

4. Risk

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4.1. General Risk Management and Control Model

The BBVA Group has a general risk management and control model (hereinafter, the "Model") that is appropriate for its business model, its organization, the countries where it operates and its corporate governance system. This model allows the Group to carry out its activity within the management and risk control strategy and policy defined by the corporate bodies of BBVA (considering sustainability specifically) and to adapt itself to a changing economic and regulatory environment, facing this management at a global level and aligned to the circumstances at all times.

The Model, for which the Group's Chief Risk Officer (CRO) is responsible and that must be updated or reviewed at least annually, is fully applied in the Group and it comprises the following basic elements:

- Governance and organization
- Risk Appetite Framework
- Assessment, monitoring and reporting
- Infrastructure.

The Group promotes the development of a risk culture that ensures a consistent application of the Model in the Group, and that guarantees that the risks function is understood and internalized at all levels of the organization.

4.1.1. Governance and organisation

The risk governance model in the BBVA Group is characterized by a special involvement of its corporate bodies, both in setting the risk strategy and in monitoring and supervising its implementation on an ongoing basis.

Thus, and as explained below, the corporate bodies are responsible for approving the risk strategy and the general policies for the different types of risks. Global Risk Management (hereinafter, GRM) and Regulation & Internal Control (including, among other areas, Non-Financial Risks) are the functions responsible for its implementation and development, with the appropriate reporting to corporate bodies.

Responsibility for day-to-day management of risks falls on business and corporate areas, the activities of which adhere to the general policies, regulation, infrastructures and controls that, based on the framework set by corporate bodies, are defined by GRM and Regulation & Internal Control in their corresponding areas of responsibility.

To carry out this work adequately, the financial risks function in the BBVA Group has been set up as a single, global function and independent from commercial areas.

The head of the financial risks function at an executive level, is the Group's Chief Risk Officer, who is appointed by the Board of Directors as a member of its senior management, and reports directly on the development of the corresponding functions to the corporate bodies. The Chief Risk Officer, for the best fulfilment of the functions, is supported by a structure consisting of cross-cutting risk units in the corporate area and specific risk units in the Group's geographical and/or business areas.

In addition, and with regard to non-financial risks and internal control, the Group has a Regulation & Internal Control area independent from the rest of units and whose head (Head of Regulation & Internal Control) is also appointed by the Board of Directors of BBVA and reports directly to corporate bodies on the performance of its functions. This area is responsible for proposing and implementing non-financial risks policies and the Internal Control Model of the Group, and it is composed by, among other, the Non-Financial Risks, Regulatory Compliance and Risk Internal Control units.

The Risk Internal Control unit, within the Regulation & Internal Control area and, therefore, independent from the financial risks function (GRM), acts as a control unit for the activities carried out by GRM. In this regard, and without prejudice to the functions performed in this regard by the Internal Audit area, Risk Internal Control checks that the regulatory framework, the models and processes and established measures are sufficient and appropriate for each type of financial risk. It also monitors its implementation and operation, and confirms that those decisions taken by GRM are taken independently from the business lines and, in particular, that there's an adequate segregation of functions between units.

Governance and organizational structure are basic pillars for ensuring an effective risk management and control. This section summarizes the roles and responsibilities of the corporate bodies in the risks area, of the Group's Chief Risk Officer and, in general, of the risks function, its interrelation and the parent-subsiary relationship model in this area and the group of committees, in addition to the Risk Internal Control unit.

Corporate Bodies of BBVA

According to the corporate governance system of BBVA, the Board of Directors of the Bank has certain reserved competencies, concerning management, through the implementation of the corresponding most relevant decisions, and concerning supervision and control, through the monitoring and supervision of implemented decisions and management of the Bank.

In addition, to ensure adequate performance of the management and supervision functions of the Board of Directors, the corporate governance system

contemplates the support activity carried out by the Risk and Compliance Committee (CRC), as well as by other committees that assist the Board. For reasons of speciality of the matter, in accordance with the functions established in its own regulations.

With regard to risks, the Board of Directors' competencies are those relating to establishing the policy for controlling and managing risk and the oversight and control of its implementation.

In carrying out these functions, the Board relies on the Risk and Compliance Committee, which monitors the evolution of all the Group's financial and non-financial risks, with a global and transversal vision, and their degree of adequacy with the defined strategies and policies and the Group's Risk Appetite Framework. Added to this are the functions regarding specific non-financial risks that, due to their speciality, the Board has assigned to other committees, such as: (i) non-financial risks of an accounting, tax and reporting nature, by the Audit Commission; (ii) technological and cybersecurity risks, by the Technology and Cybersecurity Commission; and (iii) reputational and business risks, by the Permanent Delegate Committee, which thus complement the overall supervision of the Group's set of financial and non-financial risks carried out by the Risk and Compliance Committee, for which purpose it coordinates between the different Board committees through different reports, in addition to the cross composition of the Board committees.

The involvement of the corporate bodies of BBVA in the control and management of the risks of the Group is detailed below:

Board of Directors

The Board of Directors is responsible for establishing the risk strategy of the Group and, in this role, it determines the control and risk management policy, through the following documents:

- The Risk Appetite Framework of the Group, which includes in the one hand the risk appetite statement of the Group, that is, the general principles governing the risk strategy of the Group and its target profile; and, on the other hand, and based on the above mentioned risk appetite statement, a set of quantitative metrics (core metrics, and their corresponding statements, and by type of risk metrics), reflecting the risk profile of the Group;
- the framework of management policies of the different types of risk to which the Bank is or could be exposed, which contain the basic lines for managing and controlling risks in a uniform way across the Group and consistently with the Model and Risk Appetite Framework;
- and the General risk management and control model described above.

All of the above in coordination with the rest of prospective-strategic decisions of the Bank, which includes the Strategic Plan, the Annual Budget, the Capital Plan and the Liquidity & Funding Plan, in addition to the rest of management objectives, whose approval is a responsibility of the Board of Directors.

In addition to defining the risk strategy, the Board of Directors (in the performance of its risks monitoring, management and control tasks) also monitors the evolution of the risks of the Group and of each main geographical and/or business area, ensuring compliance with the Risk Appetite Framework of the Group; and also supervising the internal information and control systems.

For the development of all these functions, the Board of Directors is supported by the CRC and the CDP, which are responsible for the functions detailed below.

Risk and Compliance Committee

The CRC is, according to its own charter, composed of non-executive directors and its main purpose is to assist the Board of Directors on the establishment and monitoring of the risk control and management policy of the Group.

For this purpose, it assists the Board of Directors in a variety of risk control and monitoring areas, in addition to its analysis functions, based on the strategic pillars established at all times by both the Board of Directors and the CDP, the proposals on the strategy, control and risk management of the Group, which are particularly specified in the Risk Appetite Framework and in the "Model". After the analysis, the Risk Appetite Framework and Model proposal is submitted to the Board of Directors for consideration and, where appropriate, approval purposes.

In addition, the CRC proposes, in a manner consistent with the Risk Appetite Framework of the Group approved by the Board of Directors, the control and management policies of the different risks of the Group, and supervises the information and internal control systems.

With regard to the monitoring of the evolution of the risks of the Group and their degree of compliance with the Risk Appetite Framework and defined general policies, and without prejudice to the monitoring task carried out by the Board of Directors and the CDP, the CRC carries out monitoring and control tasks with greater frequency and receives information with a sufficient granularity to achieve an adequate performance of its duties.

The CRC also analyzes all measures planned to mitigate the impact of all identified risks, should they materialize, which must be implemented by the CDP or the Board of Directors, as the case may be. The CRC also monitors the procedures, tools and measurement indicators of those risks established at a Group level in order to have a comprehensive view of the risks of BBVA and its Group,

and monitors compliance with the regulation and supervisory requirements in terms of risks.

The CRC is also responsible for analyzing those project-related risks that are considered strategic for the Group or corporate transactions that are going to be submitted to the Board of Directors of the CDP, within its scope of competence.

In addition, it contributes to the setting of the remuneration policy, checking that it is compatible with an appropriate and effective management of risks and that it does not provide incentives to take risks breaching the level tolerated by the Bank.

Lastly, the CRC ensures the promotion of the risk culture in the Group.

In 2022, the CRC has held 22 meetings.

Executive Committee

In order to have a comprehensive and complete vision of the progress of the Group's business and its business units, the CDP monitors the evolution of the risk profile and the core metrics defined by the Board of Directors, being aware of any potential deviation or breach of the metrics of the Risk Appetite Framework and implementing, when applicable, the appropriate measures, as explained in the Model.

In addition, the CDP is responsible for proposing the basis for developing the Risk Appetite Framework, which will be established in coordination with the rest of prospective/strategic decisions of the Bank and the rest of management objectives.

Lastly, the CDP is the committee supporting the Board of Directors in decisions related to business risk and reputational risk, according to the dispositions set out in its own charter.

Parent-subsidiary risk relationship model

In accordance with the provisions of the BBVA Group's General Corporate Governance Policy, for integrated management and supervision in the Group, the Group has a common management and control framework, consisting of basic guidelines (including strategic-prospective decisions) and General Policies, established by BBVA's corporate bodies for the Group.

For the purpose of transferring the risk strategy and its management and control model to the different subsidiaries of the BBVA Group and their corresponding specific risk units, a parent-subsidiary relationship model has been designed within the scope of risk management and control in the BBVA Group.

This relationship model implies a minimum catalog of decisions that must be adopted by the corporate bodies of the subsidiaries in terms of risks in order to provide them with an adequate governance model coordinated

with the parent company. It will be the responsibility of the head of the Risk function (GRM) of each subsidiary to formulate the proposals that proceed to the corresponding corporate body for its consideration and, where appropriate, approval, according to the scope of functions that apply.

The approval of these decisions by the corporate bodies of the subsidiaries obliges the risk units of the geographical areas to carry out a risk monitoring and control plan before their corporate bodies.

Notwithstanding the foregoing, it is considered necessary that certain decisions regarding risks reserved for the consideration of the corresponding corporate bodies of the subsidiary for their approval, are also subject to the approval of the corporate bodies of BBVA, in accordance with what is established regulations at all times.

In the specific case of BBVA, S.A., what is described in this document regarding the coordination of the local risk management function with the risk function of the parent company BBVA, S.A. is applicable (as in any subsidiary of the Group). And with regard to the decisions that the corporate bodies of the subsidiaries must adopt, in this case it is the responsibility of the head of the Risk function of BBVA, S.A. (GRM) formulate the proposals that proceed to the corresponding corporate body for its consideration and, where appropriate, approval, according to the scope of functions that apply.

Chief Risk Officer of the Group

The Group's Chief Risk Officer (CRO) is responsible for the management of all the financial risks of the Group with the necessary independence, authority, rank, experience, knowledge and resources. The CRO is appointed by the Board of Directors of BBVA and has direct access to its corporate bodies (Board of Directors, CDP and CRC), with the corresponding regular reporting on the risk situation in the Group.

The GRM area has a responsibility as the unit transversal to all the businesses of the BBVA Group. This responsibility is part of the structure of the BBVA Group, which is formed by subsidiaries based in different jurisdictions, which have autonomy and must comply with their local regulations, but always according to the risk management and control scheme designed by BBVA as the parent company of the BBVA Group.

The Chief Risk Officer of the BBVA Group is responsible for ensuring that the risks of BBVA Group, within the scope of its functions, are managed according to the established model, assuming, among other, the following responsibilities:

- Prepare, in coordination with the rest of areas responsible for risks monitoring and control, and propose to corporate bodies the risk strategy of the BBVA Group, which includes the

Risk Appetite statement of the BBVA Group, core (and their respective statements) and by type of risk metrics, and the Model.

- Ensure the necessary coordination to define and prepare the proposals for the Appetite Framework of the Group companies, and make sure they are applied correctly.
- Define, in coordination with the rest of areas responsible for risks monitoring and control, and propose to corporate bodies the general policies for each type of risk within its scope of responsibility and, as part these, to establish the required specific regulation.
- Prepare, in coordination with the rest of areas responsible for risks monitoring and control, and propose for approval, or approving if within its competence, the risk limits for the geographical areas, business areas and/or legal entities, which shall be consistent with the defined Risk Appetite Framework; it is also responsible for the monitoring, supervision and control of risk limits within its scope of responsibility.
- Submit to the Risk and Compliance Committee the information required to carry out its supervisory and control functions.
- Regular reporting to the corresponding corporate bodies on the situation of those risks of the BBVA Group within its scope of responsibility.
- Identify and assess the material risks faced by the BBVA Group within its scope of responsibility, with an effective management of those risks and, where necessary, with the implementation of the required mitigation measures.
- Early warning to the relevant corporate bodies and the Chief Executive Officer of any material risk within its scope of responsibility that could compromise the solvency of the BBVA Group.
- Ensure, within its scope of responsibility, the integrity of measurement techniques and management information systems and, in general, the provision of models, tools, systems, structures and resources to implement the risk strategy defined by the corporate bodies.
- Promote the risk culture of the BBVA Group to ensure the consistency of the Model in the different countries where it operates, strengthening the cross-cutting model of the risks function.

For decision-making, the Group's Chief Risk Officer has a governance structure for the role that culminates in a support forum, the Global Risk Management Committee (GRMC), which is established as the main executive-level committee on the risks within its remit. Its purpose is to develop the strategies, policies, regulations and infrastructures needed to identify, assess, measure and

manage the material risks within its remit that the Group faces in its business activity. This committee is composed by the Chief Risk Officer, who chairs the meetings, and the heads of the Corporate Area of the disciplines of GRM, the "Risk Strategy, Development & BEX", "Strategy and Development", "South America and Turkey", and "Risk Internal Control"; and by the heads of GRM in the three most important geographical units and in CIB. The purpose of the GRMC is to propose and challenge, among other issues, the internal regulatory framework of GRM and the infrastructures required to identify, assess, measure and manage the risks faced by the Group in carrying out its businesses and to approve risk limits.

The GRMC carries out its functions assisted by various support committees which include:

- *Global Credit Risk Management Committee*: It is responsible for analyzing and decision-making related to wholesale credit risk admission.
- *Wholesale Credit Risk Management Committee*: It is responsible for analyzing and making decisions related to wholesale credit risk admission in specific customer segments of BBVA Group, as well as being informed of the relevant decisions adopted by members of the committee within their scope of decision-making at corporate level.
- *Work Out Committee*: Its purpose is to analyze and make decisions regarding the admission of wholesale credit risks of customers classified in Watch List, doubtful risk or write-offs in accordance with the criteria established in the Group, as well as to be informed of the decisions adopted by the person in charge of the Work Out process in its area of responsibility; it will also include the approval of proposals on entries, exits and modifications in Watch List, entries and exits in doubtful, unlikely to pay and pass to write-offs; as well as the approval of other proposals that must be seen in this Committee according to the established thresholds and criteria.
- *Global Portfolio Management Committee*: The executive authority responsible for managing the limits by asset class for credit risk, equities and real estate not for own use, structural risks, insurance and pension risk and asset management; and by business area and at group level established in the risk limits planning exercise, which aims to achieve an optimal combination and composition of portfolios under the restrictions imposed by the Risk Appetite Framework, which allows maximizing the risk-adjusted return on regulatory and economic capital when appropriate. Additionally, it takes into account the concentration and asset quality objectives of the portfolio, as well as the prospects and strategic needs of the the BBVA Group.

- Risk Models Management Committee: It ensures an appropriate decision-making process regarding the planning, development, implementation, use, validation and monitoring of the models required to achieve an appropriate management of the Model Risk in the BBVA Group.
- Global Market and Counterparty Risk Committee: its purpose is to formalize, supervise and communicate the trading risk monitoring in all Global Markets business units, as well as coordinating and approving the key decisions of the Market and Counterparty Risk activity. It is also responsible for the analysis and decision making (opinion on the risk profile of the proposal, the mitigants and the risk-return ratio) with respect to the most relevant transactions in the different geographies in which Global Markets is present.
- Retail Credit Risk Committee: it ensures for the analysis, discussion and decision support on all issues regarding the retail credit risk management that impact or potentially do in the practices, processes and corporate metrics established in the General Policies, Rules and Operating Frameworks.

Also:

- GRM Continuity Committee: this committee operates under the provisions of the Corporate Continuity Committee for the different Areas. Its purpose is to analyze and make decisions about exceptional crisis situations, with the aim of managing continuity and the restoration of critical GRM processes, minimizing the impact of its operations through the Continuity Plan, which covers crisis management and Recovery Plans.
- The Corporate Committee for Admission of Operational Risk and Product Governance (CCAROyGP) aims to ensure the adequate evaluation of initiatives with significant operational risk (new business, product, outsourcing, process transformation, new systems, etc.) from the perspective of operational risk and approval of the proposed control environment.

Risk units of the corporate areas and the business/geographical areas

The risks function is comprised of risk units from the corporate area, which carry out cross-cutting functions, and of risk units of the geographical/business areas.

- The risk units of the corporate area develop and submit to the Group's Chief Risk Officer the different elements required to define the proposal for the Group's Risk Appetite Framework, the general policies, the regulation and global infrastructures within the operating

framework approved by corporate bodies; they ensure their application and report directly or through the Group's Chief Risk Officer to the corporate bodies of BBVA. With regard to non-financial risks and reputational risk, which are entrusted to the Regulation & Internal Control and Communications areas respectively, the corporate units of GRM will coordinate, with the corresponding corporate units of those areas, the development of the elements that should be integrated into the Appetite Framework of the Group.

- The risk units of the business and/or geographical areas develop and submit to the Chief Risk Officer of the geographical and/or business areas the Risk Appetite Framework proposal applicable in each geographical and/or business area, independently and always according to the Group's Risk Appetite Framework. In addition, they ensure the application of general policies and the rest of the internal regulations, with the necessary adaptations, when applicable, to local requirements, providing the appropriate infrastructures for risk management and control purposes, within the global risk infrastructure framework defined by the corporate areas, and reporting to the corresponding corporate bodies and senior management, as applicable. With regard to Non-financial risks, which are integrated in the Regulation & Internal Control area, the local risk units will coordinate, with the unit responsible for those risks, the development of the elements that should be integrated into the local Risk Appetite Framework.

Thus, the local risk units work with the risk units of the corporate area with the aim of adapting themselves to the risk strategy at Group level and pooling all the information required to monitor the evolution of their risks.

As previously mentioned, the risks function has a decision-making process supported by a structure of committees, and also a top-level committee, the GRMC, whose composition and functions are described in the section "Chief Risk Officer of the Group."

Each geographical and/or business area has its own risk management committee(s), with objectives and contents similar to those of the corporate area. These committees perform their duties consistently and in line with general risk policies and corporate rules, and its decisions are reflected in the corresponding minutes.

Under this organizational scheme, the risks function ensures the integration and application throughout the Group of the risk strategy, the regulatory framework, the infrastructures and standardized risk controls. It also benefits from the knowledge and proximity to customers

in each geographical and/or business area, and conveys the corporate risk culture to the Group's different levels. Moreover, this organization enables the risks function to conduct and report to the corporate bodies an integrated monitoring and control of the risks of the entire Group.

The risks function is cross-cutting, i.e. it is present in all of the Group's geographical and/or business areas through specific risk units. Each of these units is headed by a Chief Risk Officer for the geographical and/or business area who, within the relevant scope of responsibility, carries out risk management and control functions and is responsible for applying the Model, the general policies and corporate rules approved at Group level in a consistent manner, adapting them if necessary to local requirements and with the subsequent reporting to local corporate bodies.

The Chief Risk Officers of the geographical and/or business areas have functional reporting to the Group's Chief Risk Officer and hierarchical reporting to the head of their geographical and/or business area. This dual reporting system aims to ensure the independence of the local risks function from the operational functions and enable its alignment with the Group's general policies and goals related to risks.

Risk internal control

The Group has a specific Risk Internal Control unit, within the Regulation & Internal Control area, that, among other tasks, independently challenges and control the regulation and governance structure in terms of financial risks and its implementation and deployment in GRM, in addition to the challenge of the development and implementation of financial risks control and management processes. It is also responsible for the validation of risk models.

For this purpose, it has 3 subunits: RIC-Processes, Risks Technical Secretariat and Risk Internal Validation.

- RIC-Processes. It is responsible for challenging an appropriate development of the functions of GRM units, and for reviewing that the functioning of financial risk management and control processes is appropriate and in line with the corresponding regulation, identifying potential opportunities for improvement and contributing to the design of the action plans to be implemented by the responsible units. In addition, it is the Risk Control Specialist (RCS) in the Group's Internal Control Model and, therefore, establishes the general mitigation and control frameworks for its risk area and contrasts them with those actually implemented.
- Risks Technical Secretariat. It is responsible for the definition, design and management of the principles, policies, criteria and processes through which the regulatory risk framework is developed, processed, reported and disclosed

to the countries; and for the coordination, monitoring and assessment of its consistency and completeness. In addition, it coordinates the definition and structure of the most relevant GRM Committees, and monitors their proper functioning, in order to ensure that all risk decisions are taken through an adequate governance and structure, ensuring their traceability. It also provides to the CRC the technical support required in terms of financial risks for a better performance of its functions.

- Risk Internal Validation. It is responsible for validating the risks models. In this regard, it effectively challenges the relevant models used to manage and control the risks faced by the Group, as an independent third party from those developing or using the models in order to ensure its accuracy, robustness and stability. This review process is not restricted to the approval process, or to the introduction of changes in the models; it is a plan to make a regular assessment of those models, with the subsequent issue of recommendations and actions to mitigate identified weaknesses.

The Head of Risk Internal Control of the Group is responsible for the function and reports about his activities and work plans to the Head of Regulation & Internal Control and to the CRC, with the corresponding support in the issues required, and, in particular, challenging that GRM's reports submitted to the Committee are aligned with the criteria established at the time.

In addition, the risk internal control function is global and transversal, it includes all types of financial risks and has specific units in all geographical and/or business areas, with functional reporting to the Head of Risk Internal Control of the Group.

The Risk Internal Control function must ensure compliance with the general risks strategy defined by the Board of Directors, with adequate proportionality and continuity. In order to comply with the control activity within its scope. Risk Internal Control is member of GRM's top-level committees (sometimes even assuming the Secretariat role), independently verifying the decisions that may be taken and, specifically, the decisions related to the definition and application of internal GRM regulation.

Furthermore, the control activity is developed within a homogeneous methodological framework at a Group level, covering the entire life cycle of financial risk management and carried out under a critical and analytical approach.

The Risk Internal Control team reports the results of its control function to the corresponding heads and teams, promoting the implementation of corrective measures and submitting these assessments and the resolution

commitments in a transparent manner to the established levels.

Lastly, and notwithstanding the control responsibility that GRM teams have in the first instance, Risk Internal Control teams promote a control culture in GRM, conveying the importance of having robust processes.

4.1.2. Risk Appetite Framework

The Group's Risk Appetite Framework approved by the corporate bodies determines the risks and the risk level that the Group is willing to assume to achieve its business objectives considering the organic evolution of business. These are expressed in terms of solvency, liquidity and funding, and profitability, as well as recurrence of revenue, which are reviewed not only periodically but also if there are any substantial changes in the business strategy or relevant corporate transactions.

The Risk Appetite Framework is expressed through the following elements:

- Risk appetite statement: sets out the general principles of the Group's risk strategy and the target risk profile:

"The BBVA Group develops a multichannel and responsible universal banking business model, based on values, committed to sustainable development and centred on our customers' needs, focusing on operational excellence and the preservation of adequate security and business continuity.

BBVA intends to achieve these goals while maintaining a moderate risk profile, so the risk model established aims at ensuring a robust financial position, facilitating its commitment with sustainability and obtaining a sound risk-adjusted profitability throughout the cycle, as the best way to face adverse environments without jeopardizing its strategies.

BBVA Group's risk management is based on prudent management, and a comprehensive and prospective vision of all risks, to allow us to adapt to the disruptive risks inherent in the banking business. It includes the climate factor, a diversification of portfolios by geographies, asset classes and customer segments, prevention of money laundering and terrorist financing, and the maintenance of a long-term relationship with customers, supporting them in the transition to a sustainable future, to promote profitable growth and recurring generation of value."

- Statements and core metrics: Statements are established, based on the risk appetite

statement, specifying the general principles of risk management in terms of solvency, liquidity and funding, profitability and income recurrence. Moreover, the core metrics reflect, in quantitative terms, the principles and the target risk profile set out in the Risk Appetite statement. Each core metric has three thresholds ranging from usual management of the businesses to higher levels of impairment:

- Management benchmark: a benchmark that determines a comfortable management level for the Group.
 - Maximum appetite: the maximum level of risk that the Group is willing to accept in its ordinary activity.
 - Maximum capacity: the maximum risk level that the Group could assume, which for some metrics is associated with regulatory requirements.
- Metrics by type of risk: based on the core metrics and their thresholds, a number of metrics are determined for each type of risk, whose observance enables compliance with the core metrics and the Group's Risk Appetite statement. These metrics have a maximum risk appetite threshold.

In addition to this Framework, statements are established that include the general principles for each risk type, as well as a level of management limits that is defined and managed by the areas responsible for the management of each type of risk in order to ensure that the early management of risks complies with the established Risk Appetite Framework.

Each significant geographical area (that is, those representing more than 1% of the assets or operating income of the BBVA Group) has its own Risk Appetite framework, consisting of its local Risk Appetite statement, core statements and metrics, and metrics by type of risk, which must be consistent with those set at the Group level, but adapted to their own reality. These are approved by the corresponding corporate bodies of each entity. This Appetite Framework is supplemented by statements for each risk type and has a limit structure in line and consistent with the above.

The corporate risks area works with the various geographical and/or business areas to define their Risk Appetite Framework, so that it is coordinated with, and integrated into, the Group's Risk Appetite Framework, making sure that its profile is in line with the one defined. Moreover, and for the purposes of monitoring at local level, the Chief Risks Officer of the geographical and/or business area regularly reports on the evolution of the metrics of the Local Risk Appetite Framework to the corporate bodies, as well as to the relevant top-level local committees, following a scheme similar to that of the Group, in accordance with its own corporate governance systems.

Within the issuing process of the Risk Appetite Framework, Risk Internal Control carries out, within the scope of the GRM area the effective challenge of the Framework proposal prior to its escalation to corporate bodies, which is also documented, and it is extended to the approval of the management limits under which it is developed, also supervising its adequate approval and extension to the different entities of the Group. Likewise, in each significant geographical area, the local Risk Internal Control unit, working in the Risk Management Committee (hereinafter, RMC), carries out an effective challenge of the local Risk Appetite Framework prior to its escalation to local corporate bodies, which is also documented, and extended to the local approval process of the management limits.

Monitoring of the Risk Appetite Framework and management of breaches

So that corporate bodies can develop the risk functions of the Group, the heads of risks at an executive level will regularly report (more frequently in the case of the CRC, within its scope of responsibility) on the evolution of the metrics of the Risk Appetite Framework of the Group, with the sufficient granularity and detail, in order to check the degree of compliance of the risks strategy set out in the Risk Appetite Framework of the Group approved by the Board of Directors.

If, through the monitoring of the metrics and supervision of the Risk Appetite Framework by the executive areas, a relevant deviation or breach of the maximum appetite levels of the metrics is identified, that situation must be reported and, where applicable, the corresponding corrective measures must be submitted to the CRC.

After the relevant review by the CRC, the deviation must be reported to the CDP (as part of its role in the monitoring of the evolution of the risk profile of the Group) and to the Board of Directors, which will be responsible, when applicable, for implementing the corresponding executive measures, including the modification of any metric of the Risk Appetite Framework. For this purpose, the CRC will submit to the corresponding corporate bodies all the information received and the proposals prepared by the executive areas, together with its own analysis.

Notwithstanding the foregoing, once the information has been analyzed and the proposal of corrective measures has been reviewed by the CRC, the CDP may adopt, on grounds of urgency and under the terms established by law, measures corresponding the Board of Directors, but always reporting those measures to the Board of Directors in the first meeting held after the implementation for ratification purposes.

