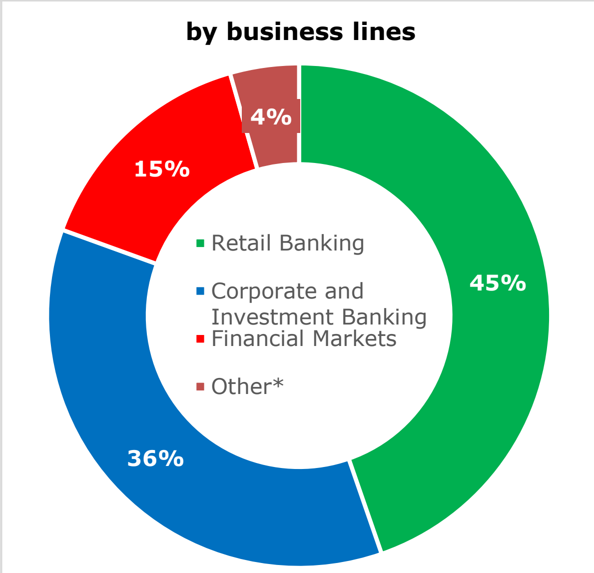
In accordance with internal regulations, the decision concerning the amount of capital for coverage of hard to quantify risks is taken by the Capital Management Committee. In 2016 the Bank maintained capital to cover reputational risk.

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 31.12.2016 by risks and business lines.

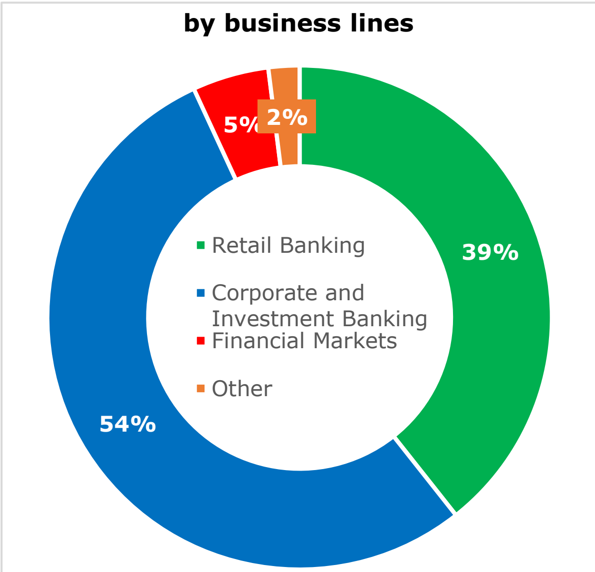
Structure of internal capital of mBank Group as of 31.12.2016





**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 31.12.2016



***The item presenting "Credit" risk includes also supervisory floor for AIRB portfolios of banks exposures and 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).

3.3.5 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. Risk appetite statements undergo further decomposition into key metrics and targets via the integrated strategic planning process, which are then cascaded down into the organization in operational phase of planning. 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 minimum 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 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".

3.3.6 Stress tests within ICAAP

Stress tests are an essential component of the ICAAP used for managing the Bank and the Group and for capital 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, ie. the most plausible (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 scenario accepted at the group level of the parent entity of the Bank. 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/ stressed potential risk coverage (RCP),

3/ the liquidity norms 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 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 are simulated.

Additionally, once a year, the Bank carries out **supplementary stress tests** using much more severe risk scenarios and/or events. The Bank and the Group 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 carried out for material risks (internal capital) and are an additional element of the analysis of the Bank's and the Group's robustness to negative macroeconomic and idiosyncratic factors.

The Bank and the Group take part in **regulatory stress tests** conducted annually by the KNF, in order to determine the impact of assumed macroeconomic stress scenarios on the Group's balance sheet and P&L as well as on external supervisory norms.

3.3.7 Capital planning

Required capital planning – strategic phase

The strategic phase of capital planning takes the form of the strategic dialogue between the Management Board, risk management area, finance area and business lines, resulting in the determination of the desired directions of business development to support the realization of the business goals of the mBank Group.

The Group plans business activities and related risk appetite within its risk bearing capacity and 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.

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.

Following the establishment of strategic directions, the key risk concentrations arising from the current and planned risk profile are examined with the Management Board setting an acceptable level of the associated risk factors. 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 is determined through 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.

Required capital planning – operational stage

Based on the strategic directions, general balance sheets targets are elaborated upon during operational phase of capital planning (bottom-up). At this stage the capital available is compared with the capital needed (resulting from business growth and stress test results) in order to determine an efficient capital allocation to lower levels.

Business units work out their partial plans based on accepted macroeconomic assumptions, financial targets and the assessment of business growth potential.

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.

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 risk types in mBank's retail banking. The main operational responsibility of DZR (in the domestic market) 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). Moreover, the Department is 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, 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.
- **The 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.
- **Corporate Risk Processes Department (DPR)** responsible for: compiling the corporate credit risk strategy, shaping the credit policy within the corporate banking area, creating through portfolio analyses, including industry-based division, products and concentration; compiling reports and statements for financial supervision bodies, the Bank's governing bodies and the Bank's organisational units, from the scope of credit portfolio of the Bank and mBank Group entities. DPR compiles and introduces rules governing corporate risk process, monitors its efficiency, manages applications supporting credit process and provides support for their users. Within the area of DPR responsibilities lies development and quality control of the rating models for retail, corporate and financial clients of mBank and mBank Group entities. DPR manages the reserves for credit risk in the area of corporate banking, conducts settlement and accounting service of credits and guarantees issued by Structured and Mezzanine Finance Department and collected debts from Restructuring and Debt Collection Department portfolio. Within DPR also takes place verification of real estate and movables provided by customers for collateral of loans for their value, liquidity and attractiveness, as well as verification of the investments financed by the Bank.
- **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); organizing the process of managing models applied for credit risk management and evaluation as well as validating such models; 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 the purposes of the consolidated supervision.

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 for SMEs, 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 Corporate Risk Processes Department in complete separation from sales functions.

In mBank Group, mortgage loans to retail customers are granted by mBank Hipoteczny. The main difference between mBank and mBank Hipoteczny's approach is another method of property valuation, i.e.

the use of the mortgage lending value (estimated in accordance with the Act on Covered Bonds and Mortgage Banks) instead of market value.

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 for granted credit products. The collateral policy is an important part of the credit policy. It provides that, in making a decision about granting a credit risk bearing product, the Bank strives to obtain collateral that would be adequate to the accepted risk. The quality of the proposed tangible collateral is assessed according to its liquidity and market value (or the mortgage lending value – in case of mBank Hipoteczny), and the quality of personal collateral is assessed according to the financial situation of the guarantor. Moreover, the impact of collateral on limitation of the impairment of the loan portfolio is a significant factor in the assessment of the collateral's quality. The quality of accepted collateral is linked to the amount of the credit risk bearing product and the level of risk related to granting such a product. The most common forms of accepted collateral include:

- mortgage on real estate,
- cession of receivables (cession of rights),
- registered pledge,
- transfer of ownership to collateral (partial or conditional),
- monetary deposit,
- guarantee deposit or cash blocked,
- bill of exchange,
- guarantees and warranties,
- a letter of comfort issued by a company whose reliability and fairness is known on the international financial markets.

In the case of personal collateral (e.g. warranty, guarantee), the situation and reliability of the entity issuing such collateral is evaluated against the same standards as those applicable to the assessment of borrowers.

Tangible collaterals are evaluated in accordance with the internal rules of the Group. The value of fixed assets (other than vehicles) taken as collateral is determined in most cases on the basis of an estimate prepared by a certified expert. These estimates submitted to the Bank is verified by a team of specialists situated in the Risk Area, who verify the correctness of the market value assumptions and assess the liquidity of the collateral from the Bank's point of view. The following factors are taken, among others, into account in the verification process:

a) for collateral on real estate:

- type of real estate,
- legal status,
- designation in the local land development plan,
- technical description of buildings and structures,
- description of land,
- situation on the local market,
- other price-making factors,

b) for collateral on plant and machinery:

- general application and function in the technological process/possibilities of alternative use,
- technical description and parameters,
- exploitation and maintenance conditions,
- compliance with applicable standards,
- availability of similar devices and machinery,
- current market situation,
- forecasts of demand for specific machinery in connection with the situation in the industrial sectors applying such machinery.

c) for collateral on inventories:

- formal and legal requirements related to specific products,
- saleability,
- warehousing conditions required,
- security and insurance of both the warehouse and the goods stored therein.

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. mLeasing also accepts declarations of voluntary submission for enforcement.

mFaktoring 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*LGD. EL indicator is used mainly at the credit decision-making stage.

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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.

