

## 2. RISK MANAGEMENT IN THE GROUP

### 2.1. RISK MANAGEMENT PRINCIPLES

The Group is subject to several different risks related with the development of its activities. The risk management of the Group's several companies complies with the control and report principles, methodologies and procedures which are defined in a centralised manner, in coordination with the respective local departments and taking into consideration the specific risks of each business.

The Group's risk management policy aims at the identification, assessment, follow-up and control of all material risks that the institution faces, both internally and externally, so as to ensure that the same are kept in levels that match the risk tolerance pre-defined by the management body.

Thus, it is particularly relevant to monitor and control the major types of risk – particularly the credit, market, operational and liquidity risks and the risks related with the pension fund - inherent to the Group's activities. These can be defined as follows:

- Credit risk – credit risk reflects the potential losses and the degree of uncertainty regarding the future returns to be generated by the loan portfolio, due to the inability of borrowers (and of their guarantors, if any), issuers of securities or counterparties to agreements, to fulfil their obligations.
- Market risk – market risk consists of the potential losses that might occur in a given portfolio, as a result of changes in interest or exchange rates and/or in the prices of the different financial instruments of the portfolio, considering either the correlations that exist between those instruments or its volatility.
- Operational risk – operational risk consists in the occurrence of losses as a result of failures and/or inadequacies of internal processes, people or systems or due to external events.
- Liquidity risk – liquidity risk reflects the Group's potential inability to meet its obligations at maturity without incurring significant losses, resulting from a deterioration in funding conditions (funding risk) and/or from the sale of its assets below market values (market liquidity risk).
- Defined benefit pension fund risk – pension fund risk stems from the potential devaluation of the Bank's Defined Benefit Pension Fund, or from the decrease of its expected returns, implying the undertaking of unplanned contributions.

Credit, market and operational risks were object of own funds requirements calculation within the scope of the regulatory information on capital adequacy of Basel's Pillar I, while liquidity risk is quantified through the ratios defined by the CRR/CRD IV. All of these risks and the pension fund risk are addressed within the scope of the stress testing included in the Group's Funding and Capital Plan.

The following highlights should be made, concerning the developments and actions in prudential activities/risk management in 2017:

- Undertaking of the internal developments necessary for the implementation of IFRS9, together with the participation in the impact studies regarding this new framework, with report to EBA;
- Execution of the stress testing exercise of 2017, specifically regarding the interest rate risk of the banking book;
- Approval of the new risk taxonomy for ICAAP(\*) purposes, with the identification and quantification of risks within the scope of this process and execution of Pillar 2 report;
- Supervisory approval of the new Retail LGD/ELBE models of Bank Millennium (Poland);
- Supervisory approval of the IRB approach for financial assets stemming from the Group's participation (in Portugal) in Collective Investment Undertakings;
- Submission of authorisation request for the PPU (Permanent Partial Use) of the standard approach for exposures related to tariffs' credits over the national electricity system and for intra-group credit exposures;
- Submission of authorisation requests for material changes to LGD/ELBE Retail and Corporate models for Portugal, with new estimates and segmentations for these parameters. The authorisations for the Retail LGD/ELBE models were granted at the beginning of 2018;
- Implementation of updates to the internal market risk model (VaR);

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(\*) *Internal Capital Adequacy Assessment Process.*

- Implementation of a software solution to support the management and registration of internal models (MRM), aiming at the reinforcement of model risk governance practices;
- Launching of the BCBS 239 (Principles for effective risk data aggregation and risk reporting) Project and nomination of the Chief Data Officer (CDO), in view of the Bank's compliance with the principles of the Basel

## 2.2. RISK MANAGEMENT GOVERNANCE

The corporate bodies are the Board of Directors – composed of non-executive and executive directors, the latter being an Executive Committee –, an Audit Committee, composed of non-executive directors, and a Statutory Auditor. The Bank also has a Remuneration and Welfare Board and a Board for International Strategy.

Millennium bcp's Board of Directors (BoD) is ultimately responsible for the risk management policy comprising the approval of high level principles and rules of risk management, the Executive Committee being responsible for carrying out that policy and for the executive decision regarding measures and actions related to risk management.