In any case, an appropriate monitoring process will be established (with a greater information frequency and granularity, if required) regarding the evolution of the breached or deviated metric, and the implementation of the corrective measures, until it has been completely

redressed, with the corresponding reporting to corporate bodies, in accordance with its risks monitoring, supervision and control functions.

Integration of the Risk Appetite Framework into the management

The transfer of the Risk Appetite Framework to ordinary management is underpinned by three basic elements:

1. The existence of a standardized set of regulations: the corporate risks area defines and proposes the general policies within its scope of action, and develops the additional internal regulation required for the development of those policies and the operating frameworks on the basis of which risk decisions must be adopted within the Group. The approval of the general policies for all types of risks is a responsibility of the corporate bodies of BBVA, while the rest of regulation is defined at an executive level according to the framework of competences applicable at any given time. The Risks units of the geographical and/or business areas comply with this regulation and performing, where necessary, the relevant adaptation to local requirements, in order to have a decision-making process that is appropriate at local level and aligned with the Group's policies.
2. Risk planning, which ensures the integration into the management of the Risk Appetite Framework through a cascade process established to set limits adjusted to the target risk profile. The Risks units of the corporate area and of the geographical and/or business areas are responsible for ensuring the alignment of this process with the Group's Risk Appetite Framework in terms of solvency, liquidity and funding, profitability, and recurrence of earnings.
3. A comprehensive management of risks during their life cycle, based on differentiated treatment according to their type.

4.1.3. Assessment, monitoring and reporting

Assessment, monitoring and reporting is a cross-cutting function at Group level. This function ensures that the model has a dynamic and proactive vision to enable compliance with the Risk Appetite Framework approved by the Board of Directors, even in adverse scenarios.

This process is integrated in the activity of the Risk units, both of the corporate area and in the geographical and/or business units, together with the units specialized in non-financial risks and reputational risk within the Regulation & Internal Control and Communications business areas respectively, in order to generate a

comprehensive and single view of the risk profile of the Group.

This process is developed through the following phases:

1. Monitoring of the identified risk factors that can compromise the performance of the Group or of the geographical and/or business areas in relation to the defined risk thresholds.
2. Assessment of the impact of the materialization of the risk factors on the metrics that define the Risk Appetite Framework based on different scenarios, including stress testing scenarios (EU-wide stress testing).
3. Response to unwanted situations and proposals for redressing measures to the corresponding levels, in order to enable a dynamic management of the situation, even before it takes place.
4. Monitoring the Group's risk profile and the identified risk factors, through internal, competitor and market indicators, among others, to anticipate their future development.
5. Reporting: complete and reliable information on the evolution of risks to corporate bodies and senior management, in accordance with the principles of accuracy, exhaustiveness, clarity and utility, frequency, and adequate distribution and confidentiality. The principle of transparency governs all the risk information reporting process.

4.1.4. Infrastructure

For the implementation of the Model, the Group has the resources required for an effective management and supervision of risks and for achieving its goals. In this regard, the Group's risks function:

1. Has the appropriate human resources in terms of number, ability, knowledge and experience. The profile of resources will evolve over time based on the specific needs of the GRM and Regulation & Internal Control areas, always with a high analytical and quantitative capacity as the main feature in the profile of those resources. Likewise, the corresponding units of the geographical and/or business areas have sufficient means from the resources, structures and tools perspective in order to achieve a risk management process aligned with the corporate model.
2. Develops the appropriate methodologies and models for the measurement and management of the different risk profiles, and the assessment of the capital required to take those risks.
3. Has the technological systems required to: support the Risk Appetite Framework in its broadest definition; calculate and measure the variables and specific data of the risk function;

support risk management according to this Model; and provide an environment for storing and using the data required for risk management purposes and reporting to supervisory bodies.

4. Promotes adequate data governance, in accordance with the principles of governance, infrastructure, precision and integrity, completeness, promptness and adaptability, following the quality standards of the internal regulations referring to this matter.

Within the risk functions, both the profiles and the infrastructure and data shall have a global and consistent approach.

The human resources among the countries must be equivalent, within proportionality, ensuring a consistent operation of the risk function within the Group. However, they will be distinguished from those of the corporate area, as the latter will be more focused on the conceptualization of appetite frameworks, operating frameworks, the definition of the regulatory framework and the development of models, among other tasks.

As in the case of the human resources, technological platforms must be global, thus enabling the implementation of the Risk Appetite Framework and the standardized management of the risk life cycle in all countries.

The corporate area is responsible for deciding on the platforms and for defining the knowledge and roles of the human resources. It is also responsible for defining risk data governance.

The foregoing is reported to the corporate bodies of BBVA so they can ensure that the Group has the appropriate means, systems, structures and resources.

4.1.5. Transactions with related parties

Regarding operations with related parties and intra-group transactions, BBVA Group has internal policies and procedures to approve, supervise and control such operations.

In this regard, BBVA and other Group subsidiaries, in their capacity as financial entities, carry out transactions with their related parties in the normal course of their business, all of which are not significant and are carried out under normal market conditions.

Additionally, BBVA Group has a resolution strategy defined by the SRB as Multiple Point of Entry (MPE), which is based, according to the Financial Self-Sufficiency Principle and the Decentralized Management Principle, on a decentralized business model in which the subsidiaries are substantially self-sufficient in terms of legal structure, governance, capital, funding

relationships and operations, subject, however, to the corporate policies established for the BBVA Group and to the general supervision and control of the corporate areas. Under this model, and subject to these principles, funding operations for subsidiaries are limited and at market prices.

Details of transactions with related parties and transactions with joint ventures and associates can be found in note 53 of the BBVA Group Consolidated Annual Accounts.

4.2. Credit and Counterparty Risk

4.2.1. Scope and nature of the Credit Risk measurement and reporting systems for capital framework purposes

Credit risk arises from the probability that one of the parties to the financial instrument contract will default on its contractual obligations due to insolvency or inability to pay and cause the other party to incur a financial loss.

It is the most relevant risk for the Group and includes the management of counterparty, issuer, counterparty and country risks.

The Group has a risk strategy established by the Board of Directors of the parent company, which establishes the Group's Risk Appetite statement, core metrics and the metrics by type of risk in which it materializes, as well as the General Risk Management and Control Model.

The Risk and Compliance Committee assists the Board of Directors in different areas relating to risk control and monitoring, complementing these functions by submitting to the Board proposals on the Group's risk strategy, control and management. It also establishes, in line with the Group's Risk Appetite Framework approved by the Board of Directors, the control and management policies for the different risks of the Group.

The Risk and Compliance Committee, the Executive Committee and the Board itself adequately monitor the implementation of the Group's risk strategy and profile.

Based on the risk strategy determined by the Board of Directors, the Global Risk Management Committee approves the statements by risk type and the management limits structure that articulates the Risk Appetite Framework at the level of geographies, risk types, asset classes and portfolios, including the proposed Asset Allocation management limits with the appropriate level of disaggregation. The limits establish, on an annual basis, maximum exposure levels by type of portfolio.

Asset Allocation limits for portfolios, businesses and risks are defined, considering the established metrics, in terms of exposure, capital consumption and composition of the portfolio mix and aimed at maximizing the generation of the Group's recurring economic profit, subject to the restrictions framework resulting from the target risk profile definition.

The Corporate Risk Area establishes individual, portfolio, sector and geographic risk concentration thresholds. These thresholds are established in terms of EAD and

Herfindahl indexes in order to limit the impact on capital consumption.

The Business Areas work in line with the global view and the defined metrics, optimizing in terms of profitability/risk, within the Group's limits and policies, each of the portfolios for which they are responsible.

Existing gaps with regard to the target portfolio are identified at global level and submitted to the Business Areas, establishing global and local plans to align the risk with the predefined target profile and taking into account the expected future evolution of the portfolios.

For risk and capital management purposes, credit risk at BBVA is quantified using two main measures: expected loss ("EL") and economic capital ("EC"). The expected loss reflects the average value of losses and is considered as business cost. However, economic capital is the amount of capital considered necessary to cover unexpected losses arising from the possibility that actual losses may exceed expected losses.

These risk measures are combined with profitability information within the value-based management framework, thus integrating the profitability-risk binomial in decision-making, from the business strategy definition to the approval of individual loans, pricing, the assessment of non-performing portfolios, incentives to the Group's areas, etc.

There are three essential parameters for obtaining the aforementioned measures (PE and CE): probability of default ("PD"), loss given default ("LGD") and exposure at default ("EAD"), based mainly on the estimation of credit conversion factors ("CCF"), which are generally estimated using the historical information available in the systems, and which are assigned to transactions and customers depending on their characteristics.

In this context, credit rating tools (ratings and scorings) assess the risk of each client/transaction based on its credit quality through a score, which is used in the allocation of risk metrics along with other additional information: age of facilities, loan-to-value ratio, client segment, etc.

Section 4.2.5.1. of this document details the definitions, methods and data used by the Group in determining the equity requirements for the estimation of the probability of default (PD), loss given default (LGD) and credit conversion factor (CCF).

4.2.2. Definitions and methodologies

4.2.2.1. Prudential definition of default

The definition of default in the prudential field is included in Article 178 of Regulation (EU) No. 575/2013. This definition is applicable both under the standardized approach and under the internal ratings-based (IRB) approach.

In 2021, the EBA Guidelines (EBA/GL/2016/07) and the Regulations on materiality thresholds (Delegated Regulation of the European Commission 2018/171 and Regulation 2018/1845 of the European Central Bank) that develop the content of the aforementioned article 178, entered into force. The modifications introduced cover aspects such as the calculation of past due days, clarifications on the indicators of probable non-payment ("Unlikely to Pay"), the criteria for the classification to non-defaulted status, definition of retail exposures and aspects related to documentation and external governance. During 2021, BBVA completed the implementation of the prudential definition of default, both for portfolios under the standardised approach, as well as portfolios under the IRB approach, once the relevant supervisory authorization has been received.

Currently, the BBVA Group considers that a default has occurred in relation to a certain obligor when at least one of the following circumstances occurs:

- a) that the obligor has a delay for more than 90 consecutive days with respect to any significant credit obligation to the entity.
- b) that the entity considers that there are reasonable doubts about the payment of all of its credit obligations to the entity itself, the parent company or any of its subsidiaries, without resorting to actions such as the execution of guarantees.

In relation to the computation of past due days, a obligor is considered in default when the sum of the past due amounts in all its credit obligations with the entity exceed the materiality thresholds (both absolute and relative) for more than 90 consecutive days. The absolute threshold is set at €100 for retail exposures and €500 for wholesale exposures and the relative threshold at 1% of all on-balance sheet exposures to the obligor.

Regarding the existence of reasonable doubts about payment, the following elements are considered as indicators of probability of default:

A) Specific credit risk adjustments: a specific adjustment as a result of a sharp deterioration in the credit quality of the obligor is an indicator of probable default.

B) Sale of credit obligations with significant economic loss: a sale of a credit obligation against an obligor with a material economic loss related to a deterioration in credit quality should be considered an indicator of default. When the economic loss exceeds the 5% threshold, the credit obligations will be considered to be in default.

C) Distressed restructuring: it is considered that there is an indicator of probable default, and therefore the client must be considered in default, when the restructuring or refinancing measures may result in a reduction of the financial obligation that is considered to be caused by a material forgiveness or deferral of principal, interest or fees.

Specifically, unless proven otherwise, transactions that meet any of the following criteria will be reclassified to the default risk category:

- a) They are supported by an inadequate payment plan.
- b) They Include contractual clauses that delay the reimbursement of the operation through regular payments.
- c) Present amounts derecognized from the balance sheet.

In any case, a restructuring will be considered impaired when the reduction in the net present value of the financial obligation is greater than 1%.

D) Bankruptcy/Arrangement/Liquidation/Failure/Pre-arrangement of the client: These situations will be valued as indicators of non-payment as long as this prevents or delays the payments of credit obligations to the institution.

E) Fraud: If credit fraud is identified before the default is recognized.

The definition of default is applied at the debtor level for wholesale counterparties. Therefore, the classification of any material exposure of a client as defaulted, either because it is more than 90 past due days or due to any of the subjective criteria, implies the consideration of all the client's exposures as default.

Regarding retail customers, the definition of default is applied at the contract level following risk management practices. Notwithstanding the foregoing, when an operation of a retail client presents defaults of more than 90 days and this represents more than 20% of the client's total balance, all its operations are considered in default.

Additionally, it should be noted that when operations of related entities with the holder are considered in default, including both entities of the same group and those with which there is a relationship of economic or financial dependence, the operations of the holder are also classified as default if after its analysis it is concluded

that there are reasonable doubts about its total reimbursement.

The classification of an operation as in default is carried out in such a way that each contract can only be either in default or non default in its entirety.

With regard to transactions/customers classified as in default, it should be noted that they will cease to be classified as such when no default trigger is still applicable, either because the client/transaction does not have material past due balances, that is, above both materiality thresholds, for more than 90 consecutive days, either when the recovery process is considered complete in accordance with the entity's recovery management or because no criterion of probable non-payment continues to apply. However, in any case, at least three months must elapse from the moment in which the situation that triggered the non-payment ceased to be fulfilled in order to stop classifying an operation in a defaulted situation as such. During this period, the obligor must show good payment behaviour and an improvement in its credit quality. In restructuring processes, the minimum period will be one year.

4.2.2.2. Accounting definitions and methodologies

The calculation of credit risk adjustments applicable to the BBVA Group's Consolidated Financial Statements follows the provisions of IFRS 9 - Financial Instruments. This standard establishes an expected loss model to calculate aforementioned provision for credit risk.

Credit risk provision is calculated for financial assets valued at amortized cost, debt instruments valued at fair value with changes in accumulated other comprehensive income, financial guarantee contracts and other commitments. All financial instruments measured at fair value through profit or loss are excluded from the impairment model.

Given the nature of the calculation of provisions under IFRS 9, all adjustments are considered specific credit risk adjustments for the purposes of Regulation (EU) No. 575/2013 of the European Parliament and of the Council.

Definition of impaired financial asset

According to IFRS 9, an asset is credit-impaired (*stage 3*) if one or more events have occurred and they have a detrimental impact on the estimated future cash flows of the asset.

Historically, the definition of impaired assets under IFRS 9 has been substantially aligned with the definition of default used by the Group for internal credit risk management purposes, which is also the definition used for regulatory purposes. As stated in section 4.2.2.1, in 2021 the Group has updated its definition of default to adapt it to the EBA Guidelines. The Group consequently updated the definition of credit-impaired asset (*stage 3*),

considering it a change in accounting estimates, re-establishing the consistency with the definition of default and guaranteeing the integration of both definitions in credit risk management.

4.2.3. Information on credit risk

4.2.3.1. Exposure to credit risk

According to Article 5 of the CRR, with respect to the regulatory capital requirements for credit risk, exposure is understood to be any asset item and all items included in the Group's off-balance sheet accounts involving credit risk and not deducted from the Group's bank capital. Accordingly, mainly loan and advances to customers are included, with their corresponding undrawn balances, letters of credit and guarantees, debt securities and capital instruments, cash and balances with central banks and credit institutions, repurchase and reverse repurchase agreements, financial derivatives and intangible assets.

The credit risk exposure specified in the following sections of this document is broken down into credit risk according to the standardised approach (Section 4.2.4), credit risk according to the advanced approach (Section 4.2.5), counterparty credit risk (Section 4.2.6), securitisation credit risk (Section 4.2.7) and structural equity risk (Section 4.4.3).

In addition to the exposure at default and the risk-weighted assets, the table below shows the original exposure, the exposure net of provisions and the exposure after conversion factors under the standardised and advanced approaches as of December 31, 2022 and as of December 31, 2021 (including counterparty credit risk):

Table 12. Credit Risk and Counterparty Risk Exposure (Million Euros. 12-31-2022)

Exposure Class	Original Exposure ⁽¹⁾	Provisions	Net exposure of provisions ⁽²⁾	On-balance exposure after credit risk mitigation techniques ^(4a)	Off-balance exposure after credit risk mitigation techniques ^(4b)	Exposure in the adjusted value ⁽⁵⁾	EAD ⁽⁶⁾	RWA's ⁽⁶⁾	RWA density (9=(8)/(6))
Central governments or central banks	162,496	(189)	162,307	180,598	6,152	188,221	184,542	31,254	17 %
Regional governments or local authorities	7,234	(9)	7,226	2,243	308	2,329	2,145	1,335	62 %
Public sector entities	1,695	(2)	1,693	780	493	1,317	1,061	1,002	94 %
Multilateral development banks	187	—	187	185	—	187	187	6	3 %
International organisations	466	—	466	466	—	466	466	—	—
Institutions	35,210	(33)	35,177	10,287	17,293	29,136	13,226	4,916	37 %
Corporates	68,768	(978)	67,791	40,353	14,639	56,941	49,909	45,746	92 %
Retail	85,078	(1,473)	83,605	51,320	26,928	75,051	52,247	36,379	70 %
Secured by mortgages on immovable property	27,878	(218)	27,659	27,300	353	27,515	27,353	9,871	36 %
Exposures in default	7,299	(4,139)	3,159	2,544	359	2,806	2,806	2,691	104 %
Exposures associated with particularly high risk	2,808	(472)	2,336	1,824	396	2,127	1,873	2,809	150 %
Covered bonds	—	—	—	—	—	—	—	—	—
Claims on institutions and corporates with a short-term credit assessment	—	—	—	—	—	—	—	—	39 %
Collective investments undertakings	1	—	1	1	1	1	1	1	100 %
Other exposures	19,559	—	19,559	19,869	37	19,907	19,902	11,230	56 %
Total standardised approach	418,680	(7,513)	411,167	337,772	66,959	406,006	355,511	147,240	41 %
Central governments or central banks	11,531	(5)	11,526	12,034	415	12,449	12,234	1,105	9 %
Institutions	129,070	(28)	128,992	105,690	9,698	115,387	111,118	7,336	7 %
Corporates	206,910	(1,896)	205,014	108,508	88,768	197,277	161,188	80,508	50 %
Corporates (SMEs)	26,174	(810)	25,364	16,347	4,942	21,289	18,201	12,896	71 %
Corporates: Specialised lending	7,588	(37)	7,551	5,247	2,341	7,588	6,513	5,306	81 %
Corporates: Others	173,148	(1,048)	172,100	86,915	81,485	168,400	136,474	62,307	46 %
Retail	122,945	(2,791)	120,154	94,038	26,606	120,644	98,198	24,483	25 %
Of which: secured by immovable property	74,481	(913)	73,568	69,749	4,732	74,481	69,847	9,994	14 %
Of which: Qualifying revolving	30,185	(721)	29,464	9,087	21,098	30,185	12,741	8,868	70 %
Of which: Others	18,279	(1,157)	17,122	15,202	776	15,978	15,609	5,620	36 %
Retail: Other SMEs	5,445	(217)	5,228	2,438	734	3,172	2,817	1,158	41 %
Retail: Other Non-SMEs	12,834	(940)	11,894	12,764	42	12,806	12,792	4,463	35 %
Total IRB approach	470,456	(4,720)	465,736	320,270	125,487	445,757	382,737	113,432	30 %
Total credit risk dilution and delivery	4,463	—	4,462	4,310	(145)	4,165	4,165	455	11 %
Total positions in securitisation (7)	893,599	(12,233)	415,629	662,353	192,301	855,928	742,413	261,127	35 %
Equity	5,692	—	—	5,692	—	5,692	5,692	13,097	230 %
Simple risk weight approach	1,120	—	—	1,120	—	1,120	1,120	2,570	230 %
Exposures in sufficiently diversified portfolios (RW 190%)	790	—	—	790	—	790	790	1,500	190 %
Exchange traded exposures (RW 290%)	190	—	—	190	—	190	190	551	290 %
Others (RW 370%)	140	—	—	140	—	140	140	519	370 %
PD/LGD approach	1,335	—	—	1,335	—	1,335	1,335	2,250	169 %
Internal models approach	119	—	—	119	—	119	119	481	405 %
Exposures subject to a 250% risk weight	3,118	—	—	3,118	—	3,118	3,118	7,796	250 %
Total credit risk	899,291	(12,233)	415,629	668,044	192,301	861,620	748,105	274,224	37 %

⁽¹⁾ Gross exposure value before credit risk mitigation techniques and CCF, excluding contributions to the default fund for a CCP.

⁽²⁾ Includes provisions and impairment of financial assets and contingent risk and commitments.

⁽³⁾ Standardised Approach exposures are adjusted by credit risk adjustments. The original equity exposure is shown net of impairment.

^(4a) ^(4b) Eligible credit risk mitigation techniques are included, either on-balance sheet or off-balance sheet, according to Chapter 4 of CRR. In the case of securitisation exposure, unfunded credit protection is included.

⁽⁵⁾ Under the standardised approach, it corresponds to the exposure value after the application of the eligible credit risk mitigation techniques, net of volatility adjustments.

⁽⁶⁾ Exposure at default, calculated as (4a)+(4b)*CCF.

⁽⁷⁾ This row includes the SEC-SA, SEC-ERBA and SEC-IRBA methods. The exposure of securitisations with a risk weight of 1,250% which are deducted from own funds is included (€860 thousand).

Credit Risk and Counterparty Risk Exposure (Million Euros. 31-12-2020)

Exposure Class	Original Exposure ⁽¹⁾	Provisions	Net exposure of provisions ⁽²⁾	On-balance exposure after credit risk mitigation techniques ^(4a)	Off-balance exposure after credit risk mitigation techniques ^(4b)	Exposure in the adjusted value ⁽⁵⁾	EAD(6)	RWA's(8)	RWA density (9=(8)/(6))
Central governments or central banks	162,496	(189)	162,307	180,598	6,152	188,221	184,542	31,254	17%
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Multilateral development banks	187	—	187	185	—	187	187	6	3%
International organisations	466	—	466	466	—	466	466	—	—
Institutions	35,210	(33)	35,177	10,287	17,293	29,136	13,226	4,916	37%
Corporates	68,768	(978)	67,791	40,353	14,639	56,941	49,909	45,746	92%
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Exposures in default	7,299	(4,139)	3,159	2,544	359	2,806	2,691	2,691	104%
Exposures associated with particularly high risk	2,808	(472)	2,336	1,824	396	2,127	1,873	2,809	150%
Covered bonds	—	—	—	—	—	—	—	—	—
Claims on institutions and corporates with a short-term credit assessment	—	—	—	—	—	—	—	—	39%
Collective investments undertakings	1	—	1	1	1	1	1	1	100%
Other exposures	19,559	—	19,559	19,869	37	19,907	19,902	11,230	56%
Total standardised approach	418,680	(7,513)	411,167	337,772	66,959	406,006	355,511	147,240	41%
Central governments or central banks	11,531	(5)		12,034	415	12,449	12,234	1,105	9%
Institutions	129,070	(28)		105,690	9,698	115,387	111,118	7,336	7%
Corporates	206,910	(1,896)		108,508	88,768	197,277	161,188	80,508	50%
Corporates (SMEs)	26,174	(810)		16,347	4,942	21,289	18,201	12,896	71%
Corporates: Specialised lending	7,588	(37)		5,247	2,341	7,588	6,513	5,306	81%
Corporates: Others	173,148	(1,048)		86,915	81,485	168,400	136,474	62,307	46%
Retail	122,945	(2,791)		94,038	26,606	120,644	98,198	24,483	25%
Of which: secured by immovable property	74,481	(913)		69,749	4,732	74,481	69,847	9,994	14%
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Retail: Other Non-SMEs	12,834	(940)		12,764	42	12,806	12,792	4,463	35%
Total IRB approach	470,456	(4,720)	0	320,270	125,487	445,757	382,737	113,432	30%
Total credit risk dilution and delivery	4,463	0	4,462	4,310	-145	4,165	4,165	455	11%
Total positions in securitisation (7)	893,599	(12,233)	415,629	662,353	192,301	855,928	742,413	261,127	35%
Equity	5,692	0	0	5,692	0	5,692	5,692	13,097	230%
Simple risk weight approach	1,120			1,120		1,120	1,120	2,570	230%
Exposures in sufficiently diversified portfolios (RW 190%)	790			790		790	790	1,500	190%
Exchange traded exposures (RW 290%)	190			190		190	190	551	290%
Others (RW 370%)	140			140		140	140	519	370%
PD/LGD approach	1,335			1,335		1,335	1,335	2,250	169%
Internal models approach	119			119		119	119	481	405%
Exposures subject to a 250% risk weight	3,118			3,118		3,118	3,118	7,796	250%
Total credit risk	899,291	(12,233)	415,629	668,044	192,301	861,620	748,105	274,224	37%

⁽¹⁾ Gross exposure value before credit risk mitigation techniques and CCF, excluding contributions to the default fund for a CCP.

⁽²⁾ Includes provisions and impairment of financial assets and contingent risk and commitments.

⁽³⁾ Standardised Approach exposures are adjusted by credit risk adjustments. The original equity exposure is shown net of impairment.

^(4a) ^(4b) Eligible credit risk mitigation techniques are included, either on-balance sheet or off-balance sheet, according to Chapter 4 of CRR. In the case of securitisation exposure, unfunded credit protection is included.

⁽⁵⁾ It corresponds to the exposure value adjusted by eligible credit risk mitigation techniques.

⁽⁶⁾ Exposure at default, calculated as (4a)+((4b)*CCF).

⁽⁷⁾ This row includes the SEC-SA, SEC-ERBA and SEC-IRBA methods. The exposure of securitisations with a risk weight of 1,250% which are deducted from own funds is included (€22 million).

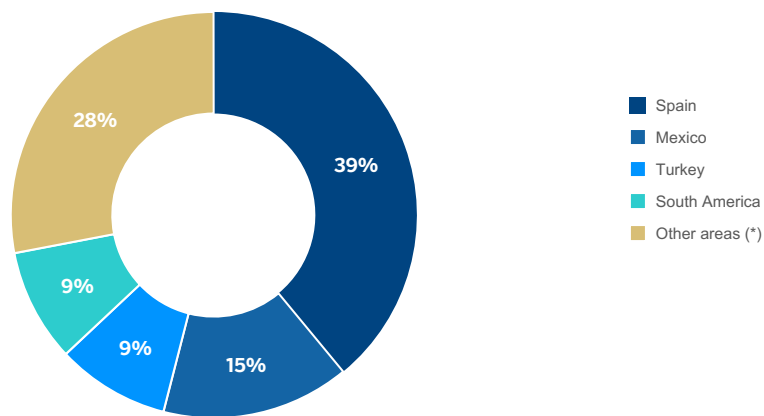
During 2022, the evolution in exposure and RWAs is due to the activity in the different portfolios, the variation of which will be detailed in their respective chapters. This year there have been no singular events in the Group's prudential perimeter or relevant methodological changes that have had an impact on the RWAs.

See following sections for more information on the variations of RWAs by standardised and IRB approaches.

The distribution of the Group's original exposure by geography (classification by country of the counterparty) is shown below:

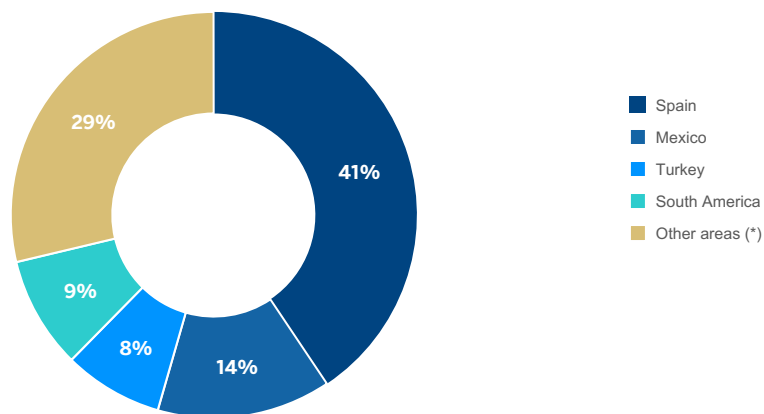
Chart 8. Distribution by geographical area of Exposure to Credit Risk

Distribution of OE by Geographical Areas 2022



^(*) Other Countries includes mainly exposures in Europe (excluding Spain), United States and Asia.