<table>
<tr><th>Sub-portfolio</th><th colspan="4">1</th><th colspan="3">2</th><th colspan="2">3</th><th colspan="3">4</th><th colspan="3">5</th><th>6</th><th colspan="2">7</th><th>8</th><th></th></tr>
<tr><td>PD-rating</td><td>1.0 - 1.2</td><td>1.4</td><td>1.6</td><td>1.8</td><td>2</td><td>2.2</td><td>2.4 - 2.6</td><td>2.8</td><td>3</td><td>3.2 - 3.4</td><td>3.6</td><td>3.8</td><td>4</td><td>4.2 - 4.6</td><td>4.8</td><td>5</td><td>5.2 - 5.4</td><td>5.6 - 5.8</td><td>No rating</td><td>6.1 - 6.5</td></tr>
<tr><td rowspan="2">S&P</td><td>AAA</td><td>AA+</td><td>AA, AA-</td><td>A+, A</td><td>A-</td><td>BBB+</td><td>BBB</td><td>BBB-</td><td>BB+</td><td>BB</td><td>BB-</td><td>B+</td><td>B+</td><td>B</td><td>B-</td><td>B-</td><td>CCC+</td><td>CCC down to CC-</td><td>n/a</td><td>C, D-I, D-II</td></tr>
<tr><td colspan="8">Investment Grade</td><td colspan="10">Non-Investment Grade</td><td></td><td>Default</td></tr>
</table>

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,
- 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 Register 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, ie. the model owner and users. The Validation Division of the Integrated Risk and Capital Management Department (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.

<u>The list of definite loss events:</u>

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.

<u>The list of required conditions for indefinite loss events is prepared separately for each following entity type:</u>

a) governments and central banks,
b) banks,
c) corporations, including specialised lending,
d) local government units,
e) insurers,
f) pension fund managing companies, investment fund managing companies.

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.

In order to assess if the impairment loss has occurred, identification of credit exposures with premises for impairment is carried out. Subsequently the comparison of the gross balance sheet credit exposure with the value of estimated future cash flows discounted at the original effective interest rate is carried out, which leads to the conclusion whether the impairment loss has occurred. If the discounted value of future cash flow is higher than the gross balance sheet value, the impairment charge is not recognised.

In case of specific situation, when the future cash flows are clearly dependent on individual events (based on discrete metric), the Bank estimates the probability of such events as the basis for calculating the impairment charge.

3.4.6.2 Impairment triggers - retail portfolio

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 3000 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 intranet application IMPAIRMENT-KORPO is a tool used to calculate impairment losses for impaired exposures granted to corporate customers and banks. The classification of customers to default portfolio and calculation of impairment write-off is as follows:

a) identifying impairment indicator on individual basis (loss events) and if they exist, classifying a customer to a default category;

b) assessing estimated future cash flows (repayments) 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.

Otherwise, impairment is not recognized and the exposure is classified to the IBNR (Incurred But Not Reported loss) portfolio, covered by a group provision. IBNR group charge for this portfolio is created in the amount of 5% of the gross carrying amount.

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 Bank's internal data, comprising a several years' period of observation of the corporate portfolio. On the basis of the monitoring period existing in the Bank, it was estimated that 6-8 months (depending on the size of the company) is the average period between the loss event occurrence and the possibility of its identification by the Bank (loss identification period "LIP"). Therefore, the Bank performs calculations on the basis of 6-8-month 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-. 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 other financial facilities 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).

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Sub-portfolio	31.12.2016		31.12.2015	
	Exposure (%)	Provision coverage (%)	Exposure (%)	Provision coverage (%)
1	13.76	0.01	4.95	0.02
2	27.01	0.06	37.38	0.04
3	22.78	0.16	20.22	0.17
4	20.57	0.33	22.02	0.28
5	6.14	0.81	5.53	0.87
6	0.37	1.83	0.64	1.54
7	1.23	3.03	1.80	3.61
8	0.07	1.24	1.03	0.02
other *)	2.88	0.04	2.40	-
Default category	5.19	53.92	4.03	57.57
Total	**100.00**	**3.02**	**100.00**	**2.55**

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

As at 31 December 2016, 40.77% 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 (42.33% as of 31 December 2015).

A distribution of share of exposures for non-default portfolios remained without significant changes compared to 2015. The share of provision coverage for default portfolio visibly increased (from 57.57% to 53.92%).

3.4.6.7 Repossessed collateral

The Group classifies repossessed collaterals as assets repossessed for debt and measures them in accordance with the adopted accounting policies described in paragraph 2.25. Repossessed collaterals 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 2016 and 2015, the Group did not have any repossessed collaterals that were difficult to sell. As at 31 December 2016, value of repossessed collaterals was PLN 6 588 thousand (31 December 2015: PLN 6 768 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 under Note 26.

3.4.7. mBank Group Forbearance Policy

Definition

The mBank Group's forbearance policy is a set of activities relating to negotiation and restructuration 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, new repayments schedule and capital repayments deferrals with interest repayments kept.

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 - forborne 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,
- Deferral 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 activities have been an integral part of Group's risk management area for many years. Forbearance 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 forbearance portfolio is based on portfolio approach and corporate portfolio analysis is based on individual approach.

In corporate banking, the concession granting process is accompanied by impairment test. Recognition of impairment results in client being taken over by the specialised unit dedicated to restructuring. All loans granted to clients being served by restructuring unit have the forbearance status. Clients without impairment, who received the concession, 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 IBNI provision and impairment provision for forbearance portfolio.

Forbearance exit conditions

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

- the agreement is recognised as performing,
- debtor financial situation's analysis showed improvement,
- two years after recognising exposure as performing have passed,
- at least from the middle of the probation period regular capital or interest payments have been made (lack of delays in repayment longer than 31 days) according to the schedule set at the moment of concession granting,
- none of the debtor exposures is overdue more than 31 days in the amount of more than PLN 500.

Portfolio characteristics

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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**	**1 323 411**	**656 609**	**1 550 302**
Outputs	(614 673)	(521 732)	(315 503)	(299 170)
New forbearance	360 638	213 182	70 953	289 685
Changes on existing loans	(62 574)	2 235	34 089	(96 663)
As at 31.12.2016	**1 890 302**	**1 017 096**	**446 148**	**1 444 154**

The table below presents changes in the carrying value of the forborne exposures in 2015

31.12.2015	Gross carrying amount	Of which defaulted	Provisions created	Net value
As at 31.12.2014	**2 281 718**	**1 749 003**	**745 806**	**1 535 912**
Outputs	(418 141)	(358 851)	(187 837)	(230 304)
New forbearance	505 926	156 103	71 516	434 410
Changes on existing loans	(162 592)	(222 844)	27 124	(189 716)
As at 31.12.2015	**2 206 911**	**1 323 411**	**656 609**	**1 550 302**

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	-	-	-	-
Loans and advances to customers, including:	1 890 302	1 017 096	446 148	1 444 154
Loans to individuals:	754 958	215 094	76 335	678 623
- Current accounts	48 261	7 739	2 580	45 681
- Term loans, including:	706 697	207 355	73 755	632 942
housing and mortgage loans	624 017	142 537	45 875	578 142
Loans to corporate clients:	1 135 344	802 002	369 813	765 531
corporate & institutional enterprises	402 874	258 838	83 683	319 191
medium & small enterprises	732 470	543 164	286 130	446 340
Loans and advances to public sector	-	-	-	-
Total	**1 890 302**	**1 017 096**	**446 148**	**1 444 154**

Forbearance portfolio as at 31 December 2015

31.12.2015	Gross carrying amount	Of which defaulted	Provisions created	Net value
Loans and advances to banks	-	-	-	-
Loans and advances to customers, including:	2 206 911	1 323 411	656 609	1 550 302
Loans to individuals:	696 427	187 684	69 770	626 657
- Current accounts	52 130	5 871	2 472	49 658
- Term loans, including:	644 297	181 813	67 298	576 999
housing and mortgage loans	515 660	116 469	36 393	479 267
Loans to corporate clients:	1 510 484	1 135 727	586 839	923 645
corporate & institutional enterprises	572 640	436 131	244 646	327 994
medium & small enterprises	937 844	699 596	342 193	595 651
Loans and advances to public sector	-	-	-	-
Total	**2 206 911**	**1 323 411**	**656 609**	**1 550 302**

The share of credit forbearance portfolio constitutes 2.23% (2015: 2.71%) of the whole portfolio. The 54% of forbearance portfolio is defaulted (2015: 60%). This portfolio is covered in 44% by the special-purpose provision (2015: 50%) and furthermore the risk of the lack of payment is mitigated by collaterals taken in the nominal amount of PLN 1.29 billion (2015: 1.32 billion).