The Audit Committee stems from the BoD and is entrusted with matters concerning the supervision of management, namely the correct functioning of the risk management and control systems, as well as the existence and abidance by adequate compliance and audit policies at the Group and entity levels.

The BoD also designated a Risk Assessment Committee which is responsible for advising the Board on issues related with the definition of the risk strategy and the management of capital, liquidity and risk.

The Executive Committee appointed a Risk Commission that is responsible, at an executive level, for monitoring global credit, market, liquidity and operational risk levels (ensuring that these are compatible with the goals, financial resources available and strategies approved for the development of the group's activity), from a standpoint of support to decision-making regarding management and promotion of a better connection between current management decisions.

The Bank also has three specialised Commissions: the Credit at Risk Commission, the Pension Fund Risk Monitoring Commission and the Internal Control and Operational Risk Monitoring Commission.

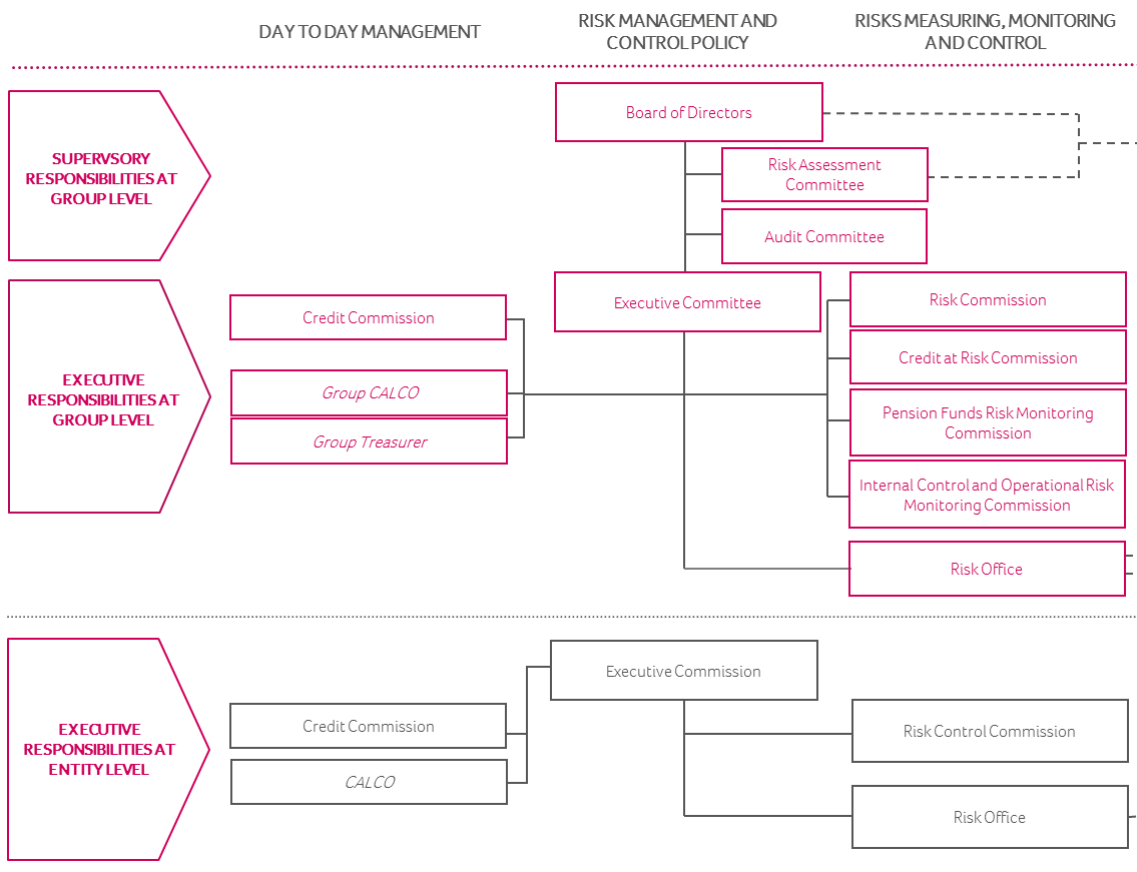
The Risk Office gives support to the Risk Commission, informing this body on the general level of risk and proposing measures to improve its respective control, implementing the approved limits. The responsible for the Risk Office also has the power to veto any decision that is not subject to the approval of the Board of Directors or of the Executive Committee and that may have an impact on the Group's risk level.