Distribution of OE by Geographical Areas 2021



^(*) Other Countries includes mainly exposures in Europe (excluding Spain), United States and Asia.

The average RWAs densities for credit and counterparty risk are shown below, by exposure class and geography where the Group operates.

Table 13. Breakdown of RWA density by geographical area and approach (Million euros. 12-31-2022)

Category of exposure	RWA Density ⁽¹⁾⁽²⁾					
	Total	Spain ⁽³⁾	Mexico	Turkey	South America	Other areas ⁽⁴⁾
Central governments or central banks	17 %	10 %	21 %	60 %	44 %	—
Regional governments or local authorities	62 %	20 %	97 %	100 %	100 %	13 %
Public sector entities	94 %	—	73 %	99 %	100 %	1 %
Multilateral Development Banks	3 %	—	—	—	7 %	—
International organisations	—	—	—	—	—	—
Institutions	37 %	—	49 %	66 %	62 %	25 %
Corporates	92 %	56 %	96 %	95 %	100 %	87 %
Retail	70 %	63 %	71 %	68 %	73 %	72 %
Secured by mortgages on immovable property	36 %	36 %	36 %	40 %	36 %	35 %
Exposures in default	104 %	109 %	100 %	103 %	104 %	106 %
Exposures associated with particularly high risk	150 %	150 %	150 %	150 %	150 %	151 %
Covered bonds	—	—	—	—	—	—
Short-term claims on institutions and corporate	39 %	—	—	—	39 %	—
Collective investments undertakings	100 %	100 %	—	—	—	100 %
Other exposures	56 %	74 %	55 %	40 %	40 %	17 %
Total credit risk by standardised approach	41 %	19 %	44 %	74 %	70 %	23 %
Central governments or central banks	9 %	72 %	65 %	122 %	63 %	8 %
Institutions	7 %	13 %	45 %	155 %	20 %	5 %
Corporates	50 %	58 %	65 %	107 %	55 %	38 %
Retail	25 %	18 %	92 %	14 %	34 %	33 %
Total credit risk by IRB approach	30 %	31 %	71 %	110 %	41 %	19 %
Securitisation exposures	11 %	11 %	—	—	—	—
Total credit risk dilution and delivery	35 %	26 %	54 %	75 %	68 %	20 %

⁽¹⁾ Equity positions are not included.

⁽²⁾ Calculated as RWA/EAD.

⁽³⁾ In Spain, the category Central Governments and Central Banks includes deferred assets net of deferred tax liabilities.

⁽⁴⁾ Other areas includes mainly exposures in Europe (excluding Spain), United States and Asia.

Breakdown of RWA density by geographical area and approach (Million euros, 12-31-2021)

Category of exposure	RWA Density ⁽¹⁾⁽²⁾						
	Total	Spain ⁽³⁾	Turkey	Mexico	USA	Other areas ⁽⁴⁾	Other areas ⁽⁴⁾
Central governments or central banks	19 %	14 %	16 %	69 %	45 %	0 %	1 %
Regional governments or local authorities	60 %	28 %	97 %	100 %	88 %	17 %	20 %
Public sector entities	97 %	—	82 %	75 %	100 %	20 %	19 %
Multilateral Development Banks	6 %	—	—	—	0.07	0 %	—
International organisations	—	—	—	—	—	—	—
Institutions	48 %	62 %	65 %	70 %	82 %	29 %	31 %
Corporates	94 %	102 %	96 %	94 %	99 %	76 %	95 %
Retail	70 %	63 %	71 %	68 %	73 %	73 %	72 %
Secured by mortgages on immovable property	36 %	34 %	36 %	40 %	36 %	37 %	37 %
Exposures in default	110 %	112 %	101 %	119 %	103 %	109 %	108 %
Exposures associated with particularly high risk	150 %	150 %	150 %	150 %	150 %	150 %	150 %
Covered bonds	—	—	—	—	—	—	—
Short-term claims on institutions and corporate	93 %	—	—	—	0.93	0 %	—
Collective investments undertakings	100 %	100 %	—	—	— %	1	100 %
Other exposures	58 %	84 %	48 %	32 %	40 %	15 %	18 %
Total credit risk by standardised approach	43 %	24 %	43 %	78 %	69 %	24 %	37 %
Central governments or central banks	6 %	81 %	40 %	87 %	25 %	5 %	9 %
Institutions	7 %	11 %	67 %	201 %	18 %	5 %	6 %
Corporates	54 %	65 %	68 %	104 %	60 %	41 %	42 %
Retail	24 %	19 %	89 %	12 %	35 %	47 %	22 %
Total credit risk by IRB approach	30 %	33 %	73 %	105 %	44 %	19 %	16 %
Securitisation exposures	12 %	12 %	—	—	— %	—	—
Total credit risk dilution and delivery	36 %	29 %	53 %	78 %	67 %	20 %	20 %

⁽¹⁾ Does not include equity positions.

⁽²⁾ Calculated as RWAs/EAD.

⁽³⁾ In Spain, the category Central Governments and Central Banks includes deferred assets net of deferred tax liabilities..

⁽⁴⁾ Includes all other countries not included in the previous columns. The countries with the largest exposure in this area are: United Kingdom, France, Italy, Germany and Portugal.

4.2.3.2. Credit quality of exposures

The carrying amount of performing and non-performing exposures, broken down by product and counterparty sector, as of December 31, 2022 and as of December 31, 2021, is below:

Table 14. EU CR1 - Performing and non-performing exposures and related provisions (Million Euros. 12-31-2022)

	Gross carrying amount/nominal amount				Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions								Collateral and financial guarantees received		
	Performing exposures ⁽¹⁾		Non-performing exposures		Performing exposures				Non-performing exposures				Accumulated partial write-off	On performing exposures	On non-performing exposures
	Of which stage 1	Of which stage 2	Of which stage 2	Of which stage 3	Of which stage 1	Of which stage 2	Of which stage 2	Of which stage 3							
Cash balances at central banks and other demand deposits	73,470	73,470	—	—	—	—	(12)	(12)	—	—	—	—	—	—	—
Loans and advances	375,474	341,612	33,614	13,497	—	13,497	(4,024)	(2,083)	(1,941)	(7,285)	—	(7,285)	(352)	161,589	4,422
Central banks	4,420	4,420	—	—	—	—	(19)	(19)	—	—	—	—	—	279	—
General governments	20,884	20,582	302	38	—	38	(19)	(8)	(11)	(11)	—	(11)	—	6,448	5
Credit institutions	16,137	16,068	69	—	—	—	(34)	(31)	(3)	—	—	—	—	1,847	—
Other financial corporations	12,151	11,913	238	17	—	17	(27)	(15)	(12)	(10)	—	(10)	—	2,260	5
Non-financial corporations	164,837	149,591	15,086	6,340	—	6,340	(1,666)	(675)	(991)	(3,829)	—	(3,829)	(352)	59,099	1,672
Of which: SME	53,823	47,444	6,297	3,653	—	3,653	(721)	(339)	(382)	(2,192)	—	(2,192)	(110)	28,593	1,203
Households	157,047	139,039	17,920	7,102	—	7,102	(2,260)	(1,335)	(925)	(3,435)	—	(3,435)	—	91,656	2,740
Debt securities	81,104	79,937	1,059	57	—	57	(167)	(67)	(100)	(41)	—	(41)	—	—	—
Central banks	3,123	3,123	—	—	—	—	(7)	(7)	—	—	—	—	—	—	—
General governments	69,525	68,418	1,055	—	—	—	(150)	(51)	(100)	—	—	—	—	—	—
Credit institutions	1,697	1,697	—	—	—	—	(3)	(3)	—	—	—	—	—	—	—
Other financial corporations	2,389	2,329	4	54	—	54	(4)	(3)	—	(40)	—	(40)	—	—	—
Non-financial corporations	4,370	4,370	—	3	—	3	(3)	(3)	—	(2)	—	(2)	—	—	—
Off-balance-sheet exposures	191,070	181,076	9,994	1,147	—	1,147	431	171	261	339	—	339	—	7,390	196
Central banks	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
General governments	3,321	3,105	217	22	—	22	3	—	2	—	—	—	—	4	—
Credit institutions	19,992	19,560	432	24	—	24	7	6	2	1	—	1	—	39	—
Other financial corporations	8,559	8,328	231	6	—	6	6	5	1	—	—	—	—	58	3
Non-financial corporations	114,536	108,282	6,254	984	—	984	291	76	215	314	—	314	—	6,951	179
Households	44,661	41,802	2,860	112	—	112	124	84	40	23	—	23	—	338	14
Total	721,118	676,095	44,667	14,701	—	14,701	(4,634)	(2,333)	(2,302)	(7,665)	—	(7,665)	(352)	168,979	4,618

⁽¹⁾ Includes the carrying amount of reverse repurchase agreements and positions subject to the securitisation framework.

^(**) Off-balance sheet exposures provisions are shown as positive, in line with FINREP regulatory financial reporting models.

⁽¹⁾ Includes gross carrying amount of the "amortised cost" portfolio, the "fair value through other comprehensive income" portfolio and the "fair value through P&L" portfolios. Due to this, the balance of the rows other than "Cash and balances with central banks" performing may differ from the sum of the balances of stage 1 and stage 2 columns for these rows.

EU CR1 - Performing and non-performing exposures and related provisions (Million Euros, 12-31-2021)

	Gross carrying amount/nominal amount						Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions						Collateral and financial guarantees received		
	Performing exposures		Non-performing exposures				Performing exposures		Non-performing exposures				Accumulated write-off	On performing exposures	On non-performing exposures
	Of which stage 1	Of which stage 2	Of which stage 2	Of which stage 3	Of which stage 1	Of which stage 2	Of which stage 2	Of which stage 3							
Cash balances at central banks and other demand deposits	61,159	61,159	—	—	—	—	(5)	(5)	—	—	—	—	—	—	—
Loans and advances	334,639	299,825	34,159	14,693	17	14,659	(4,089)	(2,001)	(2,088)	(7,064)	(2)	(7,061)	—	161,158	4,880
Central banks	5,687	5,687	—	—	—	—	(6)	(6)	—	—	—	—	—	1,182	—
General governments	19,797	19,287	369	62	—	62	(18)	(13)	(5)	(19)	—	(19)	—	5,655	10
Credit institutions	13,807	13,797	10	—	—	—	(18)	(18)	—	—	—	—	—	609	—
Other financial corporations	9,229	9,097	131	24	—	24	(14)	(8)	(6)	(9)	—	(9)	—	1,565	6
Non-financial corporations	139,903	120,125	19,340	7,316	15	7,290	(2,061)	(757)	(1,303)	(3,741)	(2)	(3,738)	—	60,850	1,803
<i>Of which: SME</i>	<i>49,447</i>	<i>39,824</i>	<i>9,548</i>	<i>3,957</i>	<i>7</i>	<i>3,941</i>	<i>(1,039)</i>	<i>(464)</i>	<i>(575)</i>	<i>(2,256)</i>	<i>(1)</i>	<i>(2,254)</i>	—	<i>29,536</i>	<i>1,332</i>
Households	146,216	131,832	14,309	7,291	2	7,283	(1,972)	(1,199)	(773)	(3,296)	—	(3,296)	—	91,297	3,062
Debt securities	73,696	72,825	765	23	—	23	(104)	(21)	(82)	(18)	—	(18)	—	—	—
Central banks	1,712	1,712	—	—	—	—	(2)	(2)	—	—	—	—	—	—	—
General governments	63,541	62,790	751	—	—	—	(97)	(15)	(82)	—	—	—	—	—	—
Credit institutions	1,795	1,795	—	—	—	—	—	—	—	—	—	—	—	—	—
Other financial corporations	2,258	2,149	4	20	—	20	(3)	(2)	—	(16)	—	(16)	—	—	—
Non-financial corporations	4,389	4,379	10	3	—	3	(2)	(2)	—	(2)	—	(2)	—	—	—
Off-balance-sheet exposures	164,487	152,418	12,069	962	1	957	455	185	270	237	—	236	—	7,389	135
Central banks	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—
General governments	3,830	3,742	88	27	—	26	2	1	—	1	—	1	—	17	—
Credit institutions	20,694	20,246	447	2	—	2	6	4	2	—	—	—	—	51	—
Other financial corporations	6,736	6,582	154	8	—	8	2	2	—	—	—	—	—	45	3
Non-financial corporations	97,019	87,707	9,312	812	1	810	342	103	239	213	—	213	—	6,945	119
Households	36,206	34,138	2,068	113	—	112	102	74	28	22	—	22	—	332	13
Total	633,980	586,227	46,993	15,678	18	15,639	(4,653)	(2,212)	(2,440)	(7,319)	(2)	(7,315)	—	168,548	5,015

⁽¹⁾ Includes the carrying amount of reverse repurchase agreements and positions subject to the securitisation framework.

^(**) Off-balance sheet exposures provisions are shown as positive, in line with FINREP regulatory financial reporting models.

⁽¹⁾ Includes gross carrying amount of the "amortised cost" portfolio, the "fair value through other comprehensive income" portfolio and the "fair value through P&L" portfolios. Due to this, the balance of the rows other than "Cash and balances with central banks" performing may differ from the sum of the balances of stage 1 and stage 2 columns for these rows.

During 2022 there has been an increase in exposure, mainly linked to the organic growth of the business; thus the total gross book value of performing exposures has grown by approximately €87 billion (+14% over the 2021 value) driven by the growth of loans and advances (€ +40,835 million) and off-balance sheet exposures (€ +26,583 million euros). Non-performing exposures, on the other hand, decreased compared to 2021 by €977 million, mainly in loans and advances portfolio, positively affected by the exchange rate and the sale of a default portfolio in Spain. Lastly, accumulated impairment and negative changes in fair value increased by €327 million during the year.

The following table shows the credit quality of performing and non-performing exposures according to the number of past due days as of December 31, 2022 and December 31, 2021:

Table 15. EU CQ3 - Credit quality of performing and non-performing exposures by past due days (Million Euros, 12-31-2022)

	Gross carrying amount/nominal amount											
	Performing exposures			Non-performing exposures								
	Not past due or past due ≤ 30 days	Past due > 30 days ≤ 90 days	Unlikely to pay that are not past due or are past due ≤ 90 days	Past due > 90 days ≤ 180 days	Past due > 180 days ≤ 1 year	Past due > 1 year ≤ 2 years	Past due > 2 years ≤ 5 years	Past due > 5 years ≤ 7 years	Past due > 7 years			
Cash balances at central banks and other demand deposits	73,470	73,470	—	—	—	—	—	—	—	—	—	—
Loans and advances	375,474	374,028	1,446	13,497	8,331	1,157	1,048	1,090	1,702	68	101	13,497
Central banks	4,420	4,420	—	—	—	—	—	—	—	—	—	—
General governments	20,884	20,850	34	38	33	—	1	—	—	—	4	38
Credit institutions	16,137	16,137	—	—	—	—	—	—	—	—	—	—
Other financial corporations	12,151	12,151	—	17	15	—	1	—	1	—	—	17
<i>Non-financial corporations</i>	164,837	164,528	309	6,340	3,996	307	437	429	1,044	52	75	6,340
Of which SMEs	53,823	53,605	217	3,653	1,854	233	351	373	743	38	61	3,653
Households	157,047	155,944	1,103	7,102	4,287	849	610	661	657	15	22	7,102
Debt Securities	81,104	81,104	—	57	57	—	—	—	—	—	—	57
Central banks	3,123	3,123	—	—	—	—	—	—	—	—	—	—
General governments	69,525	69,525	—	—	—	—	—	—	—	—	—	—
Credit institutions	1,697	1,697	—	—	—	—	—	—	—	—	—	—
Other financial corporations	2,389	2,389	—	54	54	—	—	—	—	—	—	54
Non-financial corporations	4,370	4,370	—	3	3	—	—	—	—	—	—	3
Off-balance sheet exposures	191,070			1,147								1,147
Central banks	—			—								—
General governments	3,321			22								22
Credit institutions	19,992			24								24
Other financial corporations	8,559			6								6
Non-financial corporations	114,536			984								984
Households	44,661			112								112
Total exposures December 2021	721,118	528,602	1,446	14,701	8,388	1,157	1,048	1,090	1,702	68	101	14,701

⁽¹⁾ Includes the carrying amount of reverse repurchase agreements and positions subject to the securitisation framework.

EU CQ3 - Credit quality of performing and non-performing exposures by past due days (Million Euros. 12-31-2021)

	Gross carrying amount/nominal amount											
	Performing exposures		Non-performing exposures									Of which defaulted
	Not past due or past due ≤ 30 days	Past due > 30 days ≤ 90 days	Unlikely to pay that are not past due or are past due ≤ 90 days	Past due > 90 days ≤ 180 days	Past due > 180 days ≤ 1 year	Past due > 1 year ≤ 2 years	Past due > 2 years ≤ 5 years	Past due > 5 years ≤ 7 years	Past due > 7 years			
Cash balances at central banks and other demand deposits	61,159	61,159	—	—	—	—	—	—	—	—	—	—
Loans and advances	334,639	332,811	1,173	14,693	8,983	834	967	1,437	2,246	108	118	14,693
Central banks	5,687	5,687	—	—	—	—	—	—	—	—	—	—
General governments	19,797	19,639	17	62	45	—	—	—	2	—	15	62
Credit institutions	13,807	13,807	—	—	—	—	—	—	—	—	—	—
Other financial corporations	9,229	9,228	—	24	15	7	—	1	1	—	—	24
Non-financial corporations	139,903	139,235	229	7,316	4,602	232	334	723	1,264	81	79	7,316
<i>Of which SMEs</i>	<i>49,447</i>	<i>49,232</i>	<i>140</i>	<i>3,957</i>	<i>1,941</i>	<i>185</i>	<i>266</i>	<i>523</i>	<i>966</i>	<i>47</i>	<i>30</i>	<i>3,957</i>
Households	146,216	145,215	925	7,291	4,321	595	632	712	979	27	24	7,291
Debt Securities	73,696	73,591	—	23	23	—	—	—	—	—	—	23
Central banks	1,712	1,712	—	—	—	—	—	—	—	—	—	—
General governments	63,541	63,541	—	—	—	—	—	—	—	—	—	—
Credit institutions	1,795	1,795	—	—	—	—	—	—	—	—	—	—
Other financial corporations	2,258	2,153	—	20	20	—	—	—	—	—	—	20
Non-financial corporations	4,389	4,389	—	3	3	—	—	—	—	—	—	3
Off-balance sheet exposures	164,487			962								962
Central banks	2			—								—
General governments	3,830			27								27
Credit institutions	20,694			2								2
Other financial corporations	6,736			8								8
Non-financial corporations	97,019			812								812
Households	36,206			113								113
Total exposures December 2020	633,980	467,561	1,173	15,678	9,006	834	967	1,437	2,246	108	118	15,677

(¹) Includes the carrying amount of reverse repurchase agreements and positions subject to the securitisation framework.

The distribution of exposures by geographical area as of December 31, 2022 and December 31, 2021 are below:

Table 16. EU CQ4 - Quality of non-performing exposures by geography (Million Euros. 12-31-2022)

	Gross carrying amount⁽²⁾ / nominal amount						Accumulated negative changes in fair value due to credit risk on non-performing exposures
		Of which: non performing	Of which: defaulted	Of which: subject to impairment⁽³⁾	Accumulated impairment	Provisions on off-balance sheet	
On balance exposures	470,131	13,554	13,554	469,776	(11,518)		—
Spain	198,128	7,203	7,203	198,111	(4,562)		—
Mexico	88,946	1,945	1,945	88,701	(2,502)		—
Turkey	51,228	2,218	2,218	51,225	(2,031)		—
South America	51,530	1,768	1,768	51,478	(1,965)		—
Other areas (1)	80,301	419	419	80,261	(459)		—
Off balance exposures	192,217	1,147	1,147			770	
Spain	53,974	716	716			241	
Mexico	23,209	9	9			60	
Turkey	21,077	260	260			294	
South America	15,209	148	148			141	
Other areas ⁽¹⁾	78,748	14	14			34	
Total	662,349	14,701	14,701	469,776	(11,518)	770	—

⁽¹⁾ Includes the carrying amount of reverse repurchase agreements and positions subject to the securitisation framework.

⁽²⁾ Impairment of off-balance sheet exposures is shown as positive, in line with FINREP regulatory financial reporting models.

⁽¹⁾ Other Countries includes mainly exposures in Europe (excluding Spain), United States and Asia.

⁽²⁾ Includes gross carrying amount of the "amortised cost" portfolio, the "fair value through other comprehensive income" portfolio and the "fair value through P&L" portfolios.

⁽³⁾ Includes gross carrying amount of assets at amortised cost and assets at fair value through other comprehensive income.

EU CQ4 - Quality of non-performing exposures by geography (Million Euros. 12-31-2021)

Gross carrying amount⁽²⁾ / nominal amount

		Of which: non performing	Of which: defaulted	Of which: subject to impairment ⁽³⁾	Accumulated impairment	Provisions on off-balance sheet	Accumulated negative changes in fair value due to credit risk on non-performing exposures
On balance exposures	423,050	14,716	14,716	422,290	(11,275)		—
Spain	194,453	7,822	7,822	194,280	(4,983)		—
Mexico	71,410	1,939	1,939	71,190	(2,051)		—
Turkey	42,261	2,697	2,697	41,966	(1,934)		—
South America	45,317	1,817	1,817	45,317	(1,888)		—
Other areas ⁽¹⁾	69,609	442	442	69,537	(419)		—
Off balance exposures	165,448	962	962			691	
Spain	52,051	655	655			261	
Mexico	19,805	12	12			67	
Turkey	14,052	170	170			209	
South America	11,317	116	116			110	
Other areas ⁽¹⁾	68,223	9	9			45	
Total	588,498	15,678	15,678	422,290	(11,275)	691	

⁽¹⁾ Includes the carrying amount of reverse repurchase agreements and positions subject to the securitisation framework.

^(**) Impairment of off-balance sheet exposures is shown as positive, in line with FINREP regulatory financial reporting models.

⁽¹⁾ Other Countries includes mainly exposures in Europe (excluding Spain), United States and Asia.

⁽²⁾ Includes gross carrying amount of the "amortised cost" portfolio, the "fair value through other comprehensive income" portfolio and the "fair value through P&L" portfolios.

⁽³⁾ Includes gross carrying amount of assets at amortised cost and assets at fair value through other comprehensive income.

Throughout 2022, there has been a growth in activity in all the geographies in where the Group operates, mainly due to the dynamism of lending activity.

The distribution by counterparty sector of total and non-performing exposures of loans and advances, as well as their impairment as of December 31, 2022 and December 31, 2021, are shown below:

Table 17. EU CQ5 - Credit quality of loans and advances to non-financial corporations by industry (Million Euros. 12-31-2022)

	Gross carrying amount⁽¹⁾/nominal amount				Accumulated impairment	Accumulated negative changes in fair value due to credit risk on non-performing exposures
		Of which: non performing	Of which: defaulted	Of which: subject to impairment ⁽²⁾		
Agriculture, forestry and fishing	4,475	153	153	4,475	(151)	—
Mining and quarrying	5,006	179	179	5,006	(106)	—
Manufacturing	44,658	869	869	44,583	(795)	—
Electricity, gas, steam and air conditioning supply	15,344	650	650	15,344	(535)	—
Water supply	875	21	21	875	(16)	—
Construction	8,349	784	784	8,349	(538)	—
Wholesale and retail trade	30,974	1,184	1,184	30,974	(951)	—
Transport and storage	11,054	319	319	11,051	(343)	—
Accommodation and food service activities	8,003	451	451	8,003	(329)	—
Information and communication	7,497	113	113	7,497	(47)	—
Real estate activities	11,431	718	718	11,349	(527)	—
Financial activities and insurance	7,468	200	200	7,468	(187)	—
Professional, scientific and technical activities	3,948	169	169	3,948	(154)	—
Administrative and support service activities	4,021	180	180	4,021	(124)	—
Public administration and defence, compulsory social security	268	8	8	268	(13)	—
Education	556	35	35	556	(29)	—
Human health services and social work activities	2,108	138	138	2,108	(53)	—
Arts, entertainment and recreation	927	68	68	927	(79)	—
Other services	4,214	101	101	4,214	(519)	—
Total	171,176	6,340	6,340	171,017	(5,495)	—

⁽¹⁾ Includes the carrying amount of reverse repurchase agreements and positions subject to the securitisation framework.

⁽¹⁾ Includes gross carrying amount of assets at amortised cost, assets at fair value through other comprehensive income and assets designated at fair value through profit and loss other than those held for trading.

⁽²⁾ Includes gross carrying amount of assets at amortised cost and assets at fair value through other comprehensive income.

EU CQ5 - Credit quality of loans and advances to non-financial corporations by activity sector (Million Euros. 12-31-2021)

	Gross carrying amount⁽¹⁾/nominal amount				Accumulated impairment	Accumulated negative changes in fair value due to credit risk on non-performing exposures
		Of which: non performing	Of which: defaulted	Of which: subject to impairment⁽²⁾		
Agriculture, forestry and fishing	4,077	125	125	4,077	(154)	—
Mining and quarrying	4,889	222	222	4,889	(130)	—
Manufacturing	35,129	1,008	1,008	35,058	(867)	—
Electricity, gas, steam and air conditioning supply	13,718	570	570	13,718	(489)	—
Water supply	782	22	22	782	(21)	—
Construction	8,336	896	896	8,336	(619)	—
Wholesale and retail trade	25,856	1,312	1,312	25,856	(1,104)	—
Transport and storage	10,310	879	879	10,310	(400)	—
Accommodation and food service activities	7,693	470	470	7,693	(405)	—
Information and communication	6,827	118	118	6,533	(56)	—
Real estate activities	9,511	719	719	9,438	(466)	—
Financial activities and insurance	6,236	210	210	6,236	(181)	—
Professional, scientific and technical activities	3,910	185	185	3,910	(152)	—
Administrative and support service activities	3,049	185	185	3,049	(132)	—
Public administration and defence, compulsory social security	203	9	9	203	(11)	—
Education	582	43	43	582	(34)	—
Human health services and social work activities	1,888	48	48	1,888	(41)	—
Arts, entertainment and recreation	1,011	209	209	1,011	(95)	—
Other services	3,211	84	84	3,211	(445)	—
Total	147,219	7,316	7,316	146,781	(5,801)	—

⁽¹⁾ Includes the carrying amount of reverse repurchase agreements and positions subject to the securitisation framework.

⁽¹⁾ Includes gross carrying amount of assets at amortised cost, assets at fair value through other comprehensive income and assets designated at fair value through profit and loss other than those held for trading.

⁽²⁾ Includes gross carrying amount of assets at amortised cost and assets at fair value through other comprehensive income.

During 2022, the gross book balance of loans and advances to non-financial corporations has grown by approximately €24 billion, representing an increase of 16% over the December 31, 2021 figures. In this growth, the contribution of the manufacturing industry sector (€ +9,526 million) stands out, representing a relative growth of 27% compared to December 2021. Exposures in default decreased by €976 million and accumulated impairment by €306 million; both figures were partly affected by exchange rates and the sale of a default portfolio in Spain in the last quarter of 2022.