Forborne exposures by type of concession as at 31 December 2016

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31.12.2016 Type of concession	Gross carrying amount	Of which defaulted	Provisions created	Net value
Refinancing	178 883	100 785	41 988	136 895
Modification of terms and conditions	1 711 419	916 311	404 160	1 307 259
Total	**1 890 302**	**1 017 096**	**446 148**	**1 444 154**

Forborne exposures by type of concession as at 31 December 2015

31.12.2015 Type of concession	Gross carrying amount	Of which defaulted	Provisions created	Net value
Refinancing	404 615	300 604	193 030	211 585
Modification of terms and conditions	1 802 296	1 022 807	463 579	1 338 717
Total	**2 206 911**	**1 323 411**	**656 609**	**1 550 302**

Forborne exposures by geographical breakdown as at 31 December 2016

31.12.2016	Gross carrying amount	Of which defaulted	Provisions created	Net value
Poland	1 609 140	735 934	232 784	1 376 356
Other countries	281 162	281 162	213 364	67 798
Total	**1 890 302**	**1 017 096**	**446 148**	**1 444 154**

Forborne exposures by geographical breakdown as at 31 December 2015

31.12.2015	Gross carrying amount	Of which defaulted	Provisions created	Net value
Poland	1 780 493	896 993	400 842	1 379 651
Other countries	426 418	426 418	255 767	170 651
Total	**2 206 911**	**1 323 411**	**656 609**	**1 550 302**

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	762 762	37 313	342	762 420
Past due less than 30 days	116 796	1 642	16	116 780
Past due 31 - 90 days	27 763	3 093	168	27 595
Past due over 90 days	2 691	2 684	29	2 662
Total	**910 012**	**44 732**	**555**	**909 457**

Forborne, not impaired exposures by period of overdue as 31 December 2015

31.12.2015 Overdue period	Gross carrying amount	Of which defaulted	Provisions created	Net value
Not past due	803 512	37 483	4 986	798 526
Past due less than 30 days	92 803	4 490	2 479	90 324
Past due 31 - 90 days	21 788	3 388	626	21 162
Past due over 90 days	10 360	10 360	62	10 298
Total	**928 463**	**55 721**	**8 153**	**920 310**

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	195 429	188 728	40 802	154 627
Past due less than 30 days	71 446	70 620	8 534	62 912
Past due 31 - 90 days	29 784	29 384	11 948	17 836
Past due over 90 days	683 631	683 632	384 309	299 322
Total	**980 290**	**972 364**	**445 593**	**534 697**

Forborne, impaired exposures by period of overdue as at 31 December 2015

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31.12.2015 Overdue period	**Gross carrying amount**	**Of which defaulted**	**Provisions created**	**Net value**
Not past due	421 074	415 503	200 536	220 538
Past due less than 30 days	47 575	43 235	11 104	36 471
Past due 31 - 90 days	36 698	35 848	17 434	19 264
Past due over 90 days	773 101	773 104	419 382	353 719
Total	**1 278 448**	**1 267 690**	**648 456**	**629 992**

Forborne exposures by the industry as at 31 December 2016

31.12.2016 Sectors	**Gross carrying amount**	**Of which defaulted**	**Provisions created**	**Net value**
Forestry	220 378	220 378	164 622	55 756
Financial activities	313	313	16	297
Food sector	6 227	4 467	830	5 397
Construction	92 330	79 316	6 854	85 476
Scientific and technical activities	4	4	4	-
Education	5 053	5 053	699	4 354
Power, power and heating distribution	68 693	-	-	68 693
Mining	2 108	2 108	659	1 449
Retail trade	6 183	6 183	2 979	3 204
Wholesale trade	51 908	37 409	28 840	23 068
Hotels and restaurants	51 364	43 950	2 395	48 969
Information and communication	15 605	15 603	13 871	1 734
Arts, entertainment	49 597	49 597	37 345	12 252
Construction materials	33 907	16 121	12 150	21 757
Metals	2 744	2 744	264	2 480
Health care	17 432	7 155	4 386	13 046
Other manufactoring	10 202	10 202	9 387	815
Real estate management	386 805	245 687	73 188	313 617
Agriculture	1 737	1 737	1 621	116
Textiles and clothing	881	881	44	837
Transport and logistics	6 057	3 024	558	5 499
Services	34 177	34 177	1 721	32 456
Municipal services	4 129	94	94	4 035
Other	822 468	230 893	83 621	738 847
Total	**1 890 302**	**1 017 096**	**446 148**	**1 444 154**

Forborne exposures by the industry as at 31 December 2015

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31.12.2015 Sectors	Gross carrying amount	Of which defaulted	Provisions created	Net value
Forestry	231 521	215 010	161 051	70 470
Financial activities	1 837	423	89	1 748
Food sector	32 832	31 971	9 853	22 979
Construction	124 264	104 228	17 845	106 419
Scientific and technical activities	50 834	13 136	8 313	42 521
Education	1 714	1 316	81	1 633
Electronics and household equipment	96 706	5 980	6 876	89 830
Power, power and heating distribution	100 013	100 013	25 876	74 137
Retail trade	82 086	62 017	22 189	59 897
Wholesale trade	84 844	50 527	38 909	45 935
Hotels and restaurants	65 051	53 027	6 998	58 053
Information and communication	65 647	63 792	33 316	32 331
Arts, entertainment	47 718	47 303	35 451	12 267
Metals	207 192	205 038	157 336	49 856
Health care	4 720	4 513	614	4 106
Fuels and chemicals	13 390	7 631	4 288	9 102
Other manufactoring	13 583	12 612	6 764	6 819
Real estate management	284 304	121 374	44 256	240 048
Agriculture	3 799	3 788	3 320	479
Textiles and clothing	5 156	3 353	947	4 209
Transport and logistics	10 410	6 295	2 980	7 430
Services	62 860	56 831	16 098	46 762
Municipal services	257	197	116	141
Other	616 173	153 036	53 043	563 130
Total	**2 206 911**	**1 323 411**	**656 609**	**1 550 302**

3.4.8 Counterparty risk that arises from derivatives transactions

The credit exposure on mBank portfolio from derivatives transactions 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 agreements are required to collateralize the exposure. CSAs allow for variation margin to be called if current valuation of the 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.

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 are subject to limit decomposition into different products and maturities. In case of central clearing houses 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:

- 37% banks,
- 33% central clearing houses (CCP),
- 21% corporates,
- 9% financial institutions.

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

Client type	Credit exposure 2016 (PLN m)	Credit exposure 2015 (PLN m)
Bank CSA	1 267	1 608
Bank uncollateralized	93	226
CCP	1 242	445
Corpo collateralized	(8)	(12)
Corpo limit	794	670
Non-Bank Financial Institution	324	254
Private Banking	0	(1)

Compared to the end of year 2015 there was a significant increase in credit exposure with central counterparties (CCP): 31 December 2016 PLN 1 242 million (31 December 2015: PLN 445 million). This is a result of EMIR regulation (clearing obligation).

Total counterparty risk exposures for mBank of the derivatives portfolio decomposed into current NPV and add-on has been depicted below:

(PLN m)	Banks		CCP		Corporates and other customers	
	2016	2015	2016	2015	2016	2015
NPV	56.31	107.20	0.07	0.09	321.96	246.06
add-on	1 303.79	1 726.76	1 241.97	444.84	828.70	695.21
collateral	(38.95)	(1.35)	(99.21)	(14.26)	41.06	30.28

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	31.12.2016		31.12.2015	
	Fair value %	Provision coverage (%)	Fair value %	Provision coverage (%)
1	46.95	0.11	29.31	0.16
2	31.00	0.18	34.07	0.10
3	6.39	2.70	29.46	0.53
4	12.78	0.50	3.04	1.63
5	1.21	2.58	3.05	0.74
6	0.07	1.42	0.03	4.21
7	1.32	0.54	0.03	3.11
8	0.09	0.00	1.00	0.05
Default category	0.19	2.02	0.01	5.53
Total	**100.00**	**0.39**	**100.00**	**0.31**

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

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**

31 December 2015	Trading securities			Investment debt securities	Total
Rating	Government bonds	Treasury bills	Other debt securities		
AAA	-	-	-	46 353	46 353
AA- to AA+	-	-	-	827 919	827 919
A- to A+	178 492	-	24 313	28 913 377	29 116 182
BBB+ to BBB-	-	-	219 484	388 301	607 785
BB+ to BB-	-	-	128 406	361 620	490 026
B+ to B-	-	-	-	-	-
Lower than B-	-	-	-	-	-
Unrated	-	-	-	-	-
Total	**178 492**	**-**	**372 203**	**30 537 570**	**31 088 265**

96.84% of the investments in debt securities is rated at least on A- credit rating (31 December 2015: 96.47%).

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 ('KUKE'), which covers the economic and political risk.

As at 31 December 2016 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. Monitoring and analysis covers all the sectors in which the Bank's exposure exceeds 5% of the total amount of exposures at the end of a given reporting period, and sectors additionally indicated by the Chief Risk Officer.

The Bank manages industrial concentration risk determining industrial limits. Unless the Corporate and Investment Banking Risk Committee (KRK) decides otherwise, an industrial limit for any sector is set 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,
- 5% of the gross loan portfolio in the prior reporting period for high risk sectors.

In the case of exceeding any industrial limit or an expectation that such a limit may be exceeded in the next reporting period, activities preventing the exceeding of limits are implemented and any decision in this regard shall be taken by the KRK.

The table below presents the structure of concentration of mBank Group's exposures in particular sectors.