All entities included in the Bank's consolidation perimeter guide their activities by the principles and guidelines centrally established by the Risk Commission and all the main subsidiaries abroad have local Risk Office structures established in accordance with the risks inherent to their respective activities. Those subsidiary companies also have a Risk Control Commission responsible for controlling risk locally.

By delegation of the Board of Directors, the Group CALCO (Capital, Assets and Liabilities Management Committee) was responsible for the management of the overall capital of the Group, the management of assets and liabilities and the definition of the liquidity management strategies at the consolidated level. The Group CALCO was responsible for the structural management of market and liquidity risks, including the monitoring of the liquidity plan execution, definition of transfer prices and capital allocation rules, decision making and monitoring of the coverage of specific positions and of the Investment Portfolio.

The next diagram illustrates the risk management governance framework, which includes the above referred bodies, as well as the Credit Commission – responsible for the assessment and decision on credit granting applications from the Bank's Clients.

**TABLE 6 – RISK MANAGEMENT MODEL**



**2.3. RISK ASSESSMENT**

**2.3.1. CREDIT RISK**

The granting of credit is based on the prior classification of the Customer’s risk and on the strict assessment of the protection level given by underlying collaterals. For that purpose, a single system of risk classification is used, the Rating Master Scale, based on the expected Probability of Default (PD), enabling a greater capacity to evaluate and classify the Customers and grade the associated risk.

The Rating Master Scale also enables the Bank to identify Customers that show signs of degradation in their capacity to service their debts and, in particular, those who are classified, within the prudential scope, as being in default. All the rating models and systems used in the Group have been duly weighted for the Rating Master Scale. The Group also uses an internal scale of protection levels as a crucial element in the assessment of the collateral efficiency in the mitigation of the credit risk, promoting a more active credit collateralisation and a better adequacy of the pricing to the incurred risk.

Aiming at the best possible adequacy of credit risk assessment, the Group has defined a series of client macro-segments and segments which are treated under different rating systems and models and support the links between internal ratings (risk grades) and Clients PD, ensuring that the risk assessment takes into account the specific characteristics of the Customers, in terms of their respective risk profiles.

The assessments made by the rating systems and models referred above are translated into the risk grades of a transversal Master Scale, with fifteen levels, of which the last three correspond to situations of relevant deterioration in Customer creditworthiness, called "procedural risk grades". Non-processual risk grades are attributed by rating systems models with automatic decision or by the Rating Department and are revised/updated periodically or whenever justified by events.

The internal estimates of Loss Given Default (LGD) and Credit Conversion Factors (CCF) are supported by internal approaches validated by the Supervisor in the scope of the approval of the IRB based approaches. The LGD estimations are produced by resorting to a model that collects and analyses the history of losses due to credit risk and discounts all the cash flows inherent to the respective recovery processes while the CCF own estimations result from the analysis made to data on the use of credit lines and limits or from the execution of the collateral provided for a time horizon of one year before the occurrence of the defaults. The CCF own estimations (or the regulatory values for these factors) apply to all off-balance sheet exposures.

The stage of development of the processes and systems allocated by the Group to credit risk management and control enabled the Supervisor to approve the Group's application for the use of the IRB approach for the calculation of the regulatory capital requirements for this type of risk and for the main risk classes, with effect as of 31 December 2010 for the Group's activities in Portugal, which was followed by the joint authorisation given by the Polish and Portuguese supervision authorities for the sequential adoption of that approach for Bank Millennium (Poland), effective as at 31 December 2012. Effective from 31 December 2013, the Supervisor has approved, for the Group activities in Portugal, the use of own LGD estimates for the Corporates risk class (IRB Advanced), as well as internal rating models with own LGD estimates for the real estate promotion Clients.

The Group follows a policy of permanent monitoring of its credit risk management processes, promoting their fine-tuning and every appropriate change aiming to reinforce the quality and effectiveness of those processes.