The distribution of the gross book value of performing and non-performing exposures of loans and debt securities by residual maturity is presented below. The accounting values as of December 31, 2022 and December 31, 2021 are presented:

Table 18. EU CR1-A - Maturity of exposures (Million Euros. 12-31-2022)

	Value of net exposure ⁽¹⁾					Total
	On demand	≤ 1 year	> 1 year ≤ 5 year	> 5 year	No stated maturity	
Loans and advances	4,101	114,139	106,902	152,519	—	377,661
Debt securities	—	19,378	41,795	19,772	7	80,952
Total	4,101	133,517	148,698	172,291	7	458,613

⁽¹⁾ Includes gross carrying amount of the "amortised cost" portfolio, the "fair value through other comprehensive income" portfolio and the "fair value through P&L" portfolios.

Table 18. EU CR1-A - Maturity of exposures (Million Euros. 12-31-2021)

	Value of net exposure ⁽¹⁾					Total
	On demand	≤ 1 year	> 1 year ≤ 5 year	> 5 year	No stated maturity	
Loans and advances	3,161	85,967	96,524	152,525	—	338,178
Debt securities	—	14,922	34,243	24,175	257	73,597
Total	3,161	100,889	130,767	176,700	257	411,775

⁽¹⁾ Includes gross carrying amount of the "amortised cost" portfolio, the "fair value through other comprehensive income" portfolio and the "fair value through P&L" portfolios.

The changes of non performing exposures between December 31, 2021 and December 31, 2022 is shown below in the following tables:

Table 19. EU CR2 - Changes in the balance of exposures to credit risk in default and impaired (Million Euros)

Gross book value of defaulted exposures	
Opening balance as at December 2021	15,678
Loans and debt securities that have defaulted or whose value has deteriorated since the last reporting period	3,908
Reclassification to non-default status	(2,981)
Amounts recognized as write-offs	(1,158)
Other changes	336
Closing balance as at June 2022	15,783

Gross book value of defaulted exposures	
Opening balance as at June 2022	15,783
Loans and debt securities that have defaulted or whose value has deteriorated since the last reporting period	4,204
Reclassification to non-default status	(2,765)
Amounts recognized as write-offs	(1,610)
Other changes	(910)
Closing balance as at December 2022	14,701

The balance of defaulted exposures decreased by approximately 6% during the year, mainly due to the effect of the sale of the default portfolio in Spain in the last quarter of the year, as well as the evolution of exchange rates.

A table with a general overview of forborne exposures is shown below, which includes the amounts as of December 31, 2022 and the main figures as of December 31, 2021:

Table 20. EU CQ1 - Credit quality of forborne exposures (Million Euros. 12-31-2022)

	Gross carrying amount/nominal amount of exposures with forbearance measures				Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions		Collateral received and financial guarantees received on forborne exposures	
	Non-performing forborne				On performing forborne exposures	On non-performing forborne exposures	Of which collateral and financial guarantees received on non-performing exposures with forbearance measures	
	Performing forborne	Of which defaulted	Of which impaired					
Cash balances at central banks and other demand deposits	—	—	—	—	—	—	—	—
Loans and advances	6,985	8,135	8,135	8,135	(678)	(4,242)	6,312	2,689
Central banks	—	—	—	—	—	—	—	—
General governments	18	29	29	29	(1)	(8)	6	5
Credit institutions	—	—	—	—	—	—	—	—
Other financial corporations	3	10	10	10	—	(5)	6	4
Non-financial corporations	3,848	4,442	4,442	4,442	(469)	(2,658)	2,355	964
Households	3,116	3,654	3,654	3,654	(208)	(1,571)	3,945	1,717
Debt Securities	—	—	—	—	—	—	—	—
Loan commitments given	391	41	41	41	16	6	—	—
Total exposures	7,376	8,176	8,176	8,176	(694)	(4,248)	6,312	2,689

⁽¹⁾ Includes the carrying amount of reverse repurchase agreements and positions subject to the securitisation framework.

^(**) Off-balance sheet exposures provisions are shown as positive, in line with FINREP regulatory financial reporting models.

EU CQ1 - Credit quality of forborne exposures (Million Euros. 12-31-2021)

	Gross carrying amount/nominal amount of exposures with forbearance measures				Accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions		Collateral received and financial guarantees received on forborne exposures	
	Non-performing forborne				On performing forborne exposures	On non-performing forborne exposures	Of which collateral and financial guarantees received on non-performing exposures with forbearance measures	
	Performing forborne	Of which defaulted	Of which impaired					
Cash balances at central banks and other demand deposits	—	—	—	—	—	—	—	—
Loans and advances	8,736	9,212	9,212	9,200	(801)	(4,033)	7,992	3,187
Central banks	—	—	—	—	—	—	—	—
General governments	47	38	38	38	(1)	(10)	15	6
Credit institutions	—	—	—	—	—	—	—	—
Other financial corporations	17	9	9	9	—	(4)	21	4
Non-financial corporations	4,436	5,217	5,217	5,205	(531)	(2,491)	3,170	1,242
Households	4,236	3,947	3,947	3,947	(268)	(1,529)	4,786	1,935
Debt Securities	—	—	—	—	—	—	—	—
Loan commitments given	364	34	34	34	16	4	—	—
Total exposures	9,101	9,246	9,246	9,234	(817)	(4,037)	7,992	3,187

⁽¹⁾ Includes the carrying amount of reverse repurchase agreements and positions subject to the securitisation framework.

^(**) Off-balance sheet exposures provisions are shown as positive, in line with FINREP regulatory financial reporting models.

The amounts of collateral obtained by taking possession and execution processes as of December 31, 2022 and

December 31, 2021 are shown below, differentiating property, plant and equipment from other collateral:

Table 21. EU CQ7 - Collateral obtained by taking possession and execution processes (Million Euros)

	12-31-2022		12-31-2021	
	Collateral obtained		Collateral obtained	
	Value at initial recognition ⁽¹⁾	Accumulated negative changes ⁽²⁾	Value at initial recognition ⁽¹⁾	Accumulated negative changes ⁽²⁾
Property, plant and equipment (PP&E)	—	—	—	—
Other than PP&E	1,769	(833)	2,140	(948)
Residential immovable property	1,051	(432)	1,369	(522)
Commercial Immovable property	333	(140)	344	(139)
Movable property (auto, shipping, etc.)	9	(6)	9	(7)
Equity and debt instruments	372	(254)	412	(278)
Other	4	(2)	6	(2)
Total	1,769	(833)	2,140	(948)

⁽¹⁾ Value at initial recognition: the gross carrying amount of the collateral obtained by taking possession at initial recognition.

⁽²⁾ Cumulative negative changes: cumulative impairment or negative cumulative changes in the value of collateral initially recognised.

4.2.3.3. Public guarantees and moratorium programmes in response to COVID-19 crisis

Since the beginning of the pandemic, the Group offered COVID-19 support measures to its customers in all the geographic areas where it operates, consisting of both deferrals on existing loans and new public-guaranteed lending. Deferral support schemes have expired in all geographical areas. Measures related to new government-guaranteed loans are:

Spain:

- The Official Credit Institute (ICO by its Spanish acronym) published several support programs aimed at the self-employed, small and medium-sized enterprises (hereinafter "SMEs") and companies, through which a guarantee of between 60% and 80% was granted by the ICO (for a term of up to 5 years for new financing granted under RDL Mar/2020, RDL Nov/2020, RDL 5/2021 and the Code of Good Practices).
- In March 2022, the Council of Ministers agreed to modify the Code of Good Practices to lessen access conditions given the difficulties of clients, which are facing sharp increases in costs due to their special exposure to tensions in the prices of energy and other raw materials.
- As an additional measure of the Code of Good Practices, the Council of Ministers approved the agreement to establish the possibility of term extensions of ICO financing given to self-employed and companies, after June 30, 2022, after the expiry of the Temporary Framework of state support approved by the European Commission.

In addition, on November 23, 2022, Royal Decree-Law 19/2022, of November 22, was published. It amends the Code of Good Practices, establishes a new Code of Good Practices easing the interest rates hike on mortgage loans agreements related to primary residences, and provides for other structural measures aiming to improve the loan market. BBVA has adhered to the new Code of Good Practices with effect from January 1, 2023.

Peru:

- There were public support programs such as *Reactiva*, *Creceer* or FAE aimed at companies and micro-enterprises with government guaranteeing amounts ranging from 60% to 98%, depending on the program and the type of company.
- Through a Decree published in May 2022, for loans granted under the *Reactiva* program, both the maturity and grace period of such loans could be extended. The ability to benefit from this measure expires on June 30, 2023, following the extension of the initial period that ended December 31, 2022.

New government-guaranteed financing was also granted in Turkey, Colombia and Argentina.

Information about public guarantees and moratorium schemes, introduced by the governments in response to COVID-19 crisis as of December 31, 2022 and as of December 31, 2021 is shown below.

Table 22. Information on loans and advances subject to legislative and non-legislative moratoria (Million Euros. 12-31-2022)

	Gross carrying amount								Accumulated impairment, accumulated negative changes in fair value due to credit risk								Gross carrying amount
	Performing				Non performing				Performing				Non performing				
	Of which: exposures with forbearance measures	Of which: Instruments with significant increase in credit risk since initial recognition but not credit-impaired (Stage 2)	Of which: exposures with forbearance measures	Of which: Unlikely to pay that are not past-due <= 90 days	Of which: exposures with forbearance measures	Of which: Instruments with significant increase in credit risk since initial recognition but not credit-impaired (Stage 2)	Of which: exposures with forbearance measures	Of which: Unlikely to pay that are not past-due <= 90 days	Of which: exposures with forbearance measures	Of which: Instruments with significant increase in credit risk since initial recognition but not credit-impaired (Stage 2)	Of which: exposures with forbearance measures	Of which: Unlikely to pay that are not past-due <= 90 days	Of which: exposures with forbearance measures	Of which: Unlikely to pay that are not past-due <= 90 days	Inflows to non-performing exposures		
Loans and advances subject to moratorium	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
of which: Households	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
of which: Collateralised by residential immovable property	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
of which: Non-financial corporations	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
of which: Small and Medium-sized Corporates	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
of which: Collateralised by commercial immovable property	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

Information on loans and advances subject to legislative and non-legislative moratoria (Million Euros. 12-31-2021)

	Gross carrying amount								Accumulated impairment, accumulated negative changes in fair value due to credit risk								Gross carrying amount
	Performing				Non performing				Performing				Non performing				
	Of which: exposures with forbearance measures	Of which: Instruments with significant increase in credit risk since initial recognition but not credit-impaired (Stage 2)	Of which: exposures with forbearance measures	Of which: Unlikely to pay that are not past-due <= 90 days	Of which: exposures with forbearance measures	Of which: Instruments with significant increase in credit risk since initial recognition but not credit-impaired (Stage 2)	Of which: exposures with forbearance measures	Of which: Unlikely to pay that are not past-due <= 90 days	Of which: exposures with forbearance measures	Of which: Instruments with significant increase in credit risk since initial recognition but not credit-impaired (Stage 2)	Of which: exposures with forbearance measures	Of which: Unlikely to pay that are not past-due <= 90 days	Of which: exposures with forbearance measures	Of which: Unlikely to pay that are not past-due <= 90 days	Inflows to non-performing exposures		
Loans and advances subject to moratorium	189	169	60	122	20	13	18	(23)	(19)	(6)	(19)	(4)	(2)	(3)	3		
of which: Households	107	90	11	46	17	12	17	(12)	(10)	—	(10)	(2)	(2)	(2)	1		
of which: Collateralised by residential immovable property	97	81	9	42	16	11	15	(11)	(10)	—	(10)	(2)	(1)	(2)	1		
of which: Non-financial corporations	82	79	49	76	3	1	2	(11)	(9)	(5)	(9)	(2)	—	(1)	2		
of which: Small and Medium-sized Corporates	44	42	22	40	2	1	2	(7)	(6)	(5)	(6)	(1)	—	(1)	1		
of which: Collateralised by commercial immovable property	50	49	22	48	1	1	1	(7)	(7)	(3)	(7)	—	—	—	1		

Table 23. Breakdown of loans and advances subject to legislative and non-legislative moratoria by residual maturity of moratoria (Million Euros. 12-31-2022)

	Number of obligors	Gross carrying amount	Of which: legislative moratoria	Of which: expired	Residual maturity of moratoria				
					<= 3 months	> 3 months <= 6 months	> 6 months <= 9 months	> 9 months <= 12 months	> 1 year
Loans and advances for which moratorium was offered	1,869,737	21,243							
Loans and advances subject to moratorium (granted)	1,791,756	18,103	15,592	18,103	—	—	—	—	—
of which: Households		12,974	10,476	12,974	—	—	—	—	—
of which: Collateralised by residential immovable property		9,542	7,315	9,542	—	—	—	—	—
of which: Non-financial corporations		5,039	5,027	5,039	—	—	—	—	—
of which: Small and Medium-sized Corporates		2,725	2,724	2,725	—	—	—	—	—
of which: Collateralised by commercial immovable property		1,378	1,365	1,378	—	—	—	—	—

Breakdown of loans and advances subject to legislative and non-legislative moratoria by residual maturity of moratoria (Million Euros. 12-31-2021)

	Number of obligors	Gross carrying amount	Of which: legislative moratoria	Of which: expired	Residual maturity of moratoria				
					<= 3 months	> 3 months <= 6 months	> 6 months <= 9 months	> 9 months <= 12 months	> 1 year
Loans and advances for which moratorium was offered	2,230,390	24,392							
Loans and advances subject to moratorium (granted)	2,188,720	21,931	19,116	21,743	152	2	—	33	1
of which: Households		15,011	12,213	14,904	105	—	—	2	—
of which: Collateralised by residential immovable property		10,291	7,848	10,195	94	—	—	2	—
of which: Non-financial corporations		6,798	6,781	6,716	47	1	—	31	1
of which: Small and Medium-sized Corporates		3,994	3,987	3,950	11	—	—	31	1
of which: Collateralised by commercial immovable property		1,573	1,556	1,523	18	—	—	31	—

Table 24. Information on new loans and advances subject to public guarantee schemes introduced in response to the COVID-19 crisis (Million Euros. 12-31-2022)

	Gross carrying amount		Maximum amount of collateral that can be considered	Gross carrying amount
		of which: forborne	Public guarantees received	Inflows to non-performing exposures
Newly originated loans and advances subject to public guarantee schemes	13,955	588	10,851	349
of which: Households	1,302			30
of which: Collateralised by residential immovable property	5			—
of which: Non-financial corporations	12,636	573	9,806	319
of which: Small and medium-sized Corporates	9,672			282
of which: Collateralised by commercial immovable property	17			2

Information on new loans and advances subject to public guarantee schemes introduced in response to the COVID-19 crisis (Million Euros. 12-31-2021)

	Gross carrying amount		Maximum amount of collateral that can be considered	Gross carrying amount
		of which: forborne	Public guarantees received	Inflows to non-performing exposures
Newly originated loans and advances subject to public guarantee schemes	16,093	471	12,560	275
of which: Households	1,376			20
of which: Collateralised by residential immovable property	6			—
of which: Non-financial corporations	14,700	464	11,454	254
of which: Small and medium-sized Corporates	10,911			211
of which: Collateralised by commercial immovable property	8			1

As of December 31, 2022, there are no moratoriums in accordance with EBA requirements that are active on the balance sheet, nor are extensions granted on them.

4.2.4. Information on the standardised approach

4.2.4.1. Identification of external rating agencies

The external credit assessment institutions (ECAIs) appointed by the Group to determine the risk weights applicable to its exposure are as follows: Standard & Poors', Moody's, Fitch.

The ratings of ECAI are used for exposures to wholesale portfolios, basically those involving "Sovereigns and central banks" in developed countries, and "Financial Institutions".

In cases where a counterparty has ratings from different ECAIs, the Group follows the procedure laid down in Article 138 of the Solvency Regulations, which specifies the order of priority to be used in the assignment of ratings.

When two different credit ratings made by designated ECAIs are available for a rated exposure, the higher risk weight will be applied. However, when there are more than two credit ratings for the same rated exposure, use

is to be made of the two credit ratings that provide the lowest risk weights. If the two lowest risk weights coincide, then that weight will be applied; if they do not coincide, the higher of the two will be applied.

The correspondence between the alphanumeric scale of each agency used and the risk categories used by the Group are defined in the Final Draft Implementing Technical Standards on the mapping of ECAIs credit assessment under Article 136(1) and (3) of Regulation (EU) No. 575/2013; complying with the provisions of Article 136 of the CRR.

4.2.4.2. Assignment of the credit ratings to public share issues

The number of cases and the amount of these assignments are not relevant for the Group in terms of credit admission and issuer risk management.

4.2.4.3. Exposure values before and after the application of credit risk mitigation techniques

The original exposure net of value adjustments and provisions, exposure after risk mitigation techniques, and

RWA density for each exposure category, according to the standardised approach, are shown below, excluding securitisation and counterparty credit risk exposure:

Table 25. EU CR4 - Standardised approach - credit risk exposure and credit risk mitigation effects (Million Euros. 12-31-2022)

Exposure Class	Exposures before CCF and CRM ⁽¹⁾		Exposures post-CCF and CRM ⁽²⁾		RWA ⁽³⁾ and RWA Density	
	On-balance sheet amount	Off-balance sheet amount	On-balance sheet amount	Off-balance sheet amount	RWA	RWA Density
Central governments or central banks	150,118	963	180,598	2,473	30,891	17 %
Regional governments or local authorities	6,843	278	2,019	124	1,333	62 %
Public sector entities	805	493	779	237	964	95 %
Multilateral development banks	185	—	185	—	6	3 %
International Organisations	466	—	466	—	—	—
Institutions	10,218	17,250	10,251	1,383	4,303	37 %
Corporates	41,486	14,706	38,614	7,365	43,187	94 %
Retail	56,115	27,410	48,393	3,791	36,333	70 %
Secured by mortgages on immovable property	27,306	353	27,163	190	9,871	36 %
Exposures in default	2,795	361	2,456	138	2,685	104 %
Exposures associated with particularly high risk	1,940	396	1,733	140	2,809	150 %
Covered bonds	—	—	—	—	—	—
Institutions and corporates with a short term credit assessment	—	—	—	—	—	39 %
Collective Investment Undertakings	1	1	1	1	1	100 %
Equity	—	—	—	—	—	—
Other Items	19,537	20	19,869	31	11,229	56 %
Total	317,816	62,232	332,527	15,872	143,612	41%

⁽¹⁾ Net OE: original exposure net of value adjustments and provisions.

⁽²⁾ EAD: original exposure net of value adjustments and provisions after CRM and CCF.

⁽³⁾ RWAs: EAD after risk-weighting.

EU CR4 - Standardised approach - credit risk exposure and credit risk mitigation effects (Million Euros. 12-31-2021)

Exposure Class	Exposures before CCF and CRM ⁽¹⁾		Exposures post-CCF and CRM ⁽²⁾		RWA ⁽³⁾ and RWA Density	
	On-balance sheet amount	Off-balance sheet amount	On-balance sheet amount	Off-balance sheet amount	RWA	RWA Density
Central governments or central banks	126,752	979	157,250	2,925	30,094	19 %
Regional governments or local authorities	5,255	1,179	1,304	675	1,188	60 %
Public sector entities	615	769	610	262	846	97 %
Multilateral development banks	104	—	104	—	6	6 %
International Organisations	—	—	—	—	—	—
Institutions	9,640	17,439	9,751	1,674	4,863	43 %
Corporates	36,166	11,382	33,745	6,020	37,525	94 %
Retail	45,470	18,828	38,476	2,404	28,508	70 %
Secured by mortgages on immovable property	24,062	269	23,893	142	8,637	36 %
Exposures in default	3,190	267	3,040	127	3,483	110 %
Exposures associated with particularly high risk	2,366	484	2,238	164	3,602	150 %
Covered bonds	—	—	—	—	—	—
Institutions and corporates with a short term credit assessment	—	—	—	—	—	93 %
Collective Investment Undertakings	—	1	—	1	1	100 %
Equity	—	—	—	—	—	—
Other Items	18,457	—	18,726	69	10,987	58 %
Total	272,077	51,598	289,137	14,461	129,741	43%

⁽¹⁾ Net OE: original exposure net of value adjustments and provisions.

⁽²⁾ EAD: original exposure net of value adjustments and provisions after CRM and CCF.

⁽³⁾ RWAs: EAD after risk-weighting.

The increase in exposure observed during the period is mainly explained by the increase in activity in all the geographies where the Group operates and the increase in sovereign exposures, due to the increase in balances with central banks as well as in the fixed-income portfolio, although with little effect in terms of RWA because most of the growth is in exposure to European sovereigns and other geographies where supervisory and regulatory equivalence applies. In terms of the density of the different exposure categories, no significant changes were observed.

In addition, the following tables show the exposure net of provisions, before and after the application of credit risk mitigation techniques by risk weights and exposure categories under the standardised approach, excluding securitisation positions and counterparty credit risk exposure.

Exposure net of provisions and after applying CCF and CRM related to counterparty credit risk are shown in table EU CCR3 of Section 4.2.6.2.1 of this report.

Table 26. EU CR5 - Standardised approach: exposure values after application of credit risk mitigation techniques (Million Euros. 12-31-2022)

Exposure Class	Risk Weight															Total credit exposures amount (post-CCF and post-CRM)	Of which: unrated ⁽¹⁾
	0%	2%	4%	10%	20%	35%	50%	70%	75%	100%	150%	250%	370%	1250%	Others		
Central Government or central banks	154,318	—	—	—	275	—	6,596	—	—	17,542	853	3,486	—	—	—	183,071	56,214
Regional government or local authorities	45	—	—	—	947	—	16	—	—	1,136	—	—	—	—	—	2,143	190
Public sector entities	24	—	—	—	3	—	51	—	—	938	—	—	—	—	—	1,016	913
Multilateral development banks	174	—	—	—	—	—	11	—	—	—	—	—	—	—	—	185	81
International Organisations	466	—	—	—	—	—	—	—	—	—	—	—	—	—	—	466	466
Institutions	—	198	—	—	8,042	—	1,513	—	—	1,774	107	—	—	—	—	11,633	6,658
Corporates	—	—	—	—	721	—	1,270	—	—	42,244	1,743	—	—	—	—	45,978	37,976
Retail	—	—	—	—	—	—	—	—	52,184	—	—	—	—	—	—	52,184	52,184
Secured by mortgages on immovable property	—	—	—	—	—	22,649	4,579	—	2	122	—	—	—	—	—	27,353	27,353
Exposures in default	—	—	—	—	—	—	—	—	—	2,411	182	—	—	—	—	2,594	2,594
Exposures associated with particularly high risk	—	—	—	—	—	—	—	—	—	—	1,873	—	—	—	—	1,873	1,873
Covered bonds	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Institutions and corporates with a short-term credit assessment	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Collective investment undertakings	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	1	1
Equity	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other items	8,538	—	—	—	167	—	—	—	—	11,195	—	—	—	—	—	19,900	19,900
Total	163,566	198	—	—	10,154	22,649	14,037	—	52,186	77,365	4,758	3,486	—	—	—	348,399	179,495

⁽¹⁾ Of which: Unrated refers to exposure for which no credit rating from designated ECAIs is available.

EU CR5 - Standardised approach: exposure values after application of credit risk mitigation techniques (Million Euros. 12-31-2021)

Exposure Class	Risk Weight															Total credit exposures amount (post-CCF and post-CRM)	Of which: unrated ⁽¹⁾
	0%	2%	4%	10%	20%	35%	50%	70%	75%	100%	150%	250%	370%	1250%	Others		
Central Government or central banks	131,024	—	—	—	350	—	7,721	—	—	17,152	808	3,120	—	—	—	160,175	56,724
Regional government or local authorities	58	—	—	—	806	—	177	—	—	938	—	—	—	—	—	1,979	244
Public sector entities	—	—	—	—	28	—	5	—	—	838	—	—	—	—	—	871	871
Multilateral development banks	93	—	—	—	—	—	12	—	—	—	—	—	—	—	—	104	—
International Organisations	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Institutions	—	204	—	—	6,876	—	1,806	—	—	2,456	83	—	—	—	—	11,425	3,566
Corporates	—	—	—	—	347	—	974	—	—	37,430	1,014	—	—	—	—	39,765	34,150
Retail	—	—	—	—	—	—	—	—	40,880	—	—	—	—	—	—	40,880	40,880
Secured by mortgages on immovable property	—	—	—	—	—	20,136	3,727	—	2	171	—	—	—	—	—	24,035	24,035
Exposures in default	—	—	—	—	—	—	—	—	—	2,534	633	—	—	—	—	3,167	3,167
Exposures associated with particularly high risk	—	—	—	—	—	—	—	—	—	—	2,401	—	—	—	—	2,401	2,401
Covered bonds	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Institutions and corporates with a short-term credit assessment	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Collective investment undertakings	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	1	1
Equity	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other items	7,773	—	—	—	42	—	—	—	—	10,979	—	—	—	—	—	18,795	18,795
Total	138,948	204	—	—	8,450	20,136	14,421	—	40,882	72,500	4,939	3,120	—	—	—	303,599	184,834

⁽¹⁾ Of which: Unrated refers to exposure for which no credit rating from designated ECAIs is available.

The largest changes in exposures by risk weights during the period occurred, on the one hand, in sovereign exposures subject to a 0% risk weight due to the increase in reserves and in the fixed-income portfolio and, on the other hand, in exposures to retail and corporate portfolios subject to a 75% and 100% risk weight, respectively, as a result of the boost in the growth of activity with this type of client.

The following table shows the flow statements of credit and counterparty credit risk RWA under standardised approach during the fourth quarter of 2022:

Table 27. RWA flow statements of credit risk exposures under the standardised approach (Million Euros)

	Credit Risk		Counterparty Credit Risk		Total	
	RWA amounts	Capital Requirements	RWA amounts	Capital Requirements	RWA amounts	Capital requirements
RWAs as of September 30, 2022	150,696	12,056	3,880	310	154,576	12,366
Asset size	3,029	242	(31)	(3)	2,997	240
Asset quality	(122)	(10)	(12)	(1)	(134)	(11)
Model updates	—	—	—	—	—	—
Methodology and policy	—	—	—	—	—	—
Acquisitions and disposals	—	—	—	—	—	—
Foreign exchange movements	(9,991)	(799)	(208)	(17)	(10,199)	(816)
Other	—	—	—	—	—	—
RWAs as of December 31, 2022	143,612	11,489	3,628	290	147,240	11,779

During the fourth quarter of 2022, there was a significant reduction in risk-weighted assets under the standardised approach, mainly due to the appreciation of the euro against the currencies with which the Group operates, with particular relevance for U.S. dollar exposures.

Credit risk RWAs, isolating this effect, grew by €3,029 million, in line with the evolution of the lending business in the geographies that measure RWAs under the standard method and, secondarily, due to a greater increase in the consumption of DTAs.

The APRs for counterparty risk fell slightly over the quarter, with the exchange-rate effect being the main reason.

The full annual series of RWA flow of credit risk under the standardised approach is available in the editable file “Pillar III 2022 – Tables & Annexes”.

4.2.5. Information on the IRB approach

4.2.5.1. General information

4.2.5.1.1. Authorisation by the supervisor to use the IRB approach

The following are the models authorised by the supervisor for use in the calculation of regulatory capital requirements.