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

No.	Sectors	Principal exposure (in PLN thousand)	%	Principal exposure (in PLN thousand)	%
		31.12.2016		31.12.2015	
1.	Household customers	48 949 829	57.87	46 258 683	56.82
2.	Real estate management	6 082 294	7.19	4 975 227	6.11
3.	Construction	3 793 386	4.48	3 743 369	4.60
4.	Wholesale trade	3 412 977	4.04	3 141 017	3.86
5.	Retail trade	2 247 432	2.66	2 244 062	2.76
6.	Transport and logistics	1 980 326	2.34	1 858 064	2.28
7.	Food sector	1 815 208	2.15	1 899 778	2.33
8.	Fuels and chemicals	1 661 718	1.96	1 789 636	2.20
9.	Metals	1 594 922	1.89	1 395 689	1.71
10.	Information and communication	1 388 191	1.64	1 032 953	1.27
11.	Forestry	1 197 826	1.42	1 552 832	1.91
12.	Power, power and heating distribution	1 157 807	1.37	1 472 862	1.81
13.	Services	938 423	1.11	538 987	0.66
14.	Financial activities	930 683	1.10	934 170	1.15
15.	Public administration	909 234	1.08	1 161 955	1.43
16.	Scientific and technical activities	729 065	0.86	734 330	0.90
17.	Hotels and restaurants	728 771	0.86	645 710	0.79
18.	Electronics and household equipment	492 716	0.58	517 183	0.64
19.	Motorization	484 696	0.57	489 478	0.60
20.	Industry	416 432	0.49	438 525	0.54
21.	Municipal services	414 243	0.49	369 308	0.45
22.	Mining	394 503	0.47	498 312	0.61
23.	Arts, entertainment	309 057	0.37	448 834	0.55

As at 31 December 2016, the total exposure of the Group in the above sectors (excluding household customers) amounts to 39.12% of the credit portfolio (31 December 2015: 39.16%).

The risk of investing in these sectors (in a 3-point scale, i.e., low, medium, high) as at the end of 2016 and 2015 was estimated by the Bank's sector analysts according to the following table.

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No.	Sectors	31.12.2016	31.12.2015
1.	Real estate management	medium	medium
2.	Construction	medium	medium
3.	Wholesale trade	medium	medium
4.	Retail trade	medium	medium
5.	Transport and logistics	medium	medium
6.	Food sector	medium	medium
7.	Fuels and chemicals	medium	medium
8.	Metals	high	high
9.	Information and communication	medium	medium
10.	Forestry	medium	medium
11.	Power, power and heating distribution	medium	medium
12.	Services	medium	medium
13.	Financial activities	medium	medium
14.	Public administration	low	low
15.	Scientific and technical activities	medium	medium
16.	Hotels and restaurants	medium	medium
17.	Electronics and household equipment	medium	medium
18.	Mining	high	high
19.	Motorization	medium	medium
20.	Industry	medium	medium
21.	Municipal services	medium	medium
22.	Arts, entertainment	high	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 to customers and groups of affiliated customers.

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.

Bank monitors exposures to a customer or group of affiliated customers considered a large exposure limit ie. 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 CRR Regulation), which are equal or exceed 10% of the eligible capital. At the end of 2016 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 Organization of risk management

In the process of organisation of the market risk management, the Bank follows rules and requirements set forth in KNF regulations and recommendations, in particular in Recommendations A and I.

The fundamental principle applied in the organisation of the market risk management in the Bank is the separation of risk control and monitoring functions from structures undertaking and operationally managing Bank's risk positions. Monitoring and controlling of the market risk is performed by the Financial Markets Risk Department under supervision of the Vice-president of the Management Board (CRO), while the market risk positions are operationally managed by Financial Markets Department DFM), Own Transactions Division in Brokerage Bureau (BM_WTW) and Treasury Department (DS) reporting to the Vice-president of the Management Board – Head of Financial Markets. In H1 2016 mDom Maklerski was merged with mBank. As a result of the merger of units carrying out its operations focusing on financial instruments traded on the stock exchanges in both entities Own Transactions Division in Brokerage Bureau was established and replaced prevailing Brokerage Bureau. Increase of market risk measures caused by the merger was insignificant.

Debt Securities Issue Department (DCM) is responsible for debt issuance and managing of non-government debt securities in 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 Financial Markets Risk Department (DRR), 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. DRR 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. DRR 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 Financial Markets Risk 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 DRR are the basis for managing collaterals for concluded transactions on derivative instruments.

Department 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. DRR monitors utilization of counterparty limits (pre-settlement, settlement, issuer and country risk limits) and escalates if limits are exceeded. Moreover, DRR 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 primarily on the trading book positions valuated 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. 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. From September 2015 measurement of the Value at Risk in stressed conditions was introduced. In case of this measure 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 7-year series of Value at Risk based on following 12-months windows of risk factors changes from last 8 years. In 2016 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,
- 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 decision of the Supervisory Board (with respect to mBank Group portfolio), the Management Board (with respect to mBank portfolio) and the Financial Markets Risk Committee (with respect to business lines portfolios) limits on VaR at 97,5% confidence level for 1-day holding period and stress tests limits are established.

3.7.3 Risk measurement

Value at Risk, Expected Shortfall

In 2016, Bank's market risk exposure, as measured by the Value at Risk (VaR, for one 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 Financial Markets Department (DFM), whose positions consist of trading book portfolios, amounted to 46% (PLN 2.5 million), for the Own Transactions Division in Brokerage Bureau (BM_WTW) 20% (PLN 0.2 million), while for the Treasury Department (DS), whose positions are classified solely to the banking book, it was 79% (PLN 33.3 million) for the positions without capital modelling and 60% (PLN 25.1 million) for the positions with capital modelling.

The average utilization of VaR limit for Debt Securities Issue Department (DCM) is 43% (PLN 0.8 million). The average utilisation of the VaR limit for the position of the Structured and Mezzanine Finance Department (DFS) accounted for 16% (PLN 8 thousand).

In 2016, 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 Treasury Department and the trading book portfolios and interest rate exchange positions managed by Financial Markets Department.

The DFM portfolios of instruments sensitive to changes in exchange rates like FX spots, 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.

mBank VaR and ES

The tables below present VaR and Expected Shortfall statistics for the Bank's portfolio.

PLN 000's	2016				2015			
	31.12.2016	Mean	Maximum	Minimum	31.12.2015	Mean	Maximum	Minimum
VaR IR	12 903	13 721	18 454	11 042	13 688	16 085	23 329	12 739
VaR FX	772	547	816	351	496	685	1 096	453
VaR EQ	199	214	791	62	79	5 170	6 588	67
VaR CS	21 249	27 172	30 150	19 856	26 320	23 916	26 345	20 426
VaR	**28 037**	**35 306**	**40 726**	**27 124**	**29 943**	**27 877**	**34 881**	**21 266**
ES	**42 093**	**42 983**	**49 041**	**38 046**	**40 007**	**37 576**	**45 102**	**28 954**

VaR IR – interest rate risk
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 one-day holding period) and Expected Shortfall for mBank Group (i.e. mBank, mBank Hipoteczny, mLeasing) in 2016 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), and equity prices risk (VaR EQ). 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**

For comparison, at the end of 2015 VaR for the mBank Group was PLN 30 158 thousand, including VaR for mBank at PLN 29 943 thousand, mBank Hipoteczny – PLN 99 thousand, mLeasing – PLN 273 thousands. The table below presents VaR as of the end of 2015.

PLN 000's	mBank Group	mBank	mBH	mLeasing	DM mBanku
VaR IR Mean	16 437	16 085	29	348	7
VaR FX Mean	687	685	23	17	22
VaR EQ mean	5 192	5 170	0	0	98
VaR CS Mean	23 916	23 916	0	0	0
VaR Mean	28 265	27 877	40	349	100
VaR Maximum	35 005	34 881	492	462	161
VaR Minimum	21 591	21 266	12	241	47
VaR	**30 158**	**29 943**	**99**	**273**	**56**

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 mean	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**

For comparison, the values of Expected Shortfall as of the end of 2015 are presented in table below.

PLN 000's	mBank Group	mBank	mBH	mLeasing	DM mBanku
ES średni	37 822	37 576	55	440	139
ES max	45 275	45 102	558	584	208
ES min	29 198	28 954	16	325	74
ES (31.12.2015)	**40 232**	**40 007**	**114**	**365**	**95**

Stressed Value at Risk

The new Value at Risk in stressed conditions was introduced from September 2015 (it is observed measure). The table below presents statistics of this measure for mBank for last quarter of 2015 and for 2016.

PLN 000's	2016				2015			
	31.12.2016	Mean	Maximum	Minimum	31.12.2015	Mean	Maximum	Minimum
Stressed VaR IR	45 288	43 671	50 339	36 293	37 742	35 742	39 293	31 053
Stressed VaR FX	2 339	1 363	2 655	576	1 338	1 376	2 933	516
Stressed VaR EQ	422	342	1 495	2	4	8 721	13 074	4
Stressed VaR CS	87 930	87 516	96 278	74 731	73 992	75 255	77 899	73 530
Stressed VaR	**124 833**	**119 771**	**130 662**	**105 462**	**103 060**	**111 038**	**116 945**	**102 035**

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**

The table below presents statistics of this measure for mBank Group for last quarter of 2015.

PLN 000's	mBank Group	mBank	mBH	mLeasing	DM mBanku
Stressed VaR IR	36 600	35 742	119	728	42
Stressed VaR FX	1 384	1 376	103	41	88
Stressed VaR EQ	8 768	8 721	0	0	75
Stressed VaR CS	75 255	75 255	0	0	0
Stressed VaR Mean	111 503	111 038	192	730	91
Stressed VaR Maximum	117 341	116 945	411	811	124
Stressed VaR Minimum	102 454	102 035	86	667	57
Stressed VaR	**103 580**	**103 060**	**406**	**720**	**113**

Economic capital for market risk

The average utilisation of limit on economic capital for market risk for mBank Group in 2016 amounted to 52% (PLN 681.5 million). The average level of economic capital for mBank was equal to PLN 668.9 million. As of end of 2016 the economic capital for market risk for mBank Group was PLN 783.0 million, and for mBank was PLN 767.3 million. For comparison, at the end of 2015 values of this measures were PLN 655.8 million and PLN 643.5 million, respectively.