### **2.3.2. MARKET RISK**

The Trading Book portfolio is composed by positions held with the aim of obtaining short-term gains, through sale or revaluation. These positions are actively managed, traded without restrictions and can be precisely and frequently evaluated. The positions in question include securities and derivatives related to sales activities. The Banking Book portfolio includes all the other positions, namely the wholesale financing, the securities held for investment, the commercial activity and the structural activity.

In order to ensure that the risks incurred in the portfolios of the Group are in accordance with the Group's risk tolerance levels, several limits are defined for market risks (reviewed at least once a year) and are applied to all portfolios that, in accordance with the management model, might incur these risks.

The definition of these limits is based on the market risk metrics used by the Group in its control and monitoring, which are followed by the Risk Office on a daily basis (or intra-daily, in the case of the financial markets areas - Trading and Funding).

In addition to these risk limits, stop loss limits are also defined for the financial markets areas, based on multiples of the previously defined risk limits, aiming at limiting the maximum losses which might occur within each of the areas. When these limits are reached, a review of the management strategy and assumptions for the positions in question must be undertaken.

The Group uses an integrated market risk measure that allows the monitoring of all the relevant sub-types of risk considered. This measure covers the evaluation of the following types of risk: generic risk, specific risk, non-linear risk and commodities' risk. The measurement used on the assessment of the generic market risk - relative to interest rate risk, exchange rate risk, equity risk and price risk of Credit Default Swaps uses a VaR (Value at Risk) model based on the analytical approximation defined in the methodology developed by RiskMetrics, where the calculation considers a time horizon of ten business days and a significance level of 99%.

A model is also used to assess the specific risk existing due to the ownership of securities (bonds, shares, certificates, etc.) and of derivatives which performance is directly related with the securities' value. With the necessary adjustments, this model follows the standard methodology defined in the applicable regulation in force, stemming from the Basel Agreement.

Other complementary methods are also applied to the remaining risk types, namely a non-linear risk measure that incorporates the option risk not covered by the VaR model, with a confidence interval of 99%, and a standardised approach for the commodities risk. These measures are integrated in the market risk indicator, with the conservative assumption of perfect correlation between the several risk types (worst-case scenario).

The amounts of capital at risk are thus determined, both on an individual basis, for each of the portfolio positions of the taking and managing risk areas, and in consolidated terms, considering the effects of diversification of the various portfolios.

In order to ensure that the internal VaR model is adequate to assess the risks involved in the positions held, there is a process of backtesting, carried out daily through which the VaR indicators are confronted with those that really occurred. This backtesting is made in a hypothetical manner (using the static portfolio for the estimation of the VaR and the market variations occurred in the meantime) and in a real manner (using the real result of the portfolio, writing off the intermediation results).

The interest rate risk derived from the operations of the Banking Book is assessed through a process of risk sensitivity analysis, undertaken every month, covering all the operations included in the Group's consolidated Balance Sheet.

This analysis considers the financial characteristics of the contracts available at the Group management information systems. Based on these data, the respective projection of expected cash flows is carried out, according with the repricing dates and any prepayment assumptions considered.

The aggregation, for each of the currencies assessed, of the expected cash flows for each of the periods of time, allows the determination of the interest rate gaps by repricing period.

The sensitivity of each currency to the interest rate risk is determined by the difference between the present value of the interest rate mismatch, discounted at market interest rates, and the present value of the same cash flows arising from the simulation of parallel shifts of the yield curves.

Complementing the previous approach, the Bank monthly calculates the impact on net interest margin projected for the following 12 months, due to changes in market interest rates (NII method). For this purpose, all assets, liabilities and off-balance products that generate interest are considered and the calculation on interest cash flows is performed based on the repricing and amortisation characteristics of the products and on yield curves for 12 months projected in accordance with the “cash and carry trade” and “non-arbitrage principle” methods. This exercise assumes a static balance for 12 months in which, for each amortisation, an exposure with the same maturity and proce features is generated.

The Group performs hedging operations with the market on a regular basis, aimed at reducing the interest rate mismatch of risk positions associated to the portfolio of the commercial and structural areas.