Table 28. Models authorised by the supervisor for the purpose of their use in the calculation of capital requirements (12-31-2022)

Institution Portfolio	Portfolio	Number of models	Model description
BBVA S.A.	Financial institutions	4	1 Rating, 1 PD model, 1 LGD model, 1 CCF model
	Public institutions	5	1 Rating, 1 PD model, 2 LGD models, 1 CCF model
	Specialised finance	2	1 Slotting criteria, 1 CCF model
	Developers	4	1 Rating, 1 PD model, 1 LGD model, 1 CCF model
	Small Corporates	5	1 Rating, 1 PD model, 2 LGD models, 1 CCF model
	Medium-sized Corporates	5	1 Rating, 1 PD model, 2 LGD models, 1 CCF model
	Large Corporates	5	1 Rating, 1 PD model, 2 LGD models, 1 CCF model
	Mortgages	6	2 Scorings, 2 PD models, 1 LGD model, 1 CCF model
	Consumer finance	5	2 Scorings, 2 PD models, 1 LGD model
	Credit cards	10	2 Scorings, 2 PD models, 3 LGD models, 3 CCF models
BBVA Bancomer	Automobiles	4	2 Scorings, 1 PD model, 1 LGD model
	Retail Revolving (Credit Cards)	11	4 Scorings, 5 PD models, 1 LGD model, 1 CCF model
	Large Corporates	5	1 Rating, 1 PD model, 2 LGD models, 1 CCF model
BBVA Group	Medium-sized Corporates	5	1 Rating, 1 PD model, 2 LGD models, 1 CCF model
	Equity	1	1 capital model

The following table shows the distribution of EAD of credit and counterparty risk by method for each category of exposure as of December 31, 2022 and as of December 31, 2021, in addition to the percentage subject to rollout¹ (counterparty credit risk included and securitisations are excluded):

Table 29. EU CR6-A — Scope of the use of IRB and SA approaches (Million euros. 12-31-2022)

	Exposure value as defined in Article 166 CRR for exposures subject to IRB approach	Total exposure value for exposures subject to the Standardised approach and to the IRB approach	Percentage of total exposure value subject to the permanent partial use of the SA (%)	Percentage of total exposure value subject to IRB Approach (%)	Percentage of total exposure value subject to a roll-out plan (%)
Central governments or central banks	11,276	165,501	0.66	0.07	0.27
Of which Regional governments or local authorities		—	—	—	—
Of which Public sector entities		—	—	—	—
Institutions	177,693	97,889	8.33 %	75.89 %	15.79 %
Corporates	142,572	218,092	3.95 %	74.22 %	21.83 %
Of which Corporates - Specialised lending, excluding slotting approach		—	—	—	—
Of which Corporates - Specialised lending under slotting approach		6,475	—	100.00 %	—
Retail	100,150	177,698	7.89 %	53.70 %	38.41 %
of which Retail – Secured by real estate SMEs		2,327	21.57 %	39.99 %	38.44 %
of which Retail – Secured by real estate non-SMEs		91,510	5.94 %	74.31 %	19.75 %
of which Retail – Qualifying revolving		23,058	2.19 %	52.13 %	45.68 %
of which Retail – Other SMEs		27,434	11.47 %	9.54 %	78.99 %
of which Retail – Other non-SMEs		33,369	13.30 %	35.52 %	51.19 %
Equity	5,692	5,692	0.00	100.00 %	—
Other non-credit obligation assets	—	13,335	8.03 %	—	91.97 %
Total	437,384	678,207	21.25 %	50.29 %	28.46 %

¹ Sequential deployment process of IRB models in each exposure category.

Table 29. EU CR6-A — Scope of the use of IRB and SA approaches (Million euros. 12-31-2021)

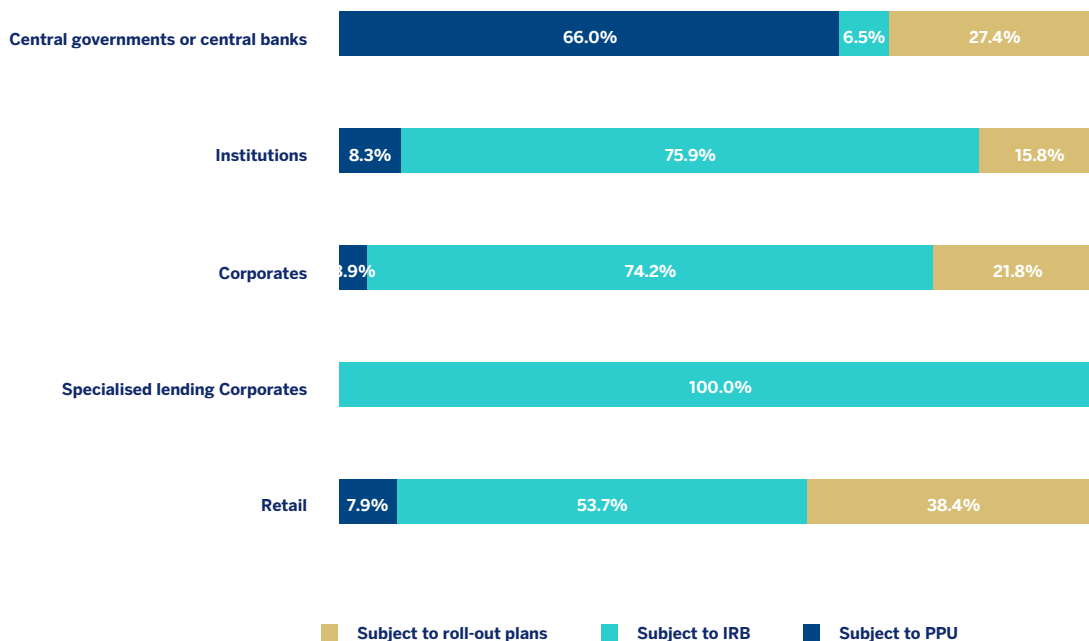
	Exposure value as defined in Article 166 CRR for exposures subject to IRB approach	Total exposure value for exposures subject to the Standardised approach and to the IRB approach	Percentage of total exposure value subject to the permanent partial use of the SA (%)	Percentage of total exposure value subject to IRB Approach (%)	Percentage of total exposure value subject to a roll-out plan (%)
Central governments or central banks	16,117	145,807	0.61	0.07	0.31
Of which Regional governments or local authorities		—	—	—	—
Of which Public sector entities		—	—	—	—
Institutions	120,899	99,448	7.23 %	76.63 %	16.13 %
Corporates	147,326	192,649	7.77 %	71.84 %	20.39 %
Of which Corporates - Specialised lending, excluding slotting approach		—	—	—	—
Of which Corporates - Specialised lending under slotting approach		6,333	—	100.00 %	—
Retail	101,191	162,671	12.80 %	59.07 %	28.13 %
of which Retail – Secured by real estate SMEs		2,538	22.46 %	42.91 %	34.63 %
of which Retail – Secured by real estate non-SMEs		91,855	5.64 %	76.66 %	17.71 %
of which Retail – Qualifying revolving		17,831	11.48 %	54.44 %	34.08 %
of which Retail – Other SMEs		22,556	17.42 %	14.31 %	68.27 %
of which Retail – Other non-SMEs		27,891	32.64 %	41.77 %	25.59 %
Equity	5,809	5,809	0.00	100.00 %	—
Other non-credit obligation assets	—	13,693	6.57 %	—	93.43 %
Total	391,342	620,077	21.46 %	52.77 %	25.77 %

The above table is shown according to the EBA ITS where the first column includes the exposure value (EAD) of the portfolios subject to the IRB method, while the second column includes the value of the exposures subject to the standard and IRB approaches. The second column includes the value of the exposure defined by article 429(4) of the CRR that corresponds to the exposure to

the leverage ratio (see section 5.1. for more information on the definition of the exposure to the leverage ratio).

The following chart shows the exposures distributed by permanent partial use of the standard method, subject to roll-out plans and those that are already subject to the IRB method:

Chart 9. Distribution of Exposure between the use of PPU, IRB and rollout plans



The main types of rating models used in the IRB portfolios are ratings for wholesale portfolios and proactive and reactive scorings in the case of retail portfolios.

The rating models give contracts/customers a score that orders customers according to their credit quality. This score is determined, among others, by the characteristics of the transactions, economic and financial conditions of the customer, information on payment behaviour, credit bureau.

The approval of the models by the supervisor includes both own estimations of the probability of default (PD), loss given default (LGD) and the internal estimation of credit conversion factors (CCFs).

The Group continues with the development of a new rollout plan that increases the coverage of IRB models (see table EU CR6-A for more information).

4.2.5.1.2. Structure of internal rating systems and relationship between internal and external ratings

The Group has rating tools for each exposure category listed in the Basel Agreement.

The retail portfolio has scoring tools for determining the credit quality of transactions on the basis of information

on the transaction itself and on the customer. The scoring models are algorithms calculated using statistical methods that score each transaction. This score reflects the transaction’s level of risk and is in direct relation to its probability of default (PD).

These decision models are the basic tool to decide who should receive a loan and the amount to be granted, thereby contributing to both the arrangement and management of retail-type loans.

For the wholesale portfolio, the Group has rating tools that, unlike scorings, do not assess transactions but rather customers. The Group has different tools for rating the various customer segments: small companies, corporates, government and the public sector, etc. In those wholesale portfolios where the number of defaults is very low (sovereign risk, corporates, financial institutions) the internal information is supplemented by the benchmarks of external rating agencies.

The PD estimates made by the Group are transferred to the Master Scale, enabling a comparison to be made with the scales used by external agencies.

Table 30. Master Scale of BBVA's rating (12-31-2022)

External rating	Internal rating	Probability of default (basic points)		
		Average	Minimum from >=	Maximum
Standard & Poor's List	Reduced List (22 groups)			
AAA	AAA	1	0	2
AA+	AA+	2	2	3
AA	AA	3	3	4
AA-	AA-	4	4	5
A+	A+	5	5	6
A	A	8	6	9
A-	A-	10	9	11
BBB+	BBB+	14	11	17
BBB	BBB	20	17	24
BBB-	BBB-	31	24	39
BB+	BB+	51	39	67
BB	BB	88	67	116
BB-	BB-	150	116	194
B+	B+	255	194	335
B	B	441	335	581
B-	B-	785	581	1,061
CCC+	CCC+	1,191	1,061	1,336
CCC	CCC	1,500	1,336	1,684
CCC-	CCC-	1,890	1,684	2,121
CC+	CC+	2,381	2,121	2,673
CC	CC	3,000	2,673	3,367
CC-	CC-	3,780	3,367	4,243

4.2.5.1.3. Use of internal estimates for purposes other than the calculation of regulatory capital requirements

The Group's internal estimates are a critical component of management based on value creation, giving rise to criteria for assessing the risk-return trade-off.

These measures have a broad range of uses, from the adoption of strategic business decisions through to the individual admission of transactions.

Specifically, internal estimates are used in everyday business in support of credit risk management through their inclusion in admission and monitoring processes, as well as in the pricing of transactions.

The management use of performance metrics that consider expected loss, economic capital and risk-adjusted return enables the monitoring of portfolios and the assessment of non-performing positions, among others.

4.2.5.1.4. Process for managing and recognizing the effects of credit risk mitigation

Mitigation is an iterative process whose purpose is to recognize the benefits of the existence of collateral and guarantees, ordering them from the highest to the lowest credit quality.

The Group uses risk mitigation techniques for exposure pertaining to the wholesale portfolio by replacing the debtor's PD with that of the guarantor, in cases in which the latter is eligible and its PD is lower than the debtor's.

In retail admission processes the guarantor is included in the scoring itself.

Collateral in IRB models is recognised through the LGD and must meet eligibility criteria based on maturity and minimum exposure coverage, and making the necessary adjustments depending on the type of existing collateral, financial or real.

4.2.5.1.5. Control mechanisms for internal rating models

The Group has a management framework for rating models that covers all the phases of the model life-cycle: from the moment where a specific need that triggers the development or change of a model is identified, through its validation, regular monitoring and use within the credit risk processes.

Model Development

The development of a model is an activity that requires the involvement of different stakeholders, experience and multidisciplinary technical knowledge. GRM Analytics is the area responsible for the development of BBVA Group's risk models. As a global function, it must ensure that the models are developed according to the best market practices, that the model development process is homogenous within the Group and an efficient management of existing resources.

Every model development must be properly documented. A correct and updated documentation allows to reduce the dependencies of key people and facilitates control, review and training tasks, mitigating the model risk.

An outsourcing of specific activities in the development of risk models is possible, but in no case does this imply a transfer of responsibility outside the Group.

The Group has internal policies where all concepts are defined.

Model Approval

The Group's Chief Risk Officer (CRO) is the head of the risk function in the executive line and, in order to better perform his duties, he is supported by a specific committee structure.

The Regulation for Changes in Risk Models defines the internal governance process that must be followed in order to start using the BBVA Group's risk models, as defined in the Model Risk Management Policy, indicating the committees that must authorize the new models and their changes (methodological changes, changes in scope and usage), as well as the cessation of its use, depending on the relevance of the model for BBVA Group and the materiality of the changes introduced in the model.

The Global Risk Management Committee (GRMC) is constituted as a forum for advising and supporting the Group Risk Director for the exercise of the functions and decision-making that the latter is responsible for adopting. This includes with regards to model risk, among other functions, approving both the material modifications or measures of the Internal Models that are used in the Calculations of Regulatory Capital (IRB; IMA; Longevity) as well as of new models that will be used to this end.

Moreover, the Risk Models Management Committee (RMMC) reports to the GRMC, providing it with adequate technical support in decisions associated with model risk management. One of its functions is the review, prior to its presentation to the GRMC, of the requests for new Internal models that will be for Regulatory Capital calculations or the changes to be introduced in the existing ones, acting in a delegated manner to approve those changes of less relevance or immaterial.

Given its technical component, the presidency is exercised by the Head of GRM Analytics. In addition to including members of GRM's Senior Management and the responsible for GRM Internal Control, the committee is also complemented by members of the GRM Analytics and Internal Validation COEs.

Model Monitoring

A comprehensive monitoring framework allows to identify unexpected behaviour incorrect model usages and even to anticipate when changes in the risk profile of portfolios or products require corrective actions to be taken. The risk rating models are monitored with a frequency appropriate to the nature of the model, the availability of new data, modelling techniques and the

importance of their use in management. The monitoring is analysed with a double perspective: performance and use.

Performance monitoring aims to detect deficiencies in the behaviour of risk rating models, anticipating their possible deterioration over time. It is a mechanism to determine if the models are working correctly, helping to verify that the components of the model work as expected. The performance monitoring framework makes possible to identify weaknesses and establish the necessary action plans to ensure its proper functioning. This analytical framework, a fundamental component of risk model planning, establishes the minimum criteria that must be taken into account, as well as the metrics and thresholds that allow warning of unwanted behaviour.

Usage monitoring aims to verify that the model is effectively used in the risk management process, for the uses defined, and in an appropriate way. This control mechanism continuously allows the detection of deviations from the intended use of the models, as well as the establishment of action plans for their correction.

In addition, the Group has an area independent from the developers and users of the rating models, as well as independent of the departments responsible for model monitoring, whose main function is to backtest the models, in order to ensure their accuracy, robustness and stability (see next section "Validation Process")

On the other hand, a series of reports are periodically presented to the governing bodies for their review, which purpose of is to monitor the main risk indicators and management metrics, the presentation of follow-up reports and plans to redirect exceeded indicators with respect to the action frameworks approved annually.

4.2.5.1.6. Description of the internal rating process

There follows a description of the internal rating process by type of customer:

- **Central banks and central governments:** For this segment, the assignment of ratings is made by country risk unit, which periodically analyse this type of customer, rating them according to the parameters included in the corresponding rating model. There are 3 different methodologies currently in use for allocating country ratings: (i) ratings from external agencies, used for developed countries, emerging countries with elevated incomes and emerging countries where the Group has little risk; (ii) internal rating based on a proprietary tool used for emerging countries where the Group has an appreciable risk; and lastly (iii) the country risk scores published by the Belgian export credit agency (which manages the quantitative model used by the OECD to assign its country risk scores) for countries of marginal importance for the

Group that have no external ratings. Sovereign ratings are generated in local and foreign currency for all countries, as well as a transfer rating, which evaluates the risk of inconvertibility/transfer restrictions.

For emerging countries rated with the internal tool, the local currency rating is obtained by adjusting the foreign currency rating provided by the internal tool with authorization from the Risk Committee allocated for such purpose.

- **Financial institutions:** The relevant risk unit periodically rates these types of clients, and constantly monitors the evolution of these clients in national and international markets. External ratings are a key factor in the ratings assignment for financial institutions.
- **Public institutions:** the rating is generally obtained by the risk units responsible for their sanction, on an annual basis, at the same time as the review of clients' risks or the publication of their accounts.
- **Large Companies:** Includes the rating of exposure with corporate business groups. The result is affected both by indicators of business risk (evaluation of the competitive environment, business positioning, regulation, etc.) and financial risk indicators (size of the group by sales, cash generation, levels of debt, financial flexibility, etc.).

In accordance with the characteristics of the large companies, the rating model has a global nature with specific algorithms according to the sector of activity and geographical adaptations. The rating of these customers is generally calculated within the framework of the annual risk review process, or the admission of new operations.

The responsibility for the assessment lies with the units proposing the risk, while those responsible of approvals, validate it when the decision is taken.

- **Medium-sized companies:** This segment also takes into account quantitative factors derived from economic and financial information, and qualitative factors that are related to the age of the company, the sector, management quality, etc. and alert factors derived from risk monitoring.

As in the Corporate segment, the rating tends to run parallel to the admission process, so the responsibility for rating lies with the unit proposing the risk, while the decision-making level is in charge of validating it.

- **Small-sized companies:** As in the case of medium-sized companies, this segment also takes into account quantitative factors derived from economic and financial information, and qualitative factors that are related to the age of the company, the

sector, management quality, etc. and alert factors derived from risk monitoring. Similarly, the rating tends to run parallel with the admission process, so the responsibility for rating is with the unit proposing the risk, while the decision-making level is in charge of validating it.

- **Specialised Lending:** To classify this segment, the Group has chosen to use the approach of slotting criteria, as included in the Basel Accord of June 2004 and in the solvency regulations (CRR Article 153.5).
- **Developers:** The rating of real estate developers covers the rating of both customers who are developers and the Property Projects unit. Its use makes it easier to monitor and rate projects during their execution phase, as well as enriching the admission processes.
- **BBVA Mexico Corporates:** This segment also takes into account quantitative factors derived from economic and financial information and bureau information, as well as qualitative factors related to the age of the company, the sector, the quality of its management, etc. The rating tends to run parallel to the admission process, so that responsibility for the rating is with the unit originating the risk, while the decision-making body validates it.

In general in the wholesale area, the rating of customers is not limited to admission, as the ratings are updated according to new information available at any time (economic and financial data, changes in the company, external factors, etc.).

- **Retailers:** Retail exposure is rated by models developed internally by the Entity that allow the credit risk of portfolios to be assessed. The model score can be assigned at the customer or product level and transformed into a probability of default, allowing for management based on risk groups. Depending on the information available, ratings can be reactive or proactive. The reactive ratings are generated from the customer's request to take out a product, while the proactive ratings are periodically calculated on the basis of the information available, internal and external, on the customer's payment behaviour. Proactive models allow offers of pre-approved and/or pre-offered products, which are instrumentalised in mass marketing campaigns. Ratings are integrated into admission and monitoring processes for retail portfolios, ensuring adequate credit risk management.

The rating process is as follows for each specific category of retail exposure:

- a. Mortgages, Consumer Finance and Retail Cards - Spain:

- Reactive processes: The manager collects data on the customer (personal, financial, banking relationship information) and on the transaction (LTV, amount, maturity, destination etc.) and calculates the rating of the transaction with the scoring. The decision on whether it is approved is made based on the results of applying the model and risk policies
 - Proactive processes: Each month all the customers who have asset positions in credit cards, consumer finance or mortgages and first and second in liability seniority, are rated according to information on their behavior.
- b. Consumer Finance Autos Spain: The financing request may come through the call center or be directly recorded in the web application by our authorised dealers. The necessary information on the customer (personal, financial information, authorisation to consult the external bureau of credit) and on the transaction (maturity, amount, etc.) is recorded to rate the transaction with the scoring. Once the validity of the information provided is verified, the decision of whether to approve it is made based on the results of applying the model and risk policies.
- c. Retail Revolving- Cards BBVA Mexico: The manager or specialist party gathers the necessary information on the customer (personal, financial information and authorisation to consult the external bureau of credit) and on the transaction (limit requested) to rate the transaction with the scoring. There are additional processes for validating and checking this information through the back office or operational support areas. The decision on whether it is approved is made based on the results of applying the model and risk policies.
- Behavioural: Every month all the active cards are rated according to their transactional behaviour and payment status.
 - Proactive: Each month all the customers who have asset positions on credit cards, consumer finance or mortgages and liabilities positions are rated, based on information on internal behaviour and flows.
- d. SMEs Spain (legal persons): Management is based on the allocation of limits/ceilings at the

customer level, based on the results of a proactive monthly update rating.

- **Equity**: For its portfolio position registered as equity, the Group is applying the rating obtained for customers as a result of their rating in the lending process.

4.2.5.1.7. Definitions, methods and data for estimating and validating risk parameters

The estimation of the parameters is based on the uniform definition of default established at Group level. Specifically, for a contract or customer to be considered in a situation of default, the provisions of current regulations must be met.

Specifically, there are two approaches in the Group for considering default and estimating parameters:

- The facility level approach is applied within the sphere of retail risk. Each customer transaction is handled as an independent unit in terms of credit risk. Therefore, noncompliance with credit obligations to the bank is handled at the transaction level, regardless of the customer's behaviour with respect to other obligations.
- The obligor level approach is applied to the remainder portfolios. The significant unit for defining default is the customer's sum of contracts, which enter a situation of default en masse when the customer defaults.

Furthermore, to avoid including non material defaults in the estimates, non-performing volumes have to pass through a materiality filter that depends on the type of customer and transaction.

Estimating parameters

In the case of Spain and Mexico, the Group has an internal information system denominated CORE – Risk Adjusted Return that reflects exposure to credit risk in the Group's different portfolios included in advanced internal models.

This information system guarantees the availability of historical data recorded by the Group, which are used to estimate the parameters of Probability of Default (PD), Loss Given Default (LGD) and Credit Conversion Factors (CCF). These are then used to calculate the regulatory capital using the advanced approach, economic capital and expected loss by credit risk.

Other sources of information for the Bank may be used in addition, depending on any new needs detected in the estimation process. Internal estimates of the PD, LGD and CCF parameters are made for all the Group's portfolios.

In the case of low default portfolios (LDP), in which the number of defaults tends to be insufficient for obtaining

empirical estimates, use is made of data from external agencies that are merged with the internal information available and expert criteria.

The following shows the estimation methodologies used for the PD, LGD and CCF risk parameters, for the purpose of calculating regulatory capital requirements.

- **Probability of default (PD)**

The methodology used for estimating the PD in cases that have a sufficiently large mass of internal data is based on the creation of risk groups. The groups proposed with a view to calibration are defined by grouping contracts together, seeking to achieve intra-group homogeneity in terms of credit quality and differentiation with all the other risk groups. The largest possible number of groups is defined in order to allow a suitable discrimination of risk.

The fundamental metric used for making these groupings is the score, being supplemented by other metrics relevant to PD that are proven to be sufficiently discriminating depending on the portfolio.

Once the risk groups have been defined, the average empirical PD recorded for each one is obtained and adjusted to the cycle. The adjustment to the cycle provides stable estimates over the course of the economic cycle, referred to as PD-TTC (through the cycle). This calculation considers the portfolio's track record and provides long-term levels of PD.

In low default portfolios (LDPs) the empirical PDs observed by external rating agencies are used to obtain the PD of internal risk groups.

Finally, in obligor level portfolios there is a Master Scale, which is simply a standard and uniform rule for credit levels that makes it possible to make comparisons of credit quality in the Group's different portfolios.

- **Loss given default (LGD)**

As a general rule, the method used to estimate loss given default (LGD) in portfolios with a sufficient number of defaults is Workout LGD. Here, the LGD of a contract is obtained as a quotient of the sum of all the financial flows recorded during the recovery process that takes place when a transaction defaults, and the transaction's exposure at the time of default.

This estimate is made by considering all the historical data recorded in internal systems. When making the estimates, there are transactions that have already defaulted but for which the recovery process is still ongoing. The loss given default recorded at the time of the estimate is therefore higher than it will ultimately be. The necessary adjustments are made in these cases so as not to distort the estimate.

These estimates are made by defining uniform risk groups in terms of the nature of the operations that

determine the LGD. They are made in such a way that there are enough groups for each one to be distinguishable and receive a different estimate.

In line with the guidelines set out by the regulations, the estimates are made by distinguishing between wholesale and retail type exposure.

There is insufficient historical experience to make a robust estimate in low default portfolios (LDP) using the Workout LGD method, so external sources of information are used, combined with internal data to provide the portfolio with a representative rate of loss given default (LGD).

The loss given default (LGD) rates estimated according to the internal databases the Bank holds are conditioned to the moment of the cycle of the data window used, since loss given default varies over the economic cycle. Hence, the following concepts can be defined: long-run loss given default (LRLGD), the downturn loss given default (DLGD), and loss given default best estimate (LGD BE).

LRLGD is calculated by making an adjustment to capture the difference between the loss given default obtained empirically with the available sample and the average loss given default observed throughout the economic cycle if the observation of the cycle is complete. In addition, the loss given default observed in a period of stress in the economic cycle, the downturn loss given default (DLGD) is determined.

These estimates are made for those portfolios whose loss given default (LGD) is noticeably sensitive to the cycle. The different ways in which the recovery cycles can conclude are determined for each portfolio where this loss given default (LGD) in conditions of stress has not yet been observed, and the level these parameters would have in a downturn situation are estimated.

Finally, LGD BE is determined according to the loss given default (LGD) observed in the BE period, which aims to cover the defaults closest in time to the present, in other words those that have been produced at a time of the economic cycle that is similar to the present and that also correspond to a very similar portfolio to the present one.

However, for defaulted transactions, the LGD at the worst time will be the LGD BE plus a stress, which is measured based on the volatility of LGD.

- **Credit conversion factor (CCF)**

As with the two preceding parameters, exposure at default is another of the necessary inputs for calculating expected loss and regulatory capital. A contract's exposure usually coincides with its balance. However, this is not applicable in all cases.

For example, for products with explicit limits, such as credit cards or credit facilities, the exposure should incorporate the potential increase in the balance that may be recorded up to the time of default.

In observance of regulatory requirements, exposure is calculated as the drawn balance, which is the real risk at any specific moment, plus a percentage (CCF) of the undrawn balance, which is the part that the customer can still use until the available limit is reached. Therefore, the CCF is defined as the percentage of the undrawn balance that is expected to be used before default occurs.

CCF is estimated by using the cohort² approach, analysing how the exposure varies from a pre-established reference date through to the moment of default, obtaining the average performance according to the relevant metrics.

Different approaches are used for retail and wholesale exposure. The facility level approach analyses the evolution of the exposure up to the time of the breach of contract, while the obligor level approach analyses the evolution of the exposure up to the moment of the non-compliance of the client.

Again, in low-default portfolios there is not enough historical experience to be able to make a reliable estimate with the defined LGD methodology. In this case, external sources are also used, which are combined with internal data to obtain a CCF representative of the portfolio.

- **Validation process**

The models used for calculating the parameters, as explained above, are subject to an effective contrast, in accordance with the principle of proportionality, by the Internal Approval team, independent from those that have developed or used said calculation, in order to ensure its accuracy, robustness and stability.

This review process is not restricted as to the time of approval, or the inclusion of changes in the models, but rather is framed within a plan that allows for a periodic evaluation of them, resulting in the issuance of recommendations and mitigating actions for the deficiencies identified.

As such, all models used in regulatory capital calculations using internal models must be subject to an annual review of the calculation, which meet the minimum quantitative and qualitative test content requested by the regulator in Section 4 of the ECB's Guidelines on Internal Models (General Aspects); even when, in accordance with the principle of proportionality, certain aspects or models that are relatively insignificant within the capital calculation may be subject to revision in the context of a broader review cycle.