Stress testing

The average utilisation of stress test limits for mBank Group in 2016 was 59% (PLN 797.2 million) for portfolio without capital modelling and 58% (PLN 788.1 million) for portfolio including capital modelling.

Average utilisation of stress test limits in mBank in 2016 amounted to 60% (PLN 776.6 million) for portfolio without capital modelling.

The average utilisation of the limits in 2016 for the Treasury Department portfolio without capital modelling was 69% (PLN 655.3 million) and 72% (PLN 692.0 million) including capital modelling. For the DFM portfolio the average utilisation was 37% (PLN 91.8 million), for BM_WTW portfolio 17% (PLN 1.3 million), for DCM portfolio 55% (PLN 33.2 million) and for DFS portfolio 33% (PLN 232 thousand). The most significant part of presented stress test values constitutes credit spread stress test for government bonds portfolio because stress test scenarios include scenario in which credit spreads increase on average by 100 bps.

The table below presents utilisation of stress test for mBank Group (without capital modelling) in 2016 in comparison to 2015:

PLN million	2016				2015			
	31.12.2016	Mean	Maximum	Minimum	31.12.2015	Mean	Maximum	Minimum
Base ST	102	87	125	26	78	111	139	72
CS ST	767	710	798	639	647	691	772	613
Total ST	**869**	**797**	**914**	**679**	**725**	**802**	**905**	**705**

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 as at 31 December 2016 and 31 December 2015. The tables bellow present assets and liabilities of the Group at balance sheet carrying amount, for each currency.

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 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**

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31.12.2015	PLN	EUR	USD	CHF	CZK	Other	Total
ASSETS							
Cash and balances with the Central Bank	5 581 797	158 265	47 965	14 535	78 932	56 639	**5 938 133**
Loans and advances to banks	891 088	674 235	167 265	2 341	107 015	55 390	**1 897 334**
Trading securities	557 541	-	-	-	-	-	**557 541**
Derivative financial instruments	2 912 454	328 614	48 001	56 263	3 996	-	**3 349 328**
Loans and advances to customers	37 075 852	16 805 432	1 749 824	19 760 541	2 845 762	196 135	**78 433 546**
Hedge accounting adjustments related to fair value of hedged items	-	-	-	-	130	-	**130**
Investment securities	29 046 825	862 205	-	-	827 919	-	**30 736 949**
Investments in joint ventures	7 359	-	-	-	-	-	**7 359**
Intangible assets	518 006	261	-	-	782	-	**519 049**
Tangible fixed assets	735 131	3 592	-	-	5 799	-	**744 522**
Other assets, including tax assets	1 199 624	70 311	56 062	16	3 707	9 410	**1 339 130**
Total assets	**78 525 677**	**18 902 915**	**2 069 117**	**19 833 696**	**3 874 042**	**317 574**	**123 523 021**
LIABILITIES							
Amounts due to the Central Bank	-	-	-	-	-	-	**-**
Amounts due to other banks	2 251 356	491 733	198 557	9 069 323	61	8 301	**12 019 331**
Derivative financial instruments	2 945 888	164 737	63 013	-	-	-	**3 173 638**
Amounts due to customers	61 949 417	12 092 703	1 752 010	532 631	4 498 170	315 935	**81 140 866**
Debt securities in issue	2 558 597	5 519 934	-	788 687	78 977	-	**8 946 195**
Hedge accounting adjustments related to fair value of hedged items - debt securities in issue	-	78 672	-	20 659	767	-	**100 098**
Other liabilities including tax liabilities	1 575 093	121 568	62 356	4 960	42 205	9 016	**1 815 198**
Provisions	219 471	4 614	695	354	280	2	**225 416**
Subordinated liabilities	1 263 940	-	-	2 563 375	-	-	**3 827 315**
Total liabilities	**72 763 762**	**18 473 961**	**2 076 631**	**12 979 989**	**4 620 460**	**333 254**	**111 248 057**
Net on-balance sheet position	**5 761 915**	**428 954**	**(7 514)**	**6 853 707**	**(746 418)**	**(15 680)**	**12 274 964**
Loan commitments and other commitments	**18 776 300**	**1 448 173**	**454 856**	**-**	**330 750**	**2 486**	**21 012 565**
Guarantees, banker's acceptances, documentary and commercial letters of credit	**3 746 579**	**1 150 464**	**161 334**	**-**	**3 542**	**19 981**	**5 081 900**

3.9. Interest rate risk

mBank S.A.

In the process of managing interest rate risk of the banking book, the risk monitoring and control functions are performed by the Financial Markets Risk Department supervised by the Vice-president of the Management Board (CRO), whereas operational management of risk positions takes place in the Treasury Department supervised by the Vice-president of the Management Board, Head of Financial Markets. This way the Bank ensures independence of risk measurement, monitoring and control functions from operational activity, which gives rise to the positions taken by the Bank.

Interest rate risk of the banking book results from the exposure of the Bank's interest income and capital to adverse change in the levels of interest rates. Guided by the KNF recommendations, in particular Recommendation G, the Bank monitors the banking book structure in terms of repricing gap as well as 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 (difference between assets, liabilities and off-balance banking book positions, measured in defined repricing buckets, based on next potential interest rate change of interest rate sensitive products), and
- the net interest income exposed to risk (EaR - Earnings at Risk – potential decrease of interest income in one year horizon due to unfavourable change of market interest rates. The measure assumes constant volume and structure of banking book, constant 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 total mBank Group exposure for interest rates for tenors above 20 years and above 30 years. As of end of 2016 utilisation of these limit for tenors above 20 years was equal to 2% (PLN 2.3 thousand), and limit for tenors above 30 years was zero and has not been exceeded.

Moreover, the Bank performs also stress test analyses aimed to estimate the impact of adverse interest rate fluctuations on net interest income and the economic value of the banking portfolio. Interest rate risk of the banking book is also quantified using market risk measures: Value at Risk and stress tests.

Exposure to interest rate risk is limited for the banking portfolio by means of repricing gap limits (management action triggers) 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 2016 and 31 December 2015, a sudden, permanent and unfavourable shift of market interest rates by 100 basis points for all maturities would result in decrease in the interest income within 12 months after the year-end date by the following amounts:

(PLN mln)	2016				2015			
	31.12.2016	Mean	Maximum	Minimum	31.12.2015	Mean	Maximum	Minimum
PLN	171.8	78.3	180.0	34.7	99.4	55.4	122.2	8.4
USD	9.3	7.5	13.8	1.2	3.7	2.4	7.5	0.7
EUR	64.9	70.6	142.3	50.2	52.5	37.3	63.1	0.0
CHF	0.0	4.1	21.6	0.0	2.4	8.1	38.8	0.0
CZK	3.1	4.1	7.5	2.4	2.7	2.3	4.8	1.3

To calculate these values, the Bank assumed that the structure of financial assets and liabilities disclosed in the financial statements as of above indicated dates would be fixed during the year and the Bank would not take any measures to change related exposure to interest rate change risk. In calculation there were included positions resulted from modelling of repricing period according to replicating portfolio method.

Stress tests

The Bank runs also other analyses of the changes of the economic value of the banking book under stress test scenarios. Under the stress test, which assumes unfavourable shift of the interest rates for respective currencies by 200 bps, the economic value of the banking book at the end of 2016 would change by PLN 658.12 million (at the end of 2015: PLN 497.92 million). During the calculation of these values no correlation between currencies was taken into account and it was assumed that clients interest rates cannot fall below 0.

Important position in banking portfolio, in respect of fair value calculations, is debt securities portfolio in PLN (NBP bills, Polish Treasury bonds and bills). Interest rate risk of this portfolio is calculated additionally using stress test methodology (described above in p. 3.7). The methodology includes changes of market interest rates scenarios as well as credit spread, which in case of treasury debt securities may reflect basis risk (spread changes between government 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.

As at 31 December 2016 and 31 December 2015 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)	31.12.2016	31.12.2015
for position expressed in PLN	5 732	7 518
for position expressed in USD	3	5
for position expressed in EUR	772	312

To calculate these values, the Bank assumed that the structure of financial assets and liabilities disclosed in the financial statements as of above indicated dates would be fixed during the year and the mBank Hipoteczny 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 milion at the end of 2015).

The table below presents VAR values as at 31.12.2016 and 31.12.2015, calculated using the parameters specified above.

PLN 000's	VaR	
	31.12.2016	31.12.2015
Interest rate risk	207	267
Currency risk	5	6
Total VaR	**212**	**273**

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.