In the context of market risk management, in 2017, the Group continued its efforts to continually improve the market risk management framework, leading to the reinforcement of the control mechanisms of the assumptions of the internal model used (VaR - Value at risk), the update of Risk Appetite for market risk, namely the revision of the limits established for the different areas, and to the revision and formalisation of internal manuals that define the operationalisation of market risks' control in consonance.

Among its main responsibilities, the Bank's Market and Liquidity Risks Area is responsible for:

- Proposing and implementing market risks' management policies and methodologies for their identification, measurement, limitation, monitoring, mitigation and reporting;
- Participating in the structural management of market risks, particularly in the planning process;
- Measuring, monitoring and reporting risk positions and the results of stress tests exercises, as well as the compliance with the established internal limits;
- Modelling the market risks' management system and ensuring its reviews;
- Reporting to the Executive Committee any excess over limits, as well as verifying the compliance with the required ratification and approval processes;
- Verifying the operating implementation, within the front-office platform, of the market risks' management system;
- Analysing new products prior to their launching; and
- Coordinating with the relevant Group entities the definition of the negotiation strategies, validating their compliance with the defined policy and limits.

On the other hand, the Risk Office (in which the Market and Liquidity Risks Area is integrated) acts independently – both organically and functionally - from all market risks takers, which reinforces the autonomy of its management functions, oriented towards a risk profile in accordance with the Group's strategic goals.

### **2.3.3. OPERATIONAL RISK**

For the management and control of operational risk, the Group has increasingly adopted a set of clearly defined principles, practices and control mechanisms that are documented and implemented, of which the following are examples: segregation of functions; definition of lines of responsibility and corresponding authorisations; definition of limits of tolerance and of exposure to risk; codes of ethics and conduct; implementation of KRI (Key Risk Indicators)<sup>1</sup>; access controls, physical and logical; reconciliation activities; exception reports; new products' structured approval process; contingency plans; insurance policies (for the total or partial risks transfer); and internal training on processes, products and systems.

Hence, aiming at an increasingly higher efficiency in the identification, assessment, control and mitigation of risk exposures, the Group has been strengthening its operational risk management framework, which encompasses the main operations abroad, benefiting from the adoption of a common supporting IT application in all the subsidiaries and the monitoring performed by the Group Risk Office.

Operational risk management is based on an end-to-end process structure, defined for all the subsidiaries of the Group, providing a broader perception of the risks and of the measures implemented so as to mitigate them and result in an integrated vision of the activities undertaken along the value chain of each process.

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<sup>1</sup> The monitoring of the KRI metrics enables the identification of changes in the risk profile or in the efficiency of the controls, providing the detection of opportunities for the launching of corrective actions to prevent effective losses. This management tool is used for all processes of the main Group geographies.

The group of processes defined for each entity is dynamic, adjusted and differentiated according to changes in the operational practices and business of each entity, so as to cover all the relevant activities developed. The processes review is ensured by dedicated organisational units.

The responsibility for the management of the processes is attributed to process owners, whose mission is to: characterise the operational losses captured in the context of their processes; perform the risks self-assessment (RSA); identify and implement the appropriate measures to mitigate risk exposures, contributing to strengthen the internal control environment; and monitor the KRI.

The objective of the risks self-assessment (RSA) is to promote the identification and mitigation (or even elimination) of risks, actual or potential, within each process. Each risk is classified according to its positioning on a tolerance matrix, for three different scenarios, which allows for the: determination of the risk of the process without considering the existent contracts (Inherent Risk); assessment of the risks exposure of the different processes, considering the influence of existing controls (Residual Risk); and identification of the impact of the improvement opportunities in the reduction of the most significant exposures (Target Risk).

The RSA exercises are based on workshops, attended by the Risk Office and with the participation of the process owners and process managers, or on questionnaires sent to the process owners for the updating of previous results, according to pre-defined updating criteria.

The process owners play a relevant role in promoting the data collection on losses occurring within the context of their processes, which are identified through the systematic monitoring of their activities, through notifications of any employee or through communications from organisational units, following costs authorizations concerning operational flaws. The Risk Office ensures the completeness of the database, notifying process owners about events that are not yet registered in the database by using information made available by other areas, such as accounting, complaints and insurance.