However, this possibility does not provide an exemption from conducting the various tests defined in the Instructions for Reporting the Validation Results of Internal Models, issued by the ECB in February 2019, and that should—for Internal Models on Capital for Credit Risk—be sent to the supervisor on an annual basis and include:

- Back-testing of the parameters by comparing the model estimates with the levels actually achieved in the annual study period.
- Discrimination Capacity Analysis, it being important to analyse the evolution of the calculated indices over time by comparing them with indices obtained at different points in time (for example, during model construction).
- Representativeness Analysis, both in order to analyse that the model's application perimeter is set to the approved and defined perimeter, and in order to analyse the representativeness of the historical data used in the estimation of the risk parameters applied; with particular emphasis on tracking the record of changes made to the definition of default.
- Override analyses, which modify the final score obtained as a large number of analyses could indicate that the model is lacking certain important information.
- Stability Analysis: in order to assess the stability of the rating system, analyses will be conducted on customer migrations, on the stability of the migration matrix and on concentration in rating grades; these analyses may be supplemented, optionally and based on results, by comparing the Population Stability Index (PSI).
- Evaluation of the Data Used in the calibration by analysing the data extraction, processing and purging processes; analysing the Data Quality Management Framework and the results obtained therefrom.

The various aspects detected by Internal Validation during the review process which are susceptible to be improved will be reflected in the validation report by setting weaknesses (recommendations, suggestions or limitations) whose criticality is expressed on a four-color scale based on the risk assigned to the same.

For each recommendation issued, the validation report will include the details of the person responsible for its resolution, the proposed action plan and the committed resolution date (which will be limited by the maximum terms defined by validation based on the severity granted to the same and the model TIER, these being greater for recommendations of lesser severity and TIER).

² A cohort is a twelve-month window that has a reference date (closing of each month) and contains all delinquent transactions whose default date occurs within the cohort. All operations must have a contract date prior to the reference date.

Once the suggestions, limitations and recommendations have been established, Internal Validation will issue its opinion on the level of risk existing in the revised model, using a four-level scale.

The reports issued by Internal Validation, required as part of the approval process for the implementation of new models or relevant changes to existing ones, will be presented to the committees established for this purpose.

Additionally, at least every six months, the periodic reports that have been issued throughout the period will be sent to the Risk Models Management Committee (RMMC) for information purposes, and those classified as having a high level of Model Risk will be presented.

Annually, the results of the year's Internal Validation work will be presented to the Global Risk Management Committee (GRMC) and to the Risk and Compliance Committee of the BBVA Group Board of Directors (CRyC), with a summary of the conclusions obtained on the models reviewed detailing the main strengths and weaknesses of the most relevant.

In addition, the details of the expired recommendations will be presented to the RMMC on a quarterly basis. The Committee urges its members to take the appropriate measures to execute the necessary plans aiming to solve or mitigate the weaknesses associated with the expired recommendations. Moreover, the information to these recommendations will be submitted to the GRMC on a biannual basis.

4.2.5.2. Exposure values by category and PD range

The following table presents the information on credit risk as of December 31, 2022 (excluding counterparty credit risk, which is set out in detail in Table CCR4 in section 4.2.6.2.2) using the internal ratings-based (IRB) approach, by debtor grade for the different categories of exposure:

Table 31. EU CR6 - IRB approach - Credit risk exposures by exposure class and PD range (Million Euros. 12-31-2022)

PD Scale ⁽¹⁾⁽⁶⁾	Original on-balance sheet gross exposure	Off-balance sheet exposures pre CCF	Average CCF ⁽²⁾	EAD post CRM and post-CCF	Average PD ⁽³⁾	Number of obligors	Average LGD ⁽⁴⁾	Average Maturity (days) ⁽⁵⁾	RWAs	RWA Density	EL	Value adjustments and provisions
Prudential portfolios for AIRB approach	213,817	123,145	49.77 %	275,019	3.18 %	14,468,381	39.49 %		102,547	37 %	3,378	(4,682)
Central governments or central banks	11,959	415	48.19 %	12,159	0.14 %	87	24.22 %	2	1,103	9 %	6	(5)
0,00 to <0,15	11,765	108	45.79 %	11,814	0.02 %	23	23.76 %	2	734	6 %	1	—
0,00 to <0,10	11,765	108	45.79 %	11,814	0.02 %	19	23.76 %	2	734	6 %	1	—
0,10 to <0,15	—	—	20.00 %	—	0.11 %	4	46.53 %	2	—	20 %	—	—
0,15 to <0,25	54	165	50.00 %	137	0.20 %	9	40.00 %	2	54	40 %	—	—
0,25 to <0,50	—	13	26.24 %	3	0.31 %	3	47.61 %	1	2	45 %	—	—
0,50 to <0,75	—	—	54.22 %	—	0.51 %	1	49.97 %	1	—	64 %	—	—
0,75 to <2,50	—	—	—	—	1.15 %	5	40.00 %	1	—	79 %	—	—
0,75 to <1,75	—	—	—	—	1.15 %	5	40.00 %	1	—	79 %	—	—
1,75 to <2,50	—	—	—	—	—	—	—	—	—	—	—	—
2,50 to <10,00	100	129	50.01 %	164	4.47 %	15	40.00 %	3	233	142 %	3	(4)
2,50 to <5,00	97	128	50.00 %	161	4.41 %	7	40.00 %	3	228	142 %	3	(4)
5,00 to <10,00	2	1	50.69 %	3	7.85 %	8	40.00 %	2	5	163 %	—	—
10,00 to <100,00	40	—	72.84 %	40	15.21 %	29	40.19 %	1	80	200 %	2	—
10,00 to <20,00	40	—	—	40	15.09 %	2	40.26 %	1	79	200 %	2	—
20,00 to <30,00	—	—	—	—	—	—	—	—	—	—	—	—
30,00 to <100,00	—	—	72.84 %	—	37.05 %	27	28.20 %	2	—	164 %	—	—
100,00 (Default)	—	—	62.50 %	—	100.00 %	2	40.00 %	2	—	7 %	—	—
Institutions	11,486	9,698	55.34 %	16,914	0.50 %	2,808	42.45 %	2	4,598	27 %	20	(28)
0,00 to <0,15	8,652	7,800	54.28 %	12,951	0.07 %	1,547	43.90 %	2	2,844	22 %	4	(3)
0,00 to <0,10	6,219	6,197	52.71 %	9,498	0.06 %	280	44.78 %	2	1,796	19 %	2	(1)
0,10 to <0,15	2,434	1,602	60.35 %	3,453	0.11 %	1,267	41.48 %	2	1,048	30 %	2	(3)
0,15 to <0,25	1,598	1,203	64.26 %	2,369	0.18 %	491	43.92 %	3	838	35 %	2	(2)
0,25 to <0,50	454	413	49.00 %	649	0.33 %	266	33.51 %	3	337	52 %	1	(2)
0,50 to <0,75	567	146	58.73 %	652	0.55 %	150	18.86 %	2	205	31 %	1	(2)
0,75 to <2,50	127	47	48.75 %	150	1.19 %	128	42.74 %	2	155	103 %	1	—
0,75 to <1,75	127	47	48.75 %	150	1.19 %	128	42.74 %	2	155	103 %	1	—
1,75 to <2,50	—	—	—	—	—	—	—	—	—	—	—	—
2,50 to <10,00	20	39	58.30 %	43	4.69 %	99	40.76 %	6	67	158 %	1	(1)
2,50 to <5,00	14	34	62.52 %	35	3.98 %	82	43.20 %	3	57	163 %	1	(1)
5,00 to <10,00	6	5	27.48 %	7	8.04 %	17	29.31 %	18	10	133 %	—	—
10,00 to <100,00	41	22	47.76 %	51	24.32 %	67	47.10 %	2	141	275 %	6	(7)
10,00 to <20,00	20	20	46.81 %	30	14.26 %	12	44.31 %	2	70	235 %	2	(1)
20,00 to <30,00	—	—	—	—	29.74 %	1	45.00 %	16	—	300 %	—	—
30,00 to <100,00	21	2	59.51 %	22	38.09 %	54	50.91 %	3	71	329 %	4	(7)
100,00 (Default)	26	27	57.30 %	50	100.00 %	60	16.33 %	3	11	22 %	5	(10)

PD Scale ⁽¹⁾⁽⁶⁾	Original on-balance sheet gross exposure	Off-balance sheet exposures pre CCF	Average CCF ⁽²⁾	EAD post CRM and post-CCF	Average PD ⁽³⁾	Number of obligors	Average LGD ⁽⁴⁾	Average Maturity (days) ⁽⁵⁾	RWAs	RWA Density	EL	Value adjustments and provisions
Corporate - SMEs	16,240	4,942	38.96 %	18,095	8.55 %	47,725	43.29 %	3	12,810	71 %	669	(810)
0,00 to <0,15	905	434	42.71 %	1,088	0.12 %	3,045	45.24 %	2	278	26 %	—	—
0,00 to <0,10	54	1	2.04 %	54	0.04 %	156	27.96 %	4	9	16 %	—	—
0,10 to <0,15	851	433	42.79 %	1,033	0.12 %	2,889	46.15 %	2	269	26 %	—	—
0,15 to <0,25	584	231	41.60 %	677	0.20 %	2,094	46.44 %	2	204	30 %	—	—
0,25 to <0,50	2,760	545	38.29 %	2,963	0.35 %	5,308	44.55 %	2	1,419	48 %	4	(4)
0,50 to <0,75	2,153	478	44.64 %	2,359	0.53 %	3,621	45.23 %	2	1,302	55 %	5	(3)
0,75 to <2,50	4,151	876	42.35 %	4,503	1.24 %	7,115	44.68 %	3	3,606	80 %	23	(21)
0,75 to <1,75	3,937	875	42.39 %	4,289	1.20 %	6,982	44.81 %	3	3,387	79 %	22	(19)
1,75 to <2,50	214	1	3.66 %	214	2.03 %	133	42.19 %	3	219	102 %	2	(2)
2,50 to <10,00	3,792	2,102	33.60 %	4,464	4.40 %	8,186	39.11 %	3	4,019	90 %	75	(82)
2,50 to <5,00	2,960	1,756	33.12 %	3,512	3.52 %	5,493	38.98 %	3	2,982	85 %	47	(55)
5,00 to <10,00	832	346	36.05 %	952	7.61 %	2,693	39.58 %	3	1,037	109 %	28	(28)
10,00 to <100,00	918	135	52.79 %	989	21.97 %	13,976	41.58 %	2	1,673	169 %	89	(67)
10,00 to <20,00	582	67	42.18 %	609	13.59 %	1,303	41.90 %	2	922	151 %	35	(37)
20,00 to <30,00	40	13	50.26 %	47	23.88 %	213	40.86 %	2	76	162 %	5	(7)
30,00 to <100,00	295	55	66.45 %	333	37.03 %	12,460	41.10 %	2	674	203 %	50	(23)
100,00 (Default)	979	141	52.05 %	1,052	100.00 %	4,380	44.79 %	3	310	29 %	471	(632)
Corporate - Non-SMEs	80,096	81,485	60.89 %	129,655	1.10 %	11,476	45.75 %	2	59,554	46 %	629	(1,048)
0,00 to <0,15	18,137	26,105	65.60 %	35,281	0.09 %	1,187	45.04 %	3	8,347	24 %	15	(3)
0,00 to <0,10	10,554	13,885	63.67 %	19,383	0.07 %	333	45.02 %	2	3,710	19 %	6	(1)
0,10 to <0,15	7,583	12,220	67.79 %	15,898	0.12 %	854	45.06 %	4	4,637	29 %	9	(2)
0,15 to <0,25	37,013	39,120	60.65 %	60,647	0.20 %	2,907	46.21 %	2	23,955	39 %	56	(16)
0,25 to <0,50	12,840	7,857	55.93 %	17,257	0.37 %	1,684	46.46 %	2	10,263	59 %	29	(7)
0,50 to <0,75	4,200	1,667	55.81 %	5,119	0.59 %	1,128	46.67 %	2	4,117	80 %	14	(13)
0,75 to <2,50	4,342	3,498	57.33 %	6,372	1.39 %	1,666	45.12 %	2	6,346	100 %	40	(33)
0,75 to <1,75	2,541	2,401	50.44 %	3,774	1.11 %	1,375	45.06 %	2	3,471	92 %	18	(6)
1,75 to <2,50	1,801	1,097	72.40 %	2,598	1.80 %	291	45.21 %	2	2,875	111 %	21	(27)
2,50 to <10,00	2,450	2,889	43.62 %	3,695	4.77 %	1,712	42.10 %	2	5,182	140 %	75	(407)
2,50 to <5,00	1,302	1,602	38.00 %	1,894	3.16 %	943	40.01 %	2	2,213	117 %	24	(24)
5,00 to <10,00	1,148	1,288	50.61 %	1,801	6.46 %	769	44.31 %	2	2,969	165 %	51	(383)
10,00 to <100,00	406	173	54.31 %	503	25.19 %	791	45.17 %	2	1,204	239 %	59	(48)
10,00 to <20,00	228	79	50.54 %	269	14.83 %	250	42.75 %	2	587	219 %	17	(35)
20,00 to <30,00	38	49	67.30 %	72	26.20 %	57	46.50 %	2	192	266 %	9	(6)
30,00 to <100,00	141	45	46.88 %	163	41.87 %	484	48.58 %	1	424	261 %	33	(8)
100,00 (Default)	707	175	44.12 %	780	100.00 %	401	43.61 %	2	140	18 %	340	(521)

PD Scale ⁽¹⁾⁽⁶⁾	Original on-balance sheet gross exposure	Off-balance sheet exposures pre CCF	Average CCF ⁽²⁾	EAD post CRM and post-CCF	Average PD ⁽³⁾	Number of obligors	Average LGD ⁽⁴⁾	Average Maturity (days) ⁽⁵⁾	RWAs	RWA Density	EL	Value adjustments and provisions
Retail - Immovable property SMEs	935	308	2.00 %	941	25.88 %	18,276	19.29 %	—	1,078	115 %	48	(11)
0,00 to <0,15	—	—	—	—	—	—	—	—	—	—	—	—
0,00 to <0,10	—	—	—	—	—	—	—	—	—	—	—	—
0,10 to <0,15	—	—	—	—	—	—	—	—	—	—	—	—
0,15 to <0,25	—	—	—	—	—	—	—	—	—	—	—	—
0,25 to <0,50	—	—	—	—	—	—	—	—	—	—	—	—
0,50 to <0,75	—	—	—	—	—	—	—	—	—	—	—	—
0,75 to <2,50	—	—	—	—	—	—	—	—	—	—	—	—
0,75 to <1,75	—	—	—	—	—	—	—	—	—	—	—	—
1,75 to <2,50	—	—	—	—	—	—	—	—	—	—	—	—
2,50 to <10,00	—	—	—	—	—	—	—	—	—	—	—	—
2,50 to <5,00	—	—	—	—	—	—	—	—	—	—	—	—
5,00 to <10,00	—	—	—	—	—	—	—	—	—	—	—	—
10,00 to <100,00	904	307	2.00 %	910	23.36 %	17,717	19.13 %	—	1,075	118 %	41	(2)
10,00 to <20,00	—	—	—	—	—	—	—	—	—	—	—	—
20,00 to <30,00	889	307	2.00 %	895	22.36 %	17,504	19.10 %	—	1,068	119 %	38	(1)
30,00 to <100,00	15	—	— %	15	82.72 %	213	20.90 %	—	7	46 %	3	(1)
100,00 (Default)	31	1	2.01 %	31	100.00 %	559	23.85 %	—	3	11 %	7	(8)
Retail - Immovable property non-SMEs	68,814	4,424	2.08 %	68,906	4.26 %	982,504	21.21 %	—	8,916	13 %	545	(903)
0,00 to <0,15	43,775	3,106	2.06 %	43,839	0.05 %	644,789	20.44 %	—	1,287	3 %	4	(14)
0,00 to <0,10	41,556	2,991	2.06 %	41,617	0.04 %	615,512	20.21 %	—	1,119	3 %	3	(13)
0,10 to <0,15	2,219	115	2.12 %	2,221	0.12 %	29,277	24.77 %	—	169	8 %	1	(2)
0,15 to <0,25	8,017	602	2.12 %	8,030	0.19 %	120,996	21.81 %	—	740	9 %	3	(7)
0,25 to <0,50	4,976	264	2.12 %	4,982	0.35 %	67,975	22.85 %	—	750	15 %	4	(7)
0,50 to <0,75	1,608	88	2.08 %	1,609	0.57 %	23,553	23.51 %	—	351	22 %	2	(5)
0,75 to <2,50	4,824	212	2.16 %	4,829	1.39 %	61,383	23.73 %	—	1,921	40 %	16	(32)
0,75 to <1,75	3,996	171	2.19 %	4,000	1.28 %	51,607	22.75 %	—	1,424	36 %	11	(20)
1,75 to <2,50	828	42	2.04 %	829	1.96 %	9,776	28.49 %	—	497	60 %	5	(12)
2,50 to <10,00	1,904	107	2.06 %	1,907	5.01 %	22,960	25.61 %	—	1,699	89 %	24	(118)
2,50 to <5,00	1,112	64	2.08 %	1,113	3.36 %	13,157	25.36 %	—	814	73 %	9	(86)
5,00 to <10,00	793	42	2.03 %	794	7.33 %	9,803	25.97 %	—	886	112 %	15	(32)
10,00 to <100,00	1,278	36	2.10 %	1,279	21.58 %	13,462	25.89 %	—	1,891	148 %	73	(65)
10,00 to <20,00	701	27	2.13 %	702	12.93 %	7,513	25.30 %	—	962	137 %	23	(29)
20,00 to <30,00	312	9	2.00 %	313	23.30 %	3,357	25.52 %	—	501	160 %	19	(16)
30,00 to <100,00	264	—	1.72 %	264	42.51 %	2,592	27.91 %	—	428	162 %	31	(20)
100,00 (Default)	2,432	9	2.15 %	2,433	100.00 %	27,386	17.25 %	—	276	11 %	419	(653)

PD Scale ⁽¹⁾⁽⁶⁾	Original on-balance sheet gross exposure	Off-balance sheet exposures pre CCF	Average CCF ⁽²⁾	EAD post CRM and post-CCF	Average PD ⁽³⁾	Number of obligors	Average LGD ⁽⁴⁾	Average Maturity (days) ⁽⁵⁾	RWAs	RWA Density	EL	Value adjustments and provisions
Retail - Other exposures SMEs	2,437	734	54.28 %	2,816	14.29 %	173,792	47.97 %	—	1,157	41 %	210	(217)
0,00 to <0,15	230	191	53.10 %	323	0.12 %	26,430	46.80 %	—	35	11 %	—	—
0,00 to <0,10	—	—	—	—	—	—	—	—	—	—	—	—
0,10 to <0,15	230	191	53.10 %	323	0.12 %	26,430	46.80 %	—	35	11 %	—	—
0,15 to <0,25	96	54	54.28 %	124	0.20 %	8,694	47.51 %	—	20	16 %	—	—
0,25 to <0,50	187	100	52.69 %	236	0.31 %	13,769	46.98 %	—	50	21 %	—	—
0,50 to <0,75	253	102	54.43 %	307	0.51 %	16,679	47.59 %	—	88	29 %	1	(1)
0,75 to <2,50	528	151	55.09 %	608	1.17 %	32,173	48.04 %	—	259	43 %	3	(4)
0,75 to <1,75	528	151	55.09 %	608	1.17 %	32,173	48.04 %	—	259	43 %	3	(4)
1,75 to <2,50	—	—	—	—	—	—	—	—	—	— %	—	—
2,50 to <10,00	558	83	55.95 %	602	4.32 %	33,352	47.69 %	—	345	57 %	12	(12)
2,50 to <5,00	433	70	56.46 %	471	3.35 %	25,789	47.79 %	—	263	56 %	8	(7)
5,00 to <10,00	125	13	53.23 %	132	7.78 %	7,563	47.33 %	—	82	62 %	5	(5)
10,00 to <100,00	338	12	53.36 %	344	27.71 %	29,139	44.51 %	—	318	92 %	42	(14)
10,00 to <20,00	59	6	57.46 %	62	14.60 %	3,799	46.84 %	—	47	75 %	4	(6)
20,00 to <30,00	257	2	44.10 %	258	29.51 %	23,509	44.29 %	—	252	97 %	34	(4)
30,00 to <100,00	22	3	52.43 %	23	42.62 %	1,831	40.70 %	—	19	82 %	4	(3)
100,00 (Default)	247	42	57.06 %	271	100.00 %	13,556	55.71 %	—	43	16 %	151	(186)
Retail - Other exposures Non-SMEs	12,764	42	67.40 %	12,792	9.70 %	1,235,130	47.28 %	—	4,463	35 %	593	(940)
0,00 to <0,15	4,315	3	53.87 %	4,317	0.06 %	336,172	44.11 %	—	346	8 %	1	(6)
0,00 to <0,10	3,319	—	47.06 %	3,319	0.04 %	230,408	43.72 %	—	201	6 %	1	(4)
0,10 to <0,15	996	3	53.91 %	997	0.13 %	105,764	45.41 %	—	145	15 %	1	(2)
0,15 to <0,25	1,059	1	49.72 %	1,060	0.22 %	103,329	45.74 %	—	225	21 %	1	(3)
0,25 to <0,50	1,137	1	48.40 %	1,138	0.39 %	126,578	46.40 %	—	354	31 %	2	(5)
0,50 to <0,75	621	2	55.27 %	622	0.61 %	74,175	49.33 %	—	266	43 %	2	(3)
0,75 to <2,50	3,321	3	55.94 %	3,322	1.41 %	368,943	49.71 %	—	2,021	61 %	23	(44)
0,75 to <1,75	2,395	3	55.91 %	2,397	1.10 %	274,067	48.90 %	—	1,331	56 %	13	(23)
1,75 to <2,50	926	—	75.00 %	926	2.23 %	94,876	51.81 %	—	690	75 %	11	(20)
2,50 to <10,00	946	4	46.51 %	948	4.50 %	100,434	53.26 %	—	799	84 %	22	(72)
2,50 to <5,00	645	2	51.98 %	646	3.65 %	66,387	54.74 %	—	548	85 %	13	(48)
5,00 to <10,00	301	2	41.84 %	302	6.33 %	34,047	50.09 %	—	251	83 %	10	(24)
10,00 to <100,00	329	24	72.58 %	346	28.30 %	42,109	50.67 %	—	409	118 %	49	(49)
10,00 to <20,00	168	4	40.55 %	169	13.10 %	16,374	52.66 %	—	180	106 %	12	(18)
20,00 to <30,00	54	13	89.99 %	65	27.63 %	13,782	46.91 %	—	82	125 %	8	(5)
30,00 to <100,00	107	7	59.67 %	112	51.74 %	11,953	49.86 %	—	147	132 %	29	(26)
100,00 (Default)	1,037	4	91.61 %	1,040	100.00 %	83,390	47.41 %	—	42	4 %	493	(759)

PD Scale ⁽¹⁾⁽⁶⁾	Original on-balance sheet gross exposure	Off-balance sheet exposures pre CCF	Average CCF ⁽²⁾	EAD post CRM and post-CCF	Average PD ⁽³⁾	Number of obligors	Average LGD ⁽⁴⁾	Average Maturity (days) ⁽⁵⁾	RWAs	RWA Density	EL	Value adjustments and provisions
Retail - qualifying revolving (QRRE)	9,087	21,098	17.33 %	12,741	6.64 %	11,996,583	71.63 %	—	8,868	70 %	659	(721)
0,00 to <0,15	764	2,993	27.86 %	1,598	0.04 %	1,639,421	41.79 %	—	20	1 %	—	—
0,00 to <0,10	696	2,838	27.81 %	1,485	0.03 %	1,498,419	41.58 %	—	16	1 %	—	—
0,10 to <0,15	68	156	28.83 %	113	0.13 %	141,002	44.60 %	—	4	4 %	—	—
0,15 to <0,25	543	2,019	29.74 %	1,143	0.19 %	1,330,789	42.36 %	—	54	5 %	1	(2)
0,25 to <0,50	296	1,411	9.83 %	434	0.44 %	351,024	75.45 %	—	72	17 %	1	(5)
0,50 to <0,75	790	2,878	9.78 %	1,071	0.60 %	892,791	75.25 %	—	226	21 %	5	(16)
0,75 to <2,50	2,481	5,804	13.35 %	3,256	1.42 %	2,435,737	80.06 %	—	1,405	43 %	37	(84)
0,75 to <1,75	1,727	4,266	12.67 %	2,267	1.15 %	1,649,034	79.50 %	—	831	37 %	20	(51)
1,75 to <2,50	754	1,538	15.22 %	988	2.05 %	786,703	81.34 %	—	574	58 %	16	(32)
2,50 to <10,00	2,785	5,086	15.39 %	3,568	5.68 %	3,695,832	81.36 %	—	4,101	115 %	164	(207)
2,50 to <5,00	1,296	2,100	16.74 %	1,647	3.69 %	1,423,139	79.75 %	—	1,411	86 %	48	(76)
5,00 to <10,00	1,490	2,986	14.44 %	1,921	7.39 %	2,272,693	82.74 %	—	2,690	140 %	116	(131)
10,00 to <100,00	1,169	893	26.95 %	1,409	22.99 %	1,435,603	79.46 %	—	2,978	211 %	240	(209)
10,00 to <20,00	679	559	28.39 %	837	13.50 %	891,549	82.99 %	—	1,647	197 %	93	(85)
20,00 to <30,00	215	108	18.27 %	235	24.56 %	249,935	81.71 %	—	590	251 %	47	(43)
30,00 to <100,00	275	226	27.54 %	337	45.48 %	294,119	69.12 %	—	741	220 %	100	(81)
100,00 (Default)	259	14	22.05 %	262	100.00 %	215,386	80.78 %	—	13	5 %	211	(197)
Total IRB Approach	213,817	123,145	49.77 %	275,019	3.18 %	14,468,381	39.49 %	—	102,547	37 %	3,378	(4,682)

(*) Exposures of less than 500,000 euros rounded down to zero are shown with a dash.

⁽¹⁾ PD intervals established by the EBA ITS (Implementing Regulation 2021/637).

⁽²⁾ Calculated as EAD after CCF for off-balance sheet exposure over total off-balance exposure before CCF.

⁽³⁾ Corresponds to obligor grade PD weighted by EAD post CRM.

⁽⁴⁾ Corresponds to obligor grade LGD weighted by EAD post CRM.

⁽⁵⁾ Corresponds to the maturity of the obligor in years weighted by EAD. In accordance with Regulation (EU) 680/2014, it is reported only for those categories where average maturities are relevant for the calculation of RWAs. Residual maturities of less than one year are rounded to 1.

⁽⁶⁾ Specialised lending exposures are included in the FIRB approach. The Group has chosen to use the supervisory category attribution criteria method, in line with the provisions of article 153.5 of the CRR, and therefore, following the New EBA ITS, Specialised lending exposures are not included in this table.