31.12.2016	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**		

31.12.2015	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	2 558 894	-	-	-	-	3 379 239	**5 938 133**
Loans and advances to banks	1 462 615	131 653	119 035	10 056	-	173 975	**1 897 334**
Trading and investment securities	11 839 915	407 071	4 500 509	13 445 724	895 046	206 225	**31 294 490**
Loans and advances to customers	57 686 531	12 893 190	3 907 016	3 464 555	239 563	242 691	**78 433 546**
Other assets and derivative financial instruments	738 581	653 572	1 190 512	680 643	101 110	956 102	**4 320 520**
Total assets	**74 286 536**	**14 085 486**	**9 717 072**	**17 600 978**	**1 235 719**	**4 958 232**	**121 884 023**
LIABILITIES							
Amounts due to the Central Bank	-	-	-	-	-	-	**-**
Amounts due to other banks	5 604 991	6 390 976	21 310	-	-	2 054	**12 019 331**
Amounts due to customers	64 014 736	9 217 228	6 566 507	1 028 305	196 722	117 368	**81 140 866**
Debt securities in issue	809 068	1 350 802	1 402 511	2 952 326	2 431 488	-	**8 946 195**
Subordinated liabilities	1 435 282	1 891 372	500 661	-	-	-	**3 827 315**
Other liabilities and derivative financial instruments	607 593	670 412	1 223 740	618 912	86 002	1 731 070	**4 937 729**
Total liabilities	**72 471 670**	**19 520 790**	**9 714 729**	**4 599 543**	**2 714 212**	**1 850 492**	**110 871 436**
Total interest repricing gap	**1 814 866**	**(5 435 304)**	**2 343**	**13 001 435**	**(1 478 493)**		

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 (in ANL Stress scenario). For this reason in a market crisis scenario (ANL Stress Market scenario) and combined scenario (ANL Stress Combined) 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. Liquidity Risk from untimely repayments of the loans is related to 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 derivatives transactions concluded embedded 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 derivatives 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 Bank maintains adequate portfolio of eligible securities.

Taking into account **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 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 both 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 mBank Group Assets and Liabilities Management Committee, 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.

- **The 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 mBank Group Assets and Liabilities Management Committee, calibrating the structure of the future cash flows within the limits imposed by the Supervisory Board, Management Board and the Financial Markets Risk Committee, maintaining adequate liquidity reserves to secure liquidity within the limits imposed by the Supervisory Board, 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 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 mBank Group (in particular mBank Hipoteczny S.A.).
- **The Financial Markets Settlement and Services Department (DOF)** – is responsible for operational supervision over cash flows in accounts.
- **The Custody Services Department (DCU)** – acts in the scope of settlements of transactions on securities.
- **The Financial Markets Risk Department (DRR)** – 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 mBank Group Assets and Liabilities Management Committee. 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.
- **The Internal Audit Department (DAW)** – III line of defence, performs independent assessment of both the first and second line of defence.

mBank S.A.

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 client group (from whom acquires deposits), product and currency 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 2016, 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.

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 reflecting the Bank's liquidity situation is the mismatch account of future cash flows, and the mismatch gap related with it. 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 2016, the Bank held liquidity surplus, adequate to 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 2016, 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 scenarios are performed 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 Reserve in the market,
- use of central bank secured lending for unsold amount of liquid securities

ANL Stress Combined combines the assumption behind ANL Stress and ANL Stress Market scenarios.

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, Assets and Liabilities Committee of the mBank Group (ALCO) as well as 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 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. 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 Polish Government debt securities in PLN and EUR, bills issued by the National Bank of Poland in PLN and Czech Republic's Government debt securities in CZK. Values of these Reserves amounted to:

Value of Liquidity Reserves (in PLN million)	
31.12.2016	31.12.2015
25 034	22 900

In the Group the Liquidity Reserves are held also by mBank Hipoteczny S.A. Both mBank S.A. and mBank Hipoteczny are subject to compliance with the same regulatory measures imposed on banks. Liquidity Reserves of mBank Hipoteczny S.A. were composed of 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)	
31.12.2016	31.12.2015
1 023	675

In order to support the process of liquidity risk management, a system of early warnings 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. 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 i 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:

- concentrations 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 of 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 trading, order book depth, purchase/sale transaction spread and issue volume. The measurement of market liquidity is included in the ANL Base and ANL Stress risk measures, where the scenario structure provides for liquidating State 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, mBank Group and 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 Assets and Liabilities Committee of the mBank Group.

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

For the purpose of current monitoring of liquidity, the Bank establishes values of realistic, cumulated gap of cash flows misfit. The gap is calculated on the basis of contractual cash flows (Note 3.10.1). Cash flows in portfolios of non-banking customers' deposits, overdrafts and term loans are mainly 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.

Value of realistic, cumulative gap of cash flows misfit (in PLN million)				
Time range	gap (31.12.2016)		gap (31.12.2015)	
	bucket	cumulative	bucket	cumulative
up to 1 working day	8 024	8 024	10 494	10 494
up to 3 working days	7 421	15 445	(5 946)	4 548
up to 7 calendar days	380	15 825	(5 946)	4 548
up to 15 calendar days	(838)	14 987	3 610	8 158
up to 1 month	2 605	17 592	775	8 933
up to 2 months	1 003	18 595	1 637	10 570
up to 3 months	(993)	17 602	442	11 012
up to 4 months	139	17 741	427	11 439
up to 5 months	133	17 874	(256)	11 183
up to 6 months	88	17 962	74	11 257
up to 7 months	197	18 159	247	11 504
up to 8 months	181	18 340	196	11 700
up to 9 months	118	18 458	52	11 752
up to 10 months	(797)	17 661	(516)	11 236
up to 11 months	182	17 843	(1 674)	9 562
up to 12 months	(1 998)	15 845	588	10 150

The above values should be interpreted as liquidity surplus/deficit in relevant time buckets. Since 21st May 2016 the data have included Dom Maklerski mBanku, which was merged with mBank S.A. on that day. Due to the positive dynamics of non-banking term deposits and current accounts (PLN 10 billion – with fixed exchange rate as of 31 December 2016 used in calculations) exceeding dynamics of loans portfolio development (PLN 1.3 billion – with fixed exchange rate as of 31 December 2016 used in calculations) increase of liquidity level as of the end of 2016 has been noticed.

In 2016 increase of liquidity level was related to the issue of EUR 500 million of bonds under the Euro Medium Term Note Program (EMTN) by the company mFF. Decrease of the indebtedness towards main shareholder, Commerzbank A.G., is a result of repayment of CHF 800 million borrowings. Simultaneously, taking into account in cash flow mismatch cumulated gap, debt from Commerzbank remained to be repaid in 2017 in amount of CHF 750 million of borrowings and CHF 400 million of subordinated debt.

ANL methodology contains an additional component, which is aimed at preparing the Bank for a 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 2016 – PLN 966 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 2016 Bank would not have to post additional collateral due to the positive valuation of the transactions.

In 2016 Bank's liquidity remained at a safe level which was reflected in surplus of liquid assets over short-term liabilities according to ANL in various scenarios and supervisory liquidity measures.

ANL gaps mismatch in terms up to 1 month and up to 1 year within 2016 and supervisory liquidity measures M1, M2 and LCR are presented in the following table:

Measure*	2016			
	31.12.2016	Mean	Maximum	Minimum
ANL Base 1M**	20 428	16 767	21 088	12 252
ANL Base 1Y**	18 694	16 597	20 837	12 392
ANL Stress 1M**	17 579	14 473	18 903	10 377
ANL Stress 1Y**	15 845	14 303	18 473	10 109
ANL Market 1M**	17 436	13 310	18 405	9 650
ANL Combined 1M**	16 411	12 437	17 404	8 706
M1	15 117	13 570	17 974	7 681
M2	1.42	1.40	1.54	1.26
M3	4.79	4.82	5.20	4.03
M4	1.41	1.34	1.41	1.28
LCR	200%	154%	200%	126%
LCR Group ***	181%	179%	187%	173%

** ANL Base, ANL Stress, ANL Stress Market, ANL Stress Combined and M1 are shown in PLN million, M2 is a relative measure presented as a decimal, ANL Stress is limited up to 1Y, ANL Stress Market and ANL Stress Combined are limited up to 1M*

*** Means, maximums and minimums are calculated for period starting from 1st February 2016.*

**** Mean, maximum and minimum are calculated for period starting from 30th September 2016.*

Short-term liquidity supervisory measures (M1, M2) in 2016 remained on safe level with a minimum value of PLN 7,7 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 4.03 and 5.20 in 2016, whereas M4 between 1.28 and 1.41. 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 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 2016 L/D ratio improved from 96.6% to 89.4%. 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. The second largest funding source is the portfolio of long-term loans from banks (with maturities over 1 year), in particular from Commerzbank (Note 28). The loans together with subordinated loans (Note 31) 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 credit repayments. The funds obtained from the repayment of the mentioned loans are used to reduce the Bank's debt in CHF owed mBank's main shareholder. In 2016 the debt to Commerzbank AG was reduced by CHF 800 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 2016 – equivalent of PLN 4.2 billion) as well as FX swap and CIRS transactions. In 2016 mBank Group issued EUR 500 million of bonds under the Euro Medium Term Note Program (EMTN), (commitment as of the end of 2016 – EUR 1.5 billion), at the same time in 2016, the Bank recorded increase in net liabilities due to FX swap and CIRS 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.