The main objective of data collection on operational loss events is to strengthen awareness of this type of risk and provide relevant information to the process owners, to be incorporated in the management of their processes, and to provide support for backtesting the results of the RSA.

The identified operational losses are related to each process and recorded in the Group's operational risk management IT application, being characterised by their respective process owners and process managers.

The full characterisation of an operational loss includes, in addition to the description of the respective cause-effect, its valuation and, when applicable, a description of the identified mitigation action (based on the analysis of the cause of loss) which was or will be implemented.

The consolidation of the loss data capture process at the different subsidiaries of the Group is evidenced by the evolution of its respective records in the database. Uniformity of criteria in data capture is ensured by the Group Risk Office, which analyses loss events data and promotes the circulation of information on the mitigation of events throughout all the geographical areas in which the Group operates. Furthermore, processes aimed at the reconciliation of the recorded information on losses with accounting data are run.

In 2017, the usual operational risk management activities continued to be carried out by the various intervenient involved in the management of this risk, aiming at an efficient and systematic identification, evaluation, mitigation and control of exposures, as well as their respective internal reporting (to the management bodies) or within the regulatory domain. Due to their relevance for operational risk management, it is important to highlight the launching of initiatives aimed at strengthening the mechanisms for a more efficient control of outsourcing risk, namely, the issuance of an internal regulation and the definition of performance and risk indicators for the monitoring of the outsourcers service levels within the scope of processes.

#### **2.3.4. LIQUIDITY RISK**

Liquidity risk is the potential inability of the Group to meet its liabilities concerning funding repayment without incurring in significant losses, whether due to the deterioration of funding conditions (funding risk) or due to the sale of assets for amounts below market value (market liquidity risk).

The liquidity risk assessment is based on the regulatory framework, as well as on other internal indicators for which exposure limits have also been defined.

The evolution of the Group's liquidity situations for short-term horizons (up to three months) is carried out daily on the basis of two internally defined indicators - the immediate liquidity and the quarterly liquidity. These indicators measure the maximum fund-taking requirements that might occur in one day, considering the cash flow projections for the periods of, respectively, three days and three months.

These operational liquidity indicators are calculated by adding to the liquidity position registered on the assessment date the future cash flows estimated for each one of the days of the respective timeframe (three days or three months) for the group of operations intermediated by the market areas, including the operations made with Customers from the Corporate and Private networks that given their dimension are mandatorily listed by the Trading Room. To the value thus estimated one adds the amount of assets considered highly liquid that are in the

Bank's securities portfolio, determining the accumulated liquidity gap in each one of the days of the timeframe under analysis.

Regarding the evolution of the Group's structural liquidity, a number of indicators are included - such as the Loans-to-Deposits Ratio, the LCR (Liquidity Coverage Ratio) and the NSFR (Net Stable Funding Ratio) - as well as the available collateral eligible for discount at central banks. These indicators are regularly monitored and reported to the Bank's management bodies. Some of the liquidity indicators structure are metrics integrated in the Group's Risk Appetite Statement.

Liquidity risk management also includes the preparation of an annual liquidity plan defining the desired financing structure for the expected evolution of the Group's assets and liabilities, including a set of initiatives and an actions plan to achieve the financing structure at both Group level and for the major subsidiaries and currencies. This plan is an integral part of the Group's planning process and is approved simultaneously with final budget approval.

At the same time, the Bank regularly monitors the evolution of the Group's liquidity position, with the identification of all factors that may justify the variations occurred. This analysis is submitted to the appraisal of the CALCO, aiming at making decisions that enable to maintain financing conditions suitable for the development of the activity. The control of the exposure to liquidity risk pertains to the Risk Commission.

### **2.3.5. DEFINED BENEFIT PENSION FUND RISK**

The defined benefit pension fund risk stems from the potential devaluation of the Bank's Defined Benefit Pension Fund, or from the decrease of its expected returns as well as from changes on the actuarial factors used on the fund projections, implying the necessity of unplanned contributions. The Pension Funds Risk Monitoring Commission is responsible for the regular monitoring and follow-up of this risk.