EU CR6 - IRB approach - Credit risk exposures by exposure class and PD range (Million Euros. 12-31-2021)

PD Scale ⁽¹⁾⁽⁶⁾	Original on-balance sheet gross exposure	Off-balance sheet exposures pre CCF	Average CCF ⁽²⁾	EAD post CRM and post-CCF	Average PD ⁽³⁾	Number of obligors	Average LGD ⁽⁴⁾	Average Maturity (days) ⁽⁵⁾	RWAs	RWA Density	EL	Value adjustments and provisions
Prudential portfolios for AIRB approach	195,081	108,414	51.52 %	252,973	4.29 %	13,058,657	38.46 %		97,614	39 %	4,032	(5,053)
Central governments or central banks	11,516	317	49.59 %	11,678	0.06 %	93	24.03 %	2	958	8 %	2	(2)
0,00 to <0,15	11,401	130	50.07 %	11,472	0.03 %	22	23.74 %	2	821	7 %	1	—
0,00 to <0,10	11,400	130	50.07 %	11,471	0.03 %	17	23.74 %	2	821	7 %	1	—
0,10 to <0,15	1	—	50.00 %	1	0.10 %	5	40.23 %	5	1	46 %	—	—
0,15 to <0,25	38	152	50.00 %	114	0.20 %	9	40.00 %	2	40	35 %	—	—
0,25 to <0,50	—	11	28.72 %	3	0.31 %	4	47.27 %	1	1	45 %	—	—
0,50 to <0,75	—	—	37.88 %	—	0.51 %	1	19.43 %	3	—	32 %	—	—
0,75 to <2,50	66	—	—	66	1.50 %	7	40.00 %	1	57	87 %	—	—
0,75 to <1,75	66	—	—	66	1.50 %	7	40.00 %	1	57	87 %	—	—
1,75 to <2,50	—	—	—	—	—	—	—	—	—	—	—	—
2,50 to <10,00	6	24	49.90 %	17	5.25 %	16	40.51 %	4	28	160 %	—	—
2,50 to <5,00	2	22	50.00 %	13	4.41 %	6	40.02 %	4	20	155 %	—	—
5,00 to <10,00	3	2	48.51 %	4	7.78 %	10	41.99 %	2	8	178 %	—	—
10,00 to <100,00	5	—	78.93 %	5	17.44 %	32	37.25 %	1	10	179 %	—	(1)
10,00 to <20,00	4	—	—	4	11.91 %	2	40.00 %	1	8	185 %	—	(1)
20,00 to <30,00	—	—	—	—	—	—	—	—	—	—	—	—
30,00 to <100,00	1	—	78.93 %	1	36.59 %	30	27.75 %	1	2	160 %	—	—
100,00 (Default)	—	—	—	—	—	2	—	—	—	—	—	—
Institutions	10,003	7,686	63.16 %	15,088	0.70 %	2,970	42.11 %	2	4,630	31 %	32	(41)
0,00 to <0,15	7,152	5,368	62.51 %	10,643	0.08 %	1,488	43.40 %	2	2,544	24 %	3	(13)
0,00 to <0,10	5,118	4,322	63.58 %	7,957	0.06 %	268	44.14 %	2	1,759	22 %	2	(3)
0,10 to <0,15	2,034	1,046	58.09 %	2,686	0.11 %	1,220	41.22 %	3	785	29 %	1	(10)
0,15 to <0,25	1,635	1,738	69.48 %	2,864	0.18 %	604	44.08 %	3	1,145	40 %	2	(2)
0,25 to <0,50	676	292	54.37 %	871	0.33 %	286	21.83 %	2	239	27 %	1	(4)
0,50 to <0,75	249	72	55.56 %	288	0.55 %	159	37.76 %	2	177	62 %	1	(1)
0,75 to <2,50	139	129	63.58 %	214	1.15 %	154	44.72 %	2	221	103 %	1	(1)
0,75 to <1,75	139	129	63.58 %	214	1.15 %	154	44.72 %	2	221	103 %	1	(1)
1,75 to <2,50	—	—	—	—	—	—	—	—	—	—	—	—
2,50 to <10,00	60	23	48.97 %	71	5.03 %	116	42.96 %	4	117	164 %	1	(3)
2,50 to <5,00	15	18	49.87 %	24	3.90 %	94	46.23 %	5	36	150 %	—	(1)
5,00 to <10,00	45	4	45.22 %	47	5.61 %	22	41.27 %	4	80	171 %	1	(3)
10,00 to <100,00	56	34	46.12 %	73	23.64 %	84	42.80 %	2	173	236 %	7	(2)
10,00 to <20,00	26	31	50.26 %	46	14.77 %	16	43.99 %	2	108	236 %	2	(1)
20,00 to <30,00	—	—	—	—	23.81 %	2	51.59 %	1	—	290 %	—	—
30,00 to <100,00	30	3	—	28	38.42 %	66	40.80 %	1	65	236 %	4	(1)
100,00 (Default)	37	31	86.27 %	64	100.00 %	79	25.42 %	3	13	20 %	16	(16)

PD Scale ⁽¹⁾⁽⁶⁾	Original on-balance sheet gross exposure	Off-balance sheet exposures pre CCF	Average CCF ⁽²⁾	EAD post CRM and post-CCF	Average PD ⁽³⁾	Number of obligors	Average LGD ⁽⁴⁾	Average Maturity (days) ⁽⁵⁾	RWAs	RWA Density	EL	Value adjustments and provisions
Corporate - SMEs	16,050	4,847	41.30 %	18,031	14.23 %	50,962	42.28 %	3	14,858	82 %	969	(1,143)
0,00 to <0,15	562	309	43.08 %	694	0.12 %	2,481	43.66 %	2	171	25 %	—	(1)
0,00 to <0,10	50	1	2.02 %	50	0.04 %	167	28.82 %	5	9	18 %	—	—
0,10 to <0,15	512	308	43.24 %	644	0.12 %	2,314	44.82 %	2	162	25 %	—	(1)
0,15 to <0,25	543	213	46.37 %	638	0.20 %	1,806	45.24 %	2	203	32 %	—	(1)
0,25 to <0,50	1,811	451	40.31 %	1,989	0.34 %	4,228	44.45 %	2	875	44 %	3	(6)
0,50 to <0,75	1,626	450	46.04 %	1,831	0.53 %	3,483	45.59 %	2	1,058	58 %	4	(7)
0,75 to <2,50	3,492	764	42.84 %	3,815	1.21 %	7,030	43.88 %	3	2,957	77 %	19	(28)
0,75 to <1,75	3,279	761	42.95 %	3,602	1.16 %	6,923	43.97 %	3	2,713	75 %	17	(24)
1,75 to <2,50	214	3	11.17 %	214	2.04 %	107	42.37 %	4	244	114 %	2	(3)
2,50 to <10,00	4,948	2,133	38.29 %	5,738	4.88 %	11,788	38.92 %	3	5,759	100 %	106	(181)
2,50 to <5,00	3,191	1,696	38.13 %	3,814	3.55 %	7,562	39.16 %	3	3,472	91 %	52	(103)
5,00 to <10,00	1,757	438	38.91 %	1,923	7.51 %	4,226	38.44 %	3	2,287	119 %	55	(78)
10,00 to <100,00	1,623	348	48.06 %	1,789	24.18 %	14,332	42.06 %	3	3,385	189 %	184	(118)
10,00 to <20,00	856	197	44.18 %	939	13.56 %	1,813	41.57 %	3	1,527	163 %	53	(71)
20,00 to <30,00	102	12	48.53 %	108	23.80 %	254	37.80 %	3	181	168 %	10	(7)
30,00 to <100,00	665	138	53.54 %	742	37.68 %	12,265	43.30 %	3	1,676	226 %	121	(39)
100,00 (Default)	1,444	180	51.93 %	1,537	100.00 %	5,814	42.52 %	3	451	29 %	653	(802)
Corporate - Non-SMEs	62,456	71,197	66.28 %	109,343	1.67 %	10,847	45.59 %	2	53,442	49 %	854	(1,089)
0,00 to <0,15	13,793	20,491	70.67 %	28,262	0.10 %	1,041	45.09 %	3	6,974	25 %	12	(21)
0,00 to <0,10	7,812	11,474	70.43 %	15,882	0.08 %	348	45.00 %	3	3,287	21 %	6	(12)
0,10 to <0,15	5,982	9,016	70.98 %	12,379	0.12 %	693	45.20 %	2	3,687	30 %	7	(8)
0,15 to <0,25	28,170	33,823	65.92 %	50,405	0.19 %	2,530	45.87 %	2	19,909	40 %	44	(12)
0,25 to <0,50	8,897	8,649	63.80 %	14,421	0.37 %	1,503	46.24 %	2	8,618	60 %	24	(12)
0,50 to <0,75	2,834	1,951	63.37 %	4,075	0.60 %	946	45.00 %	2	3,067	75 %	11	(14)
0,75 to <2,50	3,729	2,722	57.84 %	5,285	1.33 %	1,533	45.77 %	2	5,340	101 %	32	(35)
0,75 to <1,75	2,535	1,884	53.65 %	3,537	1.09 %	1,219	45.56 %	2	3,335	94 %	17	(11)
1,75 to <2,50	1,194	839	67.27 %	1,747	1.80 %	314	46.18 %	2	2,005	115 %	15	(23)
2,50 to <10,00	3,440	3,119	52.28 %	5,050	4.85 %	1,912	43.18 %	2	7,409	147 %	106	(468)
2,50 to <5,00	1,823	2,024	44.47 %	2,702	3.28 %	973	42.16 %	2	3,438	127 %	37	(84)
5,00 to <10,00	1,617	1,096	66.70 %	2,349	6.66 %	939	44.36 %	2	3,971	169 %	69	(384)
10,00 to <100,00	696	205	51.10 %	810	28.22 %	909	43.70 %	2	1,914	236 %	98	(57)
10,00 to <20,00	263	108	51.85 %	323	14.79 %	261	45.01 %	2	748	232 %	21	(23)
20,00 to <30,00	49	32	63.60 %	70	23.58 %	63	46.36 %	2	176	250 %	8	(8)
30,00 to <100,00	385	65	43.75 %	417	39.40 %	585	42.23 %	2	990	237 %	69	(26)
100,00 (Default)	898	236	59.13 %	1,035	100.00 %	473	50.79 %	3	213	21 %	526	(471)

PD Scale ⁽¹⁾⁽⁶⁾	Original on-balance sheet gross exposure	Off-balance sheet exposures pre CCF	Average CCF ⁽²⁾	EAD post CRM and post-CCF	Average PD ⁽³⁾	Number of obligors	Average LGD ⁽⁴⁾	Average Maturity (days) ⁽⁵⁾	RWAs	RWA Density	EL	Value adjustments and provisions
Retail - Immovable property SMEs	1,093	422	2.05 %	1,101	26.12 %	21,516	20.60 %	—	1,347	122 %	60	(12)
0,00 to <0,15	—	—	—	—	—	—	—	—	—	—	—	—
0,00 to <0,10	—	—	—	—	—	—	—	—	—	—	—	—
0,10 to <0,15	—	—	—	—	—	—	—	—	—	—	—	—
0,15 to <0,25	—	—	—	—	—	—	—	—	—	—	—	—
0,25 to <0,50	—	—	—	—	—	—	—	—	—	—	—	—
0,50 to <0,75	—	—	—	—	—	—	—	—	—	—	—	—
0,75 to <2,50	—	—	—	—	—	—	—	—	—	—	—	—
0,75 to <1,75	—	—	—	—	—	—	—	—	—	—	—	—
1,75 to <2,50	—	—	—	—	—	—	—	—	—	—	—	—
2,50 to <10,00	—	—	—	—	—	—	—	—	—	—	—	—
2,50 to <5,00	—	—	—	—	—	—	—	—	—	—	—	—
5,00 to <10,00	—	—	—	—	—	—	—	—	—	—	—	—
10,00 to <100,00	1,052	420	2.05 %	1,060	23.24 %	20,847	20.51 %	—	1,339	126 %	51	(2)
10,00 to <20,00	—	—	—	—	—	—	—	—	—	—	—	—
20,00 to <30,00	1,036	420	2.05 %	1,045	22.36 %	20,638	20.48 %	—	1,331	127 %	48	(1)
30,00 to <100,00	15	—	—	15	82.72 %	209	22.38 %	—	8	49 %	3	(1)
100,00 (Default)	41	2	2.69 %	41	100.00 %	669	22.99 %	—	8	18 %	9	(11)
Retail - Immovable property non-SMEs	71,199	4,485	2.07 %	71,292	4.65 %	1,015,918	21.90 %	—	9,681	14 %	572	(881)
0,00 to <0,15	44,579	3,206	2.06 %	44,645	0.05 %	656,561	21.24 %	—	1,374	3 %	4	(7)
0,00 to <0,10	42,186	3,079	2.06 %	42,249	0.04 %	624,609	21.00 %	—	1,187	3 %	3	(6)
0,10 to <0,15	2,393	127	2.24 %	2,396	0.12 %	31,952	25.47 %	—	187	8 %	1	(1)
0,15 to <0,25	9,022	629	2.09 %	9,035	0.19 %	135,037	22.69 %	—	866	10 %	4	(5)
0,25 to <0,50	4,908	249	2.12 %	4,914	0.35 %	69,130	23.36 %	—	759	15 %	4	(4)
0,50 to <0,75	1,645	88	2.10 %	1,646	0.57 %	24,365	24.32 %	—	370	23 %	2	(4)
0,75 to <2,50	4,975	188	2.20 %	4,979	1.41 %	63,538	24.43 %	—	2,059	41 %	17	(25)
0,75 to <1,75	4,154	148	2.21 %	4,157	1.30 %	53,981	23.51 %	—	1,553	37 %	12	(15)
1,75 to <2,50	821	41	2.18 %	822	1.97 %	9,557	29.13 %	—	506	62 %	5	(10)
2,50 to <10,00	1,943	89	2.05 %	1,945	5.08 %	23,296	26.03 %	—	1,772	91 %	26	(168)
2,50 to <5,00	1,107	52	2.07 %	1,108	3.38 %	13,022	25.97 %	—	834	75 %	10	(121)
5,00 to <10,00	835	37	2.02 %	836	7.33 %	10,274	26.11 %	—	938	112 %	16	(46)
10,00 to <100,00	1,422	27	2.06 %	1,423	21.74 %	14,701	26.46 %	—	2,152	151 %	84	(65)
10,00 to <20,00	774	20	2.08 %	775	13.03 %	8,217	25.89 %	—	1,089	141 %	26	(28)
20,00 to <30,00	353	6	2.00 %	353	23.46 %	3,605	26.01 %	—	576	163 %	22	(16)
30,00 to <100,00	295	—	2.67 %	295	42.54 %	2,879	28.52 %	—	486	165 %	36	(21)
100,00 (Default)	2,705	10	2.01 %	2,705	100.00 %	29,290	15.99 %	—	330	12 %	432	(603)

PD Scale ⁽¹⁾⁽⁶⁾	Original on-balance sheet gross exposure	Off-balance sheet exposures pre CCF	Average CCF ⁽²⁾	EAD post CRM and post-CCF	Average PD ⁽³⁾	Number of obligors	Average LGD ⁽⁴⁾	Average Maturity (days) ⁽⁵⁾	RWAs	RWA Density	EL	Value adjustments and provisions
Retail - Other exposures SMEs	3,101	902	57.94 %	3,590	19.63 %	204,978	47.08 %	—	1,519	42 %	347	(390)
0,00 to <0,15	207	179	56.30 %	299	0.12 %	24,069	46.36 %	—	33	11 %	—	(1)
0,00 to <0,10	—	—	—	—	—	—	—	—	—	—	—	—
0,10 to <0,15	207	179	56.30 %	299	0.12 %	24,069	46.36 %	—	33	11 %	—	(1)
0,15 to <0,25	107	59	57.75 %	139	0.20 %	8,682	47.11 %	—	22	16 %	—	(1)
0,25 to <0,50	197	102	57.76 %	252	0.31 %	14,362	46.82 %	—	54	22 %	—	(1)
0,50 to <0,75	252	112	58.88 %	314	0.51 %	18,162	46.76 %	—	91	29 %	1	(3)
0,75 to <2,50	575	192	59.03 %	682	1.19 %	37,137	46.49 %	—	290	42 %	4	(13)
0,75 to <1,75	573	192	59.03 %	680	1.19 %	37,059	46.57 %	—	289	43 %	4	(13)
1,75 to <2,50	2	—	—	2	1.89 %	78	17.41 %	—	—	21 %	—	—
2,50 to <10,00	899	184	58.02 %	997	4.64 %	48,789	43.98 %	—	553	55 %	20	(52)
2,50 to <5,00	638	145	57.76 %	716	3.58 %	36,244	44.99 %	—	392	55 %	11	(31)
5,00 to <10,00	260	38	59.00 %	281	7.35 %	12,545	41.39 %	—	161	57 %	9	(21)
10,00 to <100,00	426	20	60.48 %	437	26.90 %	33,537	44.89 %	—	406	93 %	52	(22)
10,00 to <20,00	96	11	61.82 %	102	14.53 %	5,585	45.80 %	—	78	76 %	7	(13)
20,00 to <30,00	289	3	44.88 %	290	29.41 %	25,300	45.46 %	—	289	100 %	39	(4)
30,00 to <100,00	41	6	65.32 %	45	38.84 %	2,652	39.13 %	—	39	86 %	7	(5)
100,00 (Default)	439	55	57.20 %	470	100.00 %	20,240	57.34 %	—	70	15 %	269	(297)
Retail - Other exposures Non-SMEs	12,492	70	61.52 %	12,535	10.50 %	1,290,640	47.38 %	—	4,639	37 %	679	(887)
0,00 to <0,15	3,944	3	57.34 %	3,946	0.06 %	300,733	43.51 %	—	308	8 %	1	(3)
0,00 to <0,10	3,022	—	54.55 %	3,022	0.04 %	202,507	43.03 %	—	175	6 %	—	(2)
0,10 to <0,15	923	2	57.40 %	924	0.13 %	98,226	45.08 %	—	133	14 %	—	(1)
0,15 to <0,25	1,057	1	53.11 %	1,057	0.22 %	101,141	45.28 %	—	225	21 %	1	(2)
0,25 to <0,50	1,001	1	57.00 %	1,001	0.39 %	111,797	45.36 %	—	309	31 %	2	(3)
0,50 to <0,75	557	2	55.51 %	558	0.63 %	66,857	47.81 %	—	236	42 %	2	(2)
0,75 to <2,50	3,404	27	51.15 %	3,418	1.44 %	447,148	48.84 %	—	2,059	60 %	24	(33)
0,75 to <1,75	2,393	27	51.15 %	2,406	1.12 %	301,368	47.91 %	—	1,318	55 %	13	(18)
1,75 to <2,50	1,011	—	66.67 %	1,011	2.20 %	145,780	51.06 %	—	741	73 %	11	(15)
2,50 to <10,00	1,072	8	57.83 %	1,076	4.37 %	123,391	51.98 %	—	882	82 %	24	(72)
2,50 to <5,00	751	6	57.94 %	755	3.50 %	91,577	52.73 %	—	614	81 %	14	(52)
5,00 to <10,00	321	2	57.53 %	322	6.40 %	31,814	50.21 %	—	268	83 %	10	(20)
10,00 to <100,00	444	25	72.26 %	462	29.72 %	45,930	50.82 %	—	570	123 %	68	(50)
10,00 to <20,00	183	4	42.54 %	184	13.64 %	16,691	55.23 %	—	210	114 %	14	(18)
20,00 to <30,00	76	13	87.73 %	87	26.85 %	15,628	49.93 %	—	116	132 %	12	(8)
30,00 to <100,00	186	8	62.13 %	191	46.59 %	13,611	46.97 %	—	245	128 %	43	(24)
100,00 (Default)	1,012	4	92.18 %	1,016	100.00 %	93,643	54.96 %	—	49	5 %	558	(723)

PD Scale ⁽¹⁾⁽⁶⁾	Original on-balance sheet gross exposure	Off-balance sheet exposures pre CCF	Average CCF ⁽²⁾	EAD post CRM and post-CCF	Average PD ⁽³⁾	Number of obligors	Average LGD ⁽⁴⁾	Average Maturity (days) ⁽⁵⁾	RWAs	RWA Density	EL	Value adjustments and provisions
Retail - qualifying revolving (QRRE)	7,172	18,488	17.08 %	10,315	6.96 %	10,460,733	69.68 %	—	8,868	70 %	659	(721)
0,00 to <0,15	698	2,906	28.07 %	1,514	0.04 %	1,587,147	41.86 %	—	20	1 %	—	—
0,00 to <0,10	627	2,734	27.96 %	1,392	0.03 %	1,437,152	41.55 %	—	16	1 %	—	—
0,10 to <0,15	71	172	29.77 %	122	0.14 %	149,995	45.31 %	—	4	4 %	—	—
0,15 to <0,25	494	1,917	29.50 %	1,060	0.19 %	1,243,165	42.10 %	—	54	5 %	1	(2)
0,25 to <0,50	241	1,160	10.45 %	362	0.43 %	327,427	73.83 %	—	72	17 %	1	(5)
0,50 to <0,75	639	2,446	9.43 %	870	0.60 %	776,720	74.01 %	—	226	21 %	5	(16)
0,75 to <2,50	1,898	4,973	12.45 %	2,517	1.42 %	2,081,563	79.34 %	—	1,405	43 %	37	(84)
0,75 to <1,75	1,325	3,647	11.95 %	1,760	1.15 %	1,413,293	78.64 %	—	831	37 %	20	(51)
1,75 to <2,50	573	1,326	13.83 %	757	2.05 %	668,270	80.97 %	—	574	58 %	16	(32)
2,50 to <10,00	2,187	4,380	14.08 %	2,804	5.65 %	3,252,103	80.74 %	—	4,101	115 %	164	(207)
2,50 to <5,00	1,032	1,887	15.27 %	1,320	3.69 %	1,240,999	78.99 %	—	1,411	86 %	48	(76)
5,00 to <10,00	1,155	2,493	13.19 %	1,484	7.40 %	2,011,104	82.29 %	—	2,690	140 %	116	(131)
10,00 to <100,00	785	690	24.96 %	957	23.75 %	994,170	77.48 %	—	2,978	211 %	240	(209)
10,00 to <20,00	467	385	25.29 %	564	13.22 %	603,827	82.54 %	—	1,647	197 %	93	(85)
20,00 to <30,00	129	79	14.63 %	141	24.70 %	151,787	81.11 %	—	590	251 %	47	(43)
30,00 to <100,00	188	226	27.99 %	252	46.82 %	238,556	64.13 %	—	741	220 %	100	(81)
100,00 (Default)	229	15	20.13 %	232	100.00 %	198,438	84.01 %	—	13	5 %	211	(197)
Total IRB Approach	195,081	108,414	51.52 %	252,973	4.29 %	13,058,657	38.46 %	—	102,547	37 %	3,378	(4,682)

(*) Exposures of less than 500,000 euros rounded down to zero are shown with a dash.

⁽¹⁾ PD intervals established by the EBA ITS (Implementing Regulation 2021/637).

⁽²⁾ Calculated as EAD after CCF for off-balance sheet exposure over total off-balance exposure before CCF.

⁽³⁾ Corresponds to obligor grade PD weighted by EAD post CRM.

⁽⁴⁾ Corresponds to obligor grade LGD weighted by EAD post CRM.

⁽⁵⁾ Corresponds to the maturity of the obligor in years weighted by EAD. In accordance with Regulation (EU) 680/2014, it is reported only for those categories where average maturities are relevant for the calculation of RWAs. Residual maturities of less than one year are rounded to 1.

⁽⁶⁾ Specialised lending exposures are included in the FIRB approach. The Group has chosen to use the supervisory category attribution criteria method, in line with the provisions of article 153.5 of the CRR, and therefore, following the New EBA ITS, Specialised lending exposures are not included in this table.

For information about exposures and RWA under IRB approach, see Table 12.

The information included in the above tables is set out below in chart format:

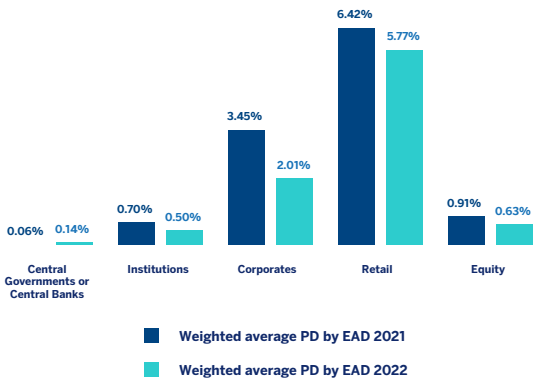
Chart 10. IRB Approach: EAD by obligor category



Chart 13. IRB Approach: RWAs by obligor category



Chart 11. IRB Approach: Weighted average PD by EAD



The following table shows the flow statements of credit and counterparty credit risk RWA under internal model (IRB) during the last quarter of 2022:

Chart 12. IRB Approach: Weighted average LGD by EAD

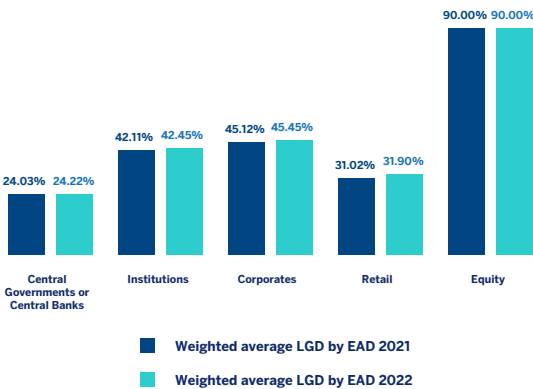


Table 32. EU CR8 - RWA flow statements of credit and counterparty risk exposures under the IRB approach (Million Euros)

	Credit Risk		Counterparty Credit Risk		Total	
	RWA amounts	Capital Requirements	RWA amounts	Capital Requirements	RWA amounts	Capital requirements
RWAs as of September 30, 2022	109,636	8,771	6,817	545	116,453	9,316
Asset size	3,345	268	(950)	(76)	2,395	192
Asset quality	(1,951)	(156)	(42)	(3)	(1,993)	(159)
Model updates	—	—	—	—	—	—
Methodology and policy	—	—	—	—	—	—
Acquisitions and disposals	—	—	—	—	—	—
Foreign exchange movements	(3,306)	(264)	(117)	(9)	(3,423)	(274)
Other	—	—	—	—	—	—
RWAs as of December 31, 2022	107,724	8,618	5,708	457	113,432	9,075

RWA under the IRB approach fell by €3,021 million in the quarter due to the favourable evolution of the exchange rate as a result of the appreciation of the euro, as the case for exposures under the standardised approach.

In credit risk, there has been an improvement in asset quality, with a reduction in the average RWA density of the corporate portfolio, mainly, which has been partially offset by organic growth. In the quarter, the effect of new securitisations, with risk transfer, generated a reduction in RWAs of approximately 700 million, included in asset size.

The full annual series of RWA flow of credit risk under the IRB approach is available in the editable file "Pillar III 2022 – Tables & Annexes".

4.2.5.3. Comparative analysis of the estimates made

In application of article 452.h) of the CRR, two tables are presented below that show relevant information on the retrospective tests of the probability of default (PD backtesting) of exposures to credit risk (excluding counterparty and securitizations), at consolidated level of the BBVA Group. Specifically, the PD estimated for the IRB models is compared with the average annual default rate of obligors.

As of December 31, 2022, this information is shown in the standard format and applying the instructions of the EBA ITS:

- EU CR9: Backtesting of PD per exposure class by fixed PD scale.
- EU CR9.1: Backtesting of PD by exposure class where an additional column is added to report the equivalent external rating. The equivalence between the PD and the external ratings described in section 4.2.5.1.2 has been used.

Both tables exclude counterparty risk, securitizations and equity. It should be noted that this information is presented at a consolidated level, adding the IRB portfolios of BBVA.S.A. and BBVA Mexico. The information presented in these tables is as follows:

- Number of obligors: the obligors at the end of the previous fiscal year are presented.
- Of which: number of obligors who have defaulted: customers who defaulted at some point during the last 12 months, so that the debtors in default during the year are shown for each PD interval.
- Observed average default rate: arithmetic mean of one-year default rates. To calculate this rate, the obligors at the end of the previous year are taken into account in the denominator, and the obligors in default in the numerator.
- Arithmetic average PD and weighted average PD (EU CR9 only): the first one refers to the arithmetic average of the PD per obligor grade at the beginning of the period. The weighted average PD will be calculated by weighting by the exposure value of each PD range used for the RWA calculation. This weighted average PD will be the same as the one reported in the EU CR6 table.
- Average historical annual default rate: it corresponds to the average annual default rate for the previous five years.