mBank S.A.Group

Liquidity risk in mBank Group is generated mainly by mBank's items. Nevertheless, liquidity risk level in mBank Group subsidiaries, where liquidity risk was deemed significant, is also a subject to monitoring. In 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 Stress model 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 mBank Group is presented in the following table:

Value of realistic, cumulative gap of cash flows misfit (in PLN million)				
Time range	gap (31.12.2016)		gap (31.12.2015)	
	bucket	cumulative	bucket	cumulative
up to 1 working day	8 968	8 968	12 064	12 064
up to 3 working days	8 224	17 192	(5 686)	6 378
up to 7 calendar days	324	17 516	(5 686)	6 378
up to 15 calendar days	(901)	16 615	3 610	9 988
up to 1 month	2 551	19 166	761	10 749
up to 2 months	1 022	20 188	1 506	12 255
up to 3 months	(1 181)	19 007	426	12 681
up to 4 months	33	19 040	327	13 008
up to 5 months	193	19 233	(230)	12 778
up to 6 months	41	19 274	80	12 858
up to 7 months	243	19 517	253	13 111
up to 8 months	226	19 743	243	13 354
up to 9 months	135	19 878	51	13 405
up to 10 months	(845)	19 033	(485)	12 920
up to 11 months	230	19 263	(1 639)	11 281
up to 12 months	(2 093)	17 170	620	11 901

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 31.12.2016

	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

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**

Liabilities (by contractual maturity dates) as at 31.12.2015

	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	2 851 640	96 521	3 222 019	6 185 231	-	**12 355 411**
Amounts due to customers	63 745 088	7 217 641	6 974 481	5 357 648	4 754 575	**88 049 433**
Debt securities in issue	5 958	15 659	576 440	5 444 067	3 865 127	**9 907 251**
Subordinated liabilities	1 018 826	1 596	39 277	1 774 492	1 441 788	**4 275 979**
Other liabilities	1 169 584	17 687	197 087	10 046	654	**1 395 058**
Total liabilities	**68 791 096**	**7 349 104**	**11 009 304**	**18 771 484**	**10 062 144**	**115 983 132**

Assets (by remaining contractual maturity dates) as at 31.12.2015

Total assets	**21 446 385**	**5 963 310**	**20 516 069**	**51 501 499**	**46 524 777**	**145 952 040**
Net liquidity gap	**(47 344 711)**	**(1 385 794)**	**9 506 765**	**32 730 015**	**36 462 633**	**29 968 908**

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.

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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 2016 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.

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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**

31.12.2015

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)	4 405	12 096	2 815	505	-	**19 821**
Overnight Index Swaps (OIS)	78	331	616	93	-	**1 118**
Interest Rate Swaps (IRS)	74 196	360 473	692 750	1 645 746	279 670	**3 052 835**
Cross Currency Interest Rate Swaps (CIRS)	14 888	(2 452)	(18 874)	(8 278)	984	**(13 732)**
Options	(2 766)	1 377	(11 212)	(141)	(2)	**(12 744)**
Other	113	2 064	3 576	381	-	**6 134**
Total derivatives settled on a net basis	**90 914**	**373 889**	**669 671**	**1 638 306**	**280 652**	**3 053 432**

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.

31.12.2016

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**

31.12.2015

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	**15 078 298**	**4 600 883**	**8 408 120**	**1 051 490**	**-**	**29 138 791**
-inflows	**15 109 535**	**4 588 461**	**8 480 786**	**1 034 073**	**-**	**29 212 855**

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 36.

3.11. Operational risk

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

- legal risk,
- IT systems risk,
- personnel and organizational risk,
- security risk,
- compliance risk.

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

Organization 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 organizing 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 minimize 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, retail banking and trading and sales.

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.

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The following table presents the distribution of actual net losses (net of recoveries) by operational risk category, incurred by the mBank Group in 2016:

Operational risk category	Distribution	Value of net losses in relations to the value of gross profit
Crimes committed by outsiders	45%	1.3%
Customers, products and business practices	43%	1.3%
Execution, delivery and process management	2%	0.1%
Other	10%	-0.3%
Total	100%	2.4%

**in other categories recoveries were higher than losses*

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 in mBank is realized in particular in accordance with the provisions of the Compliance policy at mBank S.A., which is a set of guidelines and organisational principles, which the Bank performs fulfilling the requirements of Polish law and taking into account compliance rules of the Commerzbank Group, without prejudice to the provisions of Polish law. The Policy includes also a set of basic rules of conduct for the Bank's employees and main processes of compliance risk identification that allow to manage compliance risk on all levels of the Bank's organisation.

The 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.

Providing compliance of the Bank's internal regulations with the provisions of law (Polish and international) and adopted by the Bank standards of conduct as well as observing internal rules by the Bank employees aims to mitigate the compliance risk and to eliminate or minimize the possibility of occurrence of the following risks: legal, reputational, imposed sanctions and financial losses as well as the one resulting from discrepancies in interpretation of the law.

All the Bank employees are responsible for implementation of the provisions hereof, in line with their scope of responsibilities as well as granted authorisations.

Compliance Department is responsible for coordination and supervision of the compliance 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 risk in the compliance area,
- introducing control policies and procedures in the scope of operation of Compliance Department, to minimise the risks hereof,
- adjusting hereof and internal regulations, whose owner is Compliance Department, to the changing legal conditions and standards of conduct,

- building the compliance culture especially by preparing professional materials and organising and conducting training for the employees of the Bank in issues related to compliance processes,
- maintaining ongoing contacts with the unit responsible for the performance of the compliance area in Commerzbank AG Group for the purpose of the implementation of common standards.

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

Neither the Director nor the employees of Compliance Department execute processes which are then subject to control by Compliance Department, are involved in operation which could result in a conflict of interests with their duties performed at 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 Integrated Risk and Capital Management Department through its Validation Unit.

Integrated Risk and Capital Management Department (Validation Unit) performs 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 a proper internal regulations concerning model 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 Recommendation W requirements, published by the KNF.

Model Risk Committee plays significant role in model risk management process, which was described in the previous sections of this document. 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 companies, 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 address reputational risk in specific processes in order to protect and strengthen the good name of mBank and mBank Group.

The bank's business 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 regulatory requirements regarding 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.

In order to prevent materialization of capital risk, understood as risk resulting from the lack of sufficient capital to absorb unexpected losses, the Bank applies a capital management process.

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 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.

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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. Fair value of financial assets and liabilities

Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly 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.

	31.12.2016		31.12.2015	
	Carrying value	**Fair value**	**Carrying value**	**Fair value**
Financial assets				
Loans and advances to banks	**3 082 855**	**3 079 257**	**1 897 334**	**1 895 673**
Loans and advances to customers	**81 763 277**	**82 917 783**	**78 433 546**	**78 962 650**
Loans and advances to individuals	**47 434 490**	**48 649 710**	**44 726 181**	**45 635 346**
current accounts	5 843 990	5 885 276	5 214 087	5 283 808
term loans including:	41 590 500	42 764 434	39 512 094	40 351 538
- housing and mortgage loans	34 853 185	35 827 969	33 692 879	34 412 912
Loans and advances to corporate entities	**32 872 882**	**32 812 343**	**32 004 393**	**31 635 612**
current accounts	3 934 915	3 905 205	3 771 327	3 737 886
term loans	27 210 974	27 179 853	25 788 441	25 453 099
- corporate & institutional enterprises	5 008 394	4 975 669	5 667 803	5 591 521
- medium & small enterprises	22 202 580	22 204 184	20 120 638	19 861 578
reverse repo / buy sell back transactions	56 676	56 676	1 031 029	1 031 029
other	1 670 317	1 670 609	1 413 596	1 413 598
Loans and advances to public sector	**1 227 481**	**1 227 306**	**1 519 617**	**1 508 337**
Other receivables	**228 424**	**228 424**	**183 355**	**183 355**
Financial liabilities				
Amounts due to other banks	**8 486 753**	**8 509 677**	**12 019 331**	**11 813 534**
Amounts due to customers	**91 417 962**	**91 535 698**	**81 140 866**	**81 266 808**
Debt securities in issue	**12 660 389**	**12 909 157**	**8 946 195**	**8 890 686**
Subordinated liabilities	**3 943 349**	**3 853 900**	**3 827 315**	**3 919 644**

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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 disclosed as the present value of future cash flows using current interest rates including appropriate credit spreads and is based on the expected maturity of the respective loan agreements. 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 majority of the Group's exposures is 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 using interest rates. 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 money market rates as well as FRA and IRS contracts for appropriate currencies and maturities. In case 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.

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 2016 and 31 December 2015.

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	3 079 257	-	-	3 079 257
Loans and advances to customers	82 917 783	-	-	82 917 783
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	**85 997 040**	**-**	**-**	**85 997 040**
Total financial liabilities	**116 808 432**	**7 570 459**	**16 889 844**	**92 348 129**

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31.12.2015	Including:	Level 1 Quoted prices in active markets	Level 2 Valuation techniques based on observable market data	Level 3 Other valuation techniques
VALUATION ONLY FOR PURPOSES OF DISCLOSURE				
FINANCIAL ASSETS				
Loans and advances to banks	1 895 673	-	-	1 895 673
Loans and advances to customers	78 962 650	-	-	78 962 650
FINANCIAL LIABILITIES				
Amounts due to other banks	11 813 534	-	9 143 977	2 669 557
Amounts due to customers	81 266 808	-	1 631 894	79 634 914
Debt securities in issue	8 890 686	5 144 935	-	3 745 751
Subordinated liabilities	3 919 644	-	3 919 644	-
Total financial assets	**80 858 323**	**-**	**-**	**80 858 323**
Total financial liabilities	**105 890 672**	**5 144 935**	**14 695 515**	**86 050 222**

Level 1

Level 1 includes the fair value of bonds issued by the Bank's subsidiary mFinance France (Note 29). 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 loan received from the EIB (Note 28). 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 the fair value of 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 disclosed as the present value of future cash flows using current interest rates including appropriate credit spreads and is based on the expected maturity of the respective loan agreements. 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 mBank. To reflect the fact that the majority of the Bank's exposures is collateralised whereas the median of market quotation is centred around unsecured issues, the Group performed appropriate adjustments.

Level 3 includes also the fair value of the mortgage bonds and other debt securities issued by mBank Hipoteczny. For the valuation of 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.

Level 3 also includes 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.

Moreover, the level 3 includes 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.

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31.12.2016	Including:	Level 1 Quoted prices in active markets	Level 2 Valuation techniques based on observable market data	Level 3 Other valuation techniques
RECURRING FAIR VALUE MEASUREMENTS				
FINANCIAL ASSETS				
TRADING SECURITIES	**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	***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	**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 Quoted prices in active markets	Level 2 Valuation techniques based on observable market data	Level 3 Other valuation techniques
FINANCIAL LIABILITIES				
Derivative financial instruments	***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**	**-**

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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**
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	-
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 valuated 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 Financial Market Risk 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.

31.12.2015	Including:	Level 1 Quoted prices in active markets	Level 2 Valuation techniques based on observable market data	Level 3 Other valuation techniques
RECURRING FAIR VALUE MEASUREMENTS				
FINANCIAL ASSETS				
TRADING SECURITIES	**557 541**	**183 658**	**2 654**	**371 229**
Debt securities	***550 695***	***179 466***	**-**	***371 229***
- government bonds	178 492	178 492	-	-
- deposit certificates	73 124	-	-	73 124
- banks bonds	248 156	974	-	247 182
- corporate bonds	50 923	-	-	50 923
Equity securities	***6 846***	***4 192***	***2 654***	**-**
- listed	4 192	4 192	-	-
- unlisted	2 654	-	2 654	-
DERIVATIVE FINANCIAL INSTRUMENTS	***3 349 328***	**-**	***3 348 908***	***420***
Derivative financial instruments held for trading	***3 151 873***	**-**	***3 151 453***	***420***
- interest rate derivatives	2 783 388	-	2 783 388	-
- foreign exchange derivatives	348 317	-	348 317	-
- market risks derivatives	20 168	-	19 748	420
Derivative financial instruments held for hedging	***197 455***	**-**	***197 455***	**-**
- derivatives designated as fair value hedges	146 694	-	146 694	-
- derivatives designated as cash flow hedges	50 761	-	50 761	-
INVESTMENT SECURITIES	**30 736 949**	**22 279 327**	**7 442 384**	**1 015 238**
Debt securities	***30 537 570***	***22 278 572***	***7 442 384***	***816 614***
- government bonds	22 238 625	22 238 625	-	-
- money bills	7 442 384	-	7 442 384	-
- banks bonds	233 158	-	-	233 158
- corporate bonds	583 456	-	-	583 456
- communal bonds	39 947	39 947	-	-
Equity securities	***199 379***	***755***	**-**	***198 624***
- unlisted	199 379	755	-	198 624
TOTAL FINANCIAL ASSETS	**34 643 818**	**22 462 985**	**10 793 946**	**1 386 887**

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31.12.2015	**Including:**	**Level 1** Quoted prices in active markets	**Level 2** Valuation techniques based on observable market data	**Level 3** Other valuation techniques
FINANCIAL LIABILITIES				
Derivative financial instruments	***3 173 638***	**-**	***3 173 638***	**-**
Derivative financial instruments held for trading	***3 171 624***	**-**	***3 171 624***	**-**
- interest rate derivatives	2 811 493	-	2 811 493	-
- foreign exchange derivatives	342 407	-	342 407	-
- market risks derivatives	17 724	-	17 724	-
Derivative financial instruments held for trading	***2 014***	**-**	***2 014***	**-**
- derivatives designated as fair value hedges	2 014	-	2 014	-
Total financial liabilities	***3 173 638***	**-**	***3 173 638***	**-**
TOTAL RECURRING FAIR VALUE MEASUREMENTS				
FINANCIAL ASSETS	**34 643 818**	**22 462 985**	**10 793 946**	**1 386 887**
FINANCIAL LIABILITIES	**3 173 638**	**-**	**3 173 638**	**-**

Assets Measured at Fair Value Based on Level 3 - changes in 2015	**Debt trading securities**	**Equity trading securities**	**Derivative financial instruments**	**Debt investment securities**	**Equity investment securities**
As at the beginning of the period	**527 067**	**22**	**469**	**309 761**	**30 696**
Gains and losses for the period:	**931**	**(18)**	**(49)**	**14 312**	**160 974**
Recognised in profit or loss:	931	(18)	(49)	3 967	1 827
- Net trading income	*931*	*(18)*	*(49)*	*-*	*99*
- Gains less losses from investment securities, investments in subsidiaries and associates	*-*	*-*	*-*	*3 967*	*1 728*
Recognised in other comprehensive income:	*-*	*-*	*-*	*10 345*	*159 147*
- Available for sale financial assets	*-*	*-*	*-*	*10 345*	*159 147*
Purchases	1 870 076	-	-	308 663	9 850
Redemptions	(281 307)	-	-	(49 980)	-
Sales	(7 594 537)	-	-	(984 211)	(2 753)
Issues	5 848 999	-	-	1 218 069	-
Settlements	-	-	-	-	(381)
Transfers into Level 3	-	-	-	-	*238*
Transfers out of Level 3	-	(4)	-	-	-
As at the end of the period	**371 229**	**-**	**420**	**816 614**	**198 624**

Transfers between levels in 2015	**Transfer into level 1**	**Transfer out of level 1**	**Transfer into level 2**	**Transfer out of level 2**
Investment securities	**4**	**(238)**	**-**	**-**
Equity securities	4	(238)	-	-

In 2015, one transfer has been observed from level 1 to level 3 of fair value hierarchy which resulted from the liquidation process of the issuer.

Moreover, in 2015 there was one movement from level 3 to level 1 of fair value hierarchy which resulted from the effect of valuation techniques revision applied to minority stakes of low value held by the Group.

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: valuation techniques based on observable market data or other valuation methods 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.

Level 1

As at 31 December 2016, 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 3 503 029 thousand (see Note 19) and the fair value of investment government bonds and treasury bills in the amount of PLN 28 251 321 thousand (see Note 23) (31 December 2015 respectively: PLN 178 492 thousand and 22 238 625 thousand). Level 1 includes the fair value of corporate bonds in the amount of PLN 360 853 thousand (31 December 2015 - 0). As at 31 December 2015, the level 1 also included bonds issued by banks in the amount of PLN 974 thousand and the fair value of local government bonds in the amount of PLN 39 947 thousand.

In addition, as at 31 December 2016 level 1 includes the value of the registered privileged shares of Giełda Papierów Wartościowych in the amount of PLN 839 thousand (31 December 2015: PLN 755 thousand) and the value of the shares of listed companies in the amount of PLN 4 022 thousand (31 December 2015: PLN 4 192 thousand).

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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 vale hierarchy includes the fair values of short term bills issued by NBP in the amount of PLN 1 816 077 thousand (31 December 2015: PLN 7 442 384 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 2016 and 31 December 2015, 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 1 155 459 thousand (31 December 2015: PLN 1 187 843 thousand).

Level 3 includes also the fair value of local government bonds in the amount of PLN 36 970 thousand (31 December 2015 - 0).

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. The model has been modified in 2016 by adding an additional factor adjusting credit spreads to market levels.

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	
	31.12.2016	31.12.2015
Credit institutions	3 402	1 549
Non-financial customers	6 254	2 537
Total	**9 656**	**4 086**

Moreover, level 3 covers mainly the fair value of equity securities amounting to PLN 65 261 thousand (31 December 2015: PLN 198 624 thousand). As at 31 December 2016, these amount includes the value of preferred stock in Visa Inc. in the amount of PLN 38 392 thousand. As at 31 December 2015 this amount included the value of Visa Europe Ltd. shares in the amount of PLN 167 243 thousand which was valuated at fair value on the basis on information held by the Bank in connection with the takeover transaction of Visa Europe Ltd by Visa Inc. The other equity securities presented at level 3 have been valuated 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.

3.17. Other activities

The Group provides custody, trustee, corporate administration, investment management and advisory services to third parties. In connection with these, the Group makes decisions concerning the allocation, purchase and sale of a wide variety of financial instruments. Assets held in a fiduciary capacity are not included in these financial statements.