Table 33. EU CR9 - IRB approach - Backtesting of PD per exposure class (fixed PD scale) (12-31-2022)

PD Range	Number of obligors at the end of previous year	Of which number of obligors which defaulted in the year	Observed average default rate	Weighted average PD ⁽¹⁾	Arithmetic average PD by obligors ⁽¹⁾	Average historical annual default rate
Central governments or central banks						
0,00 to <0,15	22	—	—	0.02 %	0.05 %	12.12 %
0,00 to <0,10	17	—	—	0.02 %	0.03 %	15.69 %
0,10 to <0,15	5	—	—	0.11 %	0.12 %	—
0,15 to <0,25	9	—	—	0.20 %	0.20 %	—
0,25 to <0,50	4	—	—	0.31 %	0.31 %	—
0,50 to <0,75	1	—	—	0.51 %	0.51 %	—
0,75 to <2,50	7	—	—	1.15 %	1.41 %	—
0,75 to <1,75	7	—	—	1.15 %	1.41 %	—
1,75 to <2,50	—	—	—	—	—	—
2,50 to <10,00	16	—	—	4.47 %	6.21 %	—
2,50 to <5,00	6	—	—	4.41 %	4.41 %	—
5,00 to <10,00	10	—	—	7.85 %	7.29 %	—
10,00 to <100,00	32	2	6.25 %	15.21 %	34.89 %	—
10,00 to <20,00	2	1	50.00 %	15.09 %	11.91 %	—
20,00 to <30,00	—	—	—	—	—	—
30,00 to <100,00	30	1	3.33 %	37.05 %	36.42 %	—
100,00 (Default)	2	—	—	100.00 %	100.00 %	—
Institutions						
0,00 to <0,15	1,496	19	1.27 %	0.07 %	0.12 %	2.81 %
0,00 to <0,10	276	5	1.81 %	0.06 %	0.06 %	5.87 %
0,10 to <0,15	1,220	14	1.15 %	0.11 %	0.13 %	2.12 %
0,15 to <0,25	611	10	1.64 %	0.18 %	0.20 %	1.56 %
0,25 to <0,50	288	4	1.39 %	0.33 %	0.33 %	2.58 %
0,50 to <0,75	160	1	0.63 %	0.55 %	0.54 %	2.79 %
0,75 to <2,50	156	1	0.64 %	1.19 %	1.26 %	1.23 %
0,75 to <1,75	156	1	0.64 %	1.19 %	1.26 %	1.23 %
1,75 to <2,50	—	—	—	—	—	—
2,50 to <10,00	117	1	0.85 %	4.69 %	4.12 %	3.93 %
2,50 to <5,00	95	1	1.05 %	3.98 %	3.40 %	2.95 %
5,00 to <10,00	22	—	—	8.04 %	7.25 %	8.15 %
10,00 to <100,00	85	2	2.35 %	24.32 %	32.97 %	—
10,00 to <20,00	16	1	6.25 %	14.26 %	12.62 %	—
20,00 to <30,00	2	—	—	29.74 %	23.81 %	—
30,00 to <100,00	67	1	1.49 %	38.09 %	38.11 %	—
100,00 (Default)	79	—	—	100.00 %	100.00 %	—

PD Range	Number of obligors at the end of previous year	Of which number of obligors which defaulted in the year	Observed average default rate	Weighted average PD ⁽¹⁾	Arithmetic average PD by obligors ⁽¹⁾	Average historical annual default rate
Corporate - SMEs						
0,00 to <0,15	2,481	3	0.12 %	0.12 %	0.12 %	0.91 %
0,00 to <0,10	167	—	—	0.04 %	0.04 %	0.57 %
0,10 to <0,15	2,314	3	0.13 %	0.12 %	0.12 %	0.93 %
0,15 to <0,25	1,806	4	0.22 %	0.20 %	0.20 %	1.00 %
0,25 to <0,50	4,227	21	0.50 %	0.35 %	0.33 %	1.24 %
0,50 to <0,75	3,484	19	0.55 %	0.53 %	0.52 %	1.94 %
0,75 to <2,50	7,030	67	0.95 %	1.24 %	1.17 %	3.13 %
0,75 to <1,75	6,923	67	0.97 %	1.20 %	1.16 %	3.15 %
1,75 to <2,50	107	—	—	2.03 %	2.04 %	2.13 %
2,50 to <10,00	11,788	256	2.17 %	4.40 %	5.00 %	5.18 %
2,50 to <5,00	7,562	136	1.80 %	3.52 %	3.67 %	4.82 %
5,00 to <10,00	4,226	120	2.84 %	7.61 %	7.37 %	5.82 %
10,00 to <100,00	14,332	783	5.46 %	21.97 %	33.69 %	7.02 %
10,00 to <20,00	1,813	95	5.24 %	13.59 %	14.17 %	9.87 %
20,00 to <30,00	254	29	11.42 %	23.88 %	23.94 %	14.39 %
30,00 to <100,00	12,265	659	5.37 %	37.03 %	36.78 %	6.45 %
100,00 (Default)	5,814	—	—	100.00 %	100.00 %	—
Corporate - Non-SMEs						
0,00 to <0,15	1,069	5	0.47 %	0.09 %	0.11 %	1.72 %
0,00 to <0,10	359	3	0.84 %	0.07 %	0.08 %	1.56 %
0,10 to <0,15	710	2	0.28 %	0.12 %	0.12 %	1.80 %
0,15 to <0,25	2,528	7	0.28 %	0.20 %	0.20 %	0.51 %
0,25 to <0,50	1,513	12	0.79 %	0.37 %	0.35 %	1.75 %
0,50 to <0,75	946	9	0.95 %	0.59 %	0.56 %	2.42 %
0,75 to <2,50	1,533	7	0.46 %	1.39 %	1.24 %	1.93 %
0,75 to <1,75	1,219	5	0.41 %	1.11 %	1.09 %	2.42 %
1,75 to <2,50	314	2	0.64 %	1.80 %	1.80 %	—
2,50 to <10,00	1,914	34	1.78 %	4.77 %	5.10 %	4.75 %
2,50 to <5,00	973	9	0.92 %	3.16 %	3.48 %	4.78 %
5,00 to <10,00	941	25	2.66 %	6.46 %	6.78 %	4.72 %
10,00 to <100,00	915	17	1.86 %	25.19 %	31.61 %	5.37 %
10,00 to <20,00	267	5	1.87 %	14.83 %	15.14 %	6.96 %
20,00 to <30,00	63	2	3.17 %	26.20 %	24.50 %	10.89 %
30,00 to <100,00	585	10	1.71 %	41.87 %	39.89 %	4.05 %
100,00 (Default)	473	—	—	100.00 %	100.00 %	—

PD Range	Number of obligors at the end of previous year	Of which number of obligors which defaulted in the year	Observed average default rate	Weighted average PD ⁽¹⁾	Arithmetic average PD by obligors ⁽¹⁾	Average historical annual default rate
Retail - Immovable property SMEs						
0,00 to <0,15	—	—	—	—	—	—
0,00 to <0,10	—	—	—	—	—	—
0,10 to <0,15	—	—	—	—	—	—
0,15 to <0,25	—	—	—	—	—	—
0,25 to <0,50	—	—	—	—	—	—
0,50 to <0,75	—	—	—	—	—	—
0,75 to <2,50	—	—	—	—	—	—
0,75 to <1,75	—	—	—	—	—	—
1,75 to <2,50	—	—	—	—	—	—
2,50 to <10,00	—	—	—	—	—	—
2,50 to <5,00	—	—	—	—	—	—
5,00 to <10,00	—	—	—	—	—	—
10,00 to <100,00	20,847	192	0.92 %	23.36 %	22.97 %	0.91 %
10,00 to <20,00	—	—	—	—	—	—
20,00 to <30,00	20,638	127	0.62 %	22.36 %	22.36 %	0.61 %
30,00 to <100,00	209	65	31.10 %	82.72 %	82.72 %	30.95 %
100,00 (Default)	669	—	—	100.00 %	100.00 %	—
Retail - Immovable property non-SMEs						
0,00 to <0,15	656,561	565	0.09 %	0.05 %	0.05 %	0.38 %
0,00 to <0,10	624,609	496	0.08 %	0.04 %	0.04 %	0.30 %
0,10 to <0,15	31,952	69	0.22 %	0.12 %	0.12 %	1.96 %
0,15 to <0,25	135,037	470	0.35 %	0.19 %	0.19 %	1.37 %
0,25 to <0,50	69,130	446	0.65 %	0.35 %	0.36 %	1.95 %
0,50 to <0,75	24,365	294	1.21 %	0.57 %	0.57 %	2.10 %
0,75 to <2,50	63,538	1,289	2.03 %	1.39 %	1.38 %	3.27 %
0,75 to <1,75	53,981	1,059	1.96 %	1.28 %	1.27 %	3.12 %
1,75 to <2,50	9,557	230	2.41 %	1.96 %	1.98 %	4.16 %
2,50 to <10,00	23,296	1,660	7.13 %	5.01 %	5.11 %	13.91 %
2,50 to <5,00	13,022	614	4.72 %	3.36 %	3.41 %	9.00 %
5,00 to <10,00	10,274	1,046	10.18 %	7.33 %	7.26 %	20.13 %
10,00 to <100,00	14,701	3,218	21.89 %	21.58 %	22.21 %	28.57 %
10,00 to <20,00	8,217	1,369	16.66 %	12.93 %	13.36 %	27.20 %
20,00 to <30,00	3,605	865	23.99 %	23.30 %	23.93 %	24.92 %
30,00 to <100,00	2,879	984	34.18 %	42.51 %	45.28 %	37.08 %
100,00 (Default)	29,290	—	—	100.00 %	100.00 %	—

PD Range	Number of obligors at the end of previous year	Of which number of obligors which defaulted in the year	Observed average default rate	Weighted average PD ⁽¹⁾	Arithmetic average PD by obligors ⁽¹⁾	Average historical annual default rate
Retail - Other exposures						
SMEs						
0,00 to <0,15	24,069	29	0.12 %	0.12 %	0.12 %	0.25 %
0,00 to <0,10	—	—	—	—	—	—
0,10 to <0,15	24,069	29	0.12 %	0.12 %	0.12 %	0.25 %
0,15 to <0,25	8,682	11	0.13 %	0.20 %	0.20 %	0.34 %
0,25 to <0,50	14,362	65	0.45 %	0.31 %	0.31 %	0.63 %
0,50 to <0,75	18,162	124	0.68 %	0.51 %	0.51 %	0.90 %
0,75 to <2,50	37,137	503	1.35 %	1.17 %	1.18 %	1.51 %
0,75 to <1,75	37,059	498	1.34 %	1.17 %	1.18 %	1.50 %
1,75 to <2,50	78	5	6.41 %	—	1.89 %	5.17 %
2,50 to <10,00	48,789	1,661	3.40 %	4.32 %	4.52 %	4.25 %
2,50 to <5,00	36,244	976	2.69 %	3.35 %	3.58 %	3.40 %
5,00 to <10,00	12,545	685	5.46 %	7.78 %	7.24 %	6.70 %
10,00 to <100,00	33,533	1,893	5.65 %	27.71 %	26.51 %	7.79 %
10,00 to <20,00	5,580	623	11.16 %	14.60 %	15.05 %	12.08 %
20,00 to <30,00	25,309	692	2.73 %	29.51 %	27.57 %	5.11 %
30,00 to <100,00	2,644	578	21.86 %	42.62 %	40.47 %	24.37 %
100,00 (Default)	20,240	—	—	100.00 %	100.00 %	—
Retail - Other exposures						
Non-SMEs						
0,00 to <0,15	301,790	422	0.14 %	0.06 %	0.07 %	0.34 %
0,00 to <0,10	202,504	152	0.08 %	0.04 %	0.05 %	0.21 %
0,10 to <0,15	99,286	270	0.27 %	0.13 %	0.13 %	0.59 %
0,15 to <0,25	100,073	458	0.46 %	0.22 %	0.21 %	1.04 %
0,25 to <0,50	114,155	841	0.74 %	0.39 %	0.39 %	1.79 %
0,50 to <0,75	60,013	582	0.97 %	0.61 %	0.62 %	2.27 %
0,75 to <2,50	467,782	8,120	1.74 %	1.41 %	1.51 %	3.47 %
0,75 to <1,75	316,097	4,871	1.54 %	1.10 %	1.15 %	3.33 %
1,75 to <2,50	151,685	3,249	2.14 %	2.23 %	2.25 %	3.78 %
2,50 to <10,00	107,267	5,524	5.15 %	4.50 %	4.55 %	8.24 %
2,50 to <5,00	75,760	2,836	3.74 %	3.65 %	3.69 %	6.85 %
5,00 to <10,00	31,507	2,688	8.53 %	6.33 %	6.61 %	11.60 %
10,00 to <100,00	45,916	10,856	23.64 %	28.30 %	29.47 %	37.57 %
10,00 to <20,00	15,685	2,734	17.43 %	13.10 %	14.18 %	28.20 %
20,00 to <30,00	18,368	1,406	7.65 %	27.63 %	27.28 %	32.30 %
30,00 to <100,00	11,863	6,716	56.61 %	51.74 %	53.07 %	58.14 %
100,00 (Default)	93,643	—	—	100.00 %	100.00 %	—

PD Range	Number of obligors at the end of previous year	Of which number of obligors which defaulted in the year	Observed average default rate	Weighted average PD ⁽¹⁾	Arithmetic average PD by obligors ⁽¹⁾	Average historical annual default rate
Retail - qualifying revolving (QRRE)						
0,00 to <0,15	1,587,147	1,141	0.07 %	0.04 %	0.04 %	0.20 %
0,00 to <0,10	1,437,152	748	0.05 %	0.03 %	0.04 %	0.14 %
0,10 to <0,15	149,995	393	0.26 %	0.13 %	0.14 %	0.69 %
0,15 to <0,25	1,243,165	3,648	0.29 %	0.19 %	0.19 %	0.44 %
0,25 to <0,50	327,427	2,142	0.65 %	0.44 %	0.43 %	0.97 %
0,50 to <0,75	776,720	6,900	0.89 %	0.60 %	0.60 %	1.54 %
0,75 to <2,50	2,081,563	38,664	1.86 %	1.42 %	1.48 %	2.26 %
0,75 to <1,75	1,413,293	22,197	1.57 %	1.15 %	1.19 %	1.97 %
1,75 to <2,50	668,270	16,467	2.46 %	2.05 %	2.08 %	2.87 %
2,50 to <10,00	3,252,122	156,891	4.82 %	5.68 %	6.17 %	5.78 %
2,50 to <5,00	1,240,999	44,987	3.63 %	3.69 %	3.76 %	4.06 %
5,00 to <10,00	2,011,123	111,904	5.56 %	7.39 %	7.66 %	6.83 %
10,00 to <100,00	994,172	200,602	20.18 %	22.99 %	24.43 %	18.66 %
10,00 to <20,00	603,827	93,862	15.54 %	13.50 %	13.54 %	14.63 %
20,00 to <30,00	151,787	44,367	29.23 %	24.56 %	24.52 %	27.91 %
30,00 to <100,00	238,558	62,373	26.15 %	45.48 %	51.93 %	22.95 %
100,00 (Default)	198,438	6,533	3.29 %	100.00 %	100.00 %	1.46 %

⁽¹⁾ A floor of 0.03% PD is applied to exposures in the categories of Institutions, Corporates and Retail, according to Articles 160 and 163 of the CRR.

Table 34. EU CR9.1 - Backtesting of PD per exposure class (internal PD scale) (12-31-2022)

PD Scale	External rating equivalent	Number of obligors at the end of previous year	Of which number of obligors which defaulted in the year	Observed average default rate	Arithmetic average PD by obligors ⁽¹⁾	Average historical annual default rate
Central governments or central banks						
0.00 to <0.02	AAA	5	—	—	0.01 %	20.00 %
0.02 to <0.03	AA+	—	—	—	—	—
0.03 to <0.04	AA	3	—	—	0.03 %	—
0.04 to <0.05	AA-	2	—	—	0.04 %	33.33 %
0.05 to <0.06	A+	7	—	—	0.05 %	14.29 %
0.06 to <0.09	A	—	—	—	—	—
0.09 to <0.11	A-	1	—	—	0.10 %	—
0.11 to <0.17	BBB+	5	—	—	0.13 %	—
0.17 to <0.24	BBB	8	—	—	0.20 %	—
0.29 to <0.39	BBB-	4	—	—	0.31 %	—
0.39 to <0.67	BB+	1	—	—	0.51 %	—
0.67 to <1.16	BB	1	—	—	0.88 %	—
1.16 to <1.94	BB-	6	—	—	1.50 %	—
1.94 to <3.35	B+	—	—	—	—	—
3.35 to <5.81	B	8	—	—	4.57 %	—
5.81 to <11.61	B-	8	—	—	7.85 %	—
11.61 to <100.00	CCC	32	2	6.25 %	34.89 %	—
100.00 (default)	D	2	—	—	100.00 %	—
Institutions						
0.00 to <0.02	AAA	—	—	—	—	—
0.02 to <0.03	AA+	—	—	—	—	—
0.03 to <0.04	AA	18	—	—	0.03 %	5.56 %
0.04 to <0.05	AA-	54	—	—	0.04 %	9.23 %
0.05 to <0.06	A+	96	1	1.04 %	0.06 %	5.08 %
0.06 to <0.09	A	106	4	3.77 %	0.09 %	5.50 %
0.09 to <0.11	A-	238	4	1.68 %	0.10 %	3.38 %
0.11 to <0.17	BBB+	1,112	13	1.17 %	0.14 %	1.65 %
0.17 to <0.24	BBB	476	7	1.47 %	0.21 %	1.75 %
0.29 to <0.39	BBB-	295	4	1.36 %	0.32 %	2.59 %
0.39 to <0.67	BB+	160	1	0.63 %	0.54 %	2.70 %
0.67 to <1.16	BB	81	—	—	0.92 %	1.27 %
1.16 to <1.94	BB-	75	1	1.33 %	1.62 %	1.19 %
1.94 to <3.35	B+	56	—	—	2.67 %	3.08 %
3.35 to <5.81	B	45	1	2.22 %	4.55 %	4.55 %
5.81 to <11.61	B-	16	—	—	8.03 %	3.70 %
11.61 to <100.00	CCC	85	2	2.35 %	32.97 %	—
100.00 (default)	D	79	—	—	100.00 %	—

PD Scale	External rating equivalent	Number of obligors at the end of previous year	Of which number of obligors which defaulted in the year	Observed average default rate	Arithmetic average PD by obligors ⁽¹⁾	Average historical annual default rate
Corporate - SMEs						
0.00 to <0.02	AAA	—	—	—	—	—
0.02 to <0.03	AA+	—	—	—	—	—
0.03 to <0.04	AA	104	—	—	0.03 %	—
0.04 to <0.05	AA-	19	—	—	0.04 %	—
0.05 to <0.06	A+	19	—	—	0.05 %	4.76 %
0.06 to <0.09	A	17	—	—	0.07 %	—
0.09 to <0.11	A-	1,139	2	0.18 %	0.10 %	0.76 %
0.11 to <0.17	BBB+	1,209	1	0.08 %	0.14 %	1.03 %
0.17 to <0.24	BBB	1,767	4	0.23 %	0.20 %	1.05 %
0.29 to <0.39	BBB-	3,523	13	0.37 %	0.31 %	1.35 %
0.39 to <0.67	BB+	4,198	27	0.64 %	0.50 %	1.84 %
0.67 to <1.16	BB	3,802	39	1.03 %	0.88 %	2.75 %
1.16 to <1.94	BB-	3,131	28	0.89 %	1.50 %	3.79 %
1.94 to <3.35	B+	3,113	51	1.64 %	2.55 %	4.73 %
3.35 to <5.81	B	5,147	98	1.90 %	4.49 %	4.70 %
5.81 to <11.61	B-	3,629	107	2.95 %	7.74 %	6.04 %
11.61 to <100.00	CCC	14,331	783	5.46 %	33.69 %	7.97 %
100.00 (default)	D	5,814	—	—	100.00 %	—
Corporate - Non-SMEs						
0.00 to <0.02	AAA	—	—	—	—	—
0.02 to <0.03	AA+	—	—	—	—	—
0.03 to <0.04	AA	36	—	—	0.03 %	2.56 %
0.04 to <0.05	AA-	36	—	—	0.05 %	—
0.05 to <0.06	A+	—	—	— %	—	2.27 %
0.06 to <0.09	A	49	—	—	0.07 %	2.59 %
0.09 to <0.11	A-	400	3	0.75 %	0.10 %	1.26 %
0.11 to <0.17	BBB+	1,698	8	0.47 %	0.15 %	1.67 %
0.17 to <0.24	BBB	223	—	—	0.20 %	2.16 %
0.29 to <0.39	BBB-	2,668	13	0.49 %	0.30 %	1.43 %
0.39 to <0.67	BB+	946	9	0.95 %	0.56 %	1.90 %
0.67 to <1.16	BB	895	3	0.34 %	0.95 %	1.84 %
1.16 to <1.94	BB-	638	4	0.63 %	1.65 %	3.33 %
1.94 to <3.35	B+	531	7	1.32 %	2.73 %	4.86 %
3.35 to <5.81	B	904	9	1.00 %	4.80 %	4.40 %
5.81 to <11.61	B-	479	18	3.76 %	8.30 %	5.94 %
11.61 to <100.00	CCC	915	17	1.86 %	31.61 %	6.91 %
100.00 (default)	D	473	—	—	100.00 %	—

PD Scale	External rating equivalent	Number of obligors at the end of previous year	Of which number of obligors which defaulted in the year	Observed average default rate	Arithmetic average PD by obligors ⁽¹⁾	Average historical annual default rate
Retail - Immovable property SMEs						
0.00 to <0.02	AAA	—	—	—	—	—
0.02 to <0.03	AA+	—	—	—	—	—
0.03 to <0.04	AA	—	—	—	—	—
0.04 to <0.05	AA-	—	—	—	—	—
0.05 to <0.06	A+	—	—	—	—	—
0.06 to <0.09	A	—	—	—	—	—
0.09 to <0.11	A-	—	—	—	—	—
0.11 to <0.17	BBB+	—	—	—	—	—
0.17 to <0.24	BBB	—	—	—	—	—
0.29 to <0.39	BBB-	—	—	—	—	—
0.39 to <0.67	BB+	—	—	—	—	—
0.67 to <1.16	BB	—	—	—	—	—
1.16 to <1.94	BB-	—	—	—	—	2.27 %
1.94 to <3.35	B+	—	—	—	—	—
3.35 to <5.81	B	—	—	—	—	—
5.81 to <11.61	B-	—	—	—	—	—
11.61 to <100.00	CCC	20,847	192	0.92 %	22.97 %	0.91 %
100.00 (default)	D	669	—	—	100.00 %	—
Retail - Immovable property non-SMEs						
0.00 to <0.02	AAA	—	—	—	—	—
0.02 to <0.03	AA+	—	—	—	—	—
0.03 to <0.04	AA	420,667	213	0.05 %	0.03 %	0.17 %
0.04 to <0.05	AA-	43,032	29	0.07 %	0.04 %	0.34 %
0.05 to <0.06	A+	65,494	204	0.15 %	0.05 %	0.21 %
0.06 to <0.09	A	88,720	132	0.15 %	0.08 %	0.87 %
0.09 to <0.11	A-	10,058	27	0.27 %	0.09 %	1.14 %
0.11 to <0.17	BBB+	43,087	118	0.27 %	0.13 %	1.53 %
0.17 to <0.24	BBB	110,132	353	0.32 %	0.19 %	1.56 %
0.29 to <0.39	BBB-	61,759	367	0.59 %	0.31 %	1.48 %
0.39 to <0.67	BB+	45,506	441	0.97 %	0.51 %	2.37 %
0.67 to <1.16	BB	19,981	317	1.59 %	0.91 %	2.95 %
1.16 to <1.94	BB-	34,000	742	2.18 %	1.49 %	3.41 %
1.94 to <3.35	B+	13,376	448	3.35 %	2.52 %	6.31 %
3.35 to <5.81	B	8,457	468	5.53 %	4.51 %	11.30 %
5.81 to <11.61	B-	7,970	909	11.41 %	7.90 %	23.05 %
11.61 to <100.00	CCC	14,389	3,174	22.06 %	22.46 %	27.14 %
100.00 (default)	D	29,290	—	—	100.00 %	—

PD Scale	External rating equivalent	Number of obligors at the end of previous year	Of which number of obligors which defaulted in the year	Observed average default rate	Arithmetic average PD by obligors ⁽¹⁾	Average historical annual default rate
Retail - Other exposures SMEs						
0.00 to <0.02	AAA	—	—	—	—	—
0.02 to <0.03	AA+	—	—	—	—	—
0.03 to <0.04	AA	—	—	—	—	—
0.04 to <0.05	AA-	—	—	—	—	—
0.05 to <0.06	A+	—	—	—	—	—
0.06 to <0.09	A	—	—	—	—	12.50 %
0.09 to <0.11	A-	14,556	10	0.07 %	0.10 %	0.16 %
0.11 to <0.17	BBB+	9,513	19	0.20 %	0.14 %	0.36 %
0.17 to <0.24	BBB	8,682	11	0.13 %	0.20 %	0.34 %
0.29 to <0.39	BBB-	14,362	65	0.45 %	0.31 %	0.63 %
0.39 to <0.67	BB+	18,154	124	0.68 %	0.51 %	0.87 %
0.67 to <1.16	BB	19,418	220	1.13 %	0.88 %	1.31 %
1.16 to <1.94	BB-	17,727	283	1.60 %	1.50 %	1.74 %
1.94 to <3.35	B+	16,724	416	2.49 %	2.55 %	2.92 %
3.35 to <5.81	B	20,595	605	2.94 %	4.50 %	3.92 %
5.81 to <11.61	B-	11,470	640	5.58 %	7.43 %	6.90 %
11.61 to <100.00	CCC	33,533	1,893	5.65 %	26.51 %	10.94 %
100.00 (default)	D	20,240	—	—	100.00 %	—
Retail - Other exposures Non-SMEs						
0.00 to <0.02	AAA	—	—	—	—	—
0.02 to <0.03	AA+	—	—	—	—	—
0.03 to <0.04	AA	87,963	29	0.03 %	0.03 %	0.08 %
0.04 to <0.05	AA-	60,321	50	0.08 %	0.04 %	0.19 %
0.05 to <0.06	A+	—	—	—	—	0.30 %
0.06 to <0.09	A	49,106	60	0.12 %	0.07 %	0.42 %
0.09 to <0.11	A-	23,688	46	0.19 %	0.10 %	0.53 %
0.11 to <0.17	BBB+	96,926	268	0.28 %	0.14 %	0.72 %
0.17 to <0.24	BBB	82,407	421	0.51 %	0.22 %	1.01 %
0.29 to <0.39	BBB-	51,556	338	0.66 %	0.33 %	1.60 %
0.39 to <0.67	BB+	111,043	986	0.89 %	0.50 %	2.08 %
0.67 to <1.16	BB	196,372	2,745	1.40 %	0.92 %	2.92 %
1.16 to <1.94	BB-	157,458	2,914	1.85 %	1.50 %	3.89 %
1.94 to <3.35	B+	151,895	3,194	2.10 %	2.41 %	4.71 %
3.35 to <5.81	B	63,353	3,272	5.16 %	4.38 %	7.60 %
5.81 to <11.61	B-	20,916	1,865	8.92 %	7.64 %	13.64 %
11.61 to <100.00	CCC	43,992	10,615	24.13 %	30.31 %	38.39 %
100.00 (default)	D	93,643	—	—	100.00 %	—

PD Scale	External rating equivalent	Number of obligors at the end of previous year	Of which number of obligors which defaulted in the year	Observed average default rate	Arithmetic average PD by obligors ⁽¹⁾	Average historical annual default rate
Retail - qualifying revolving (QRRE)						
0.00 to <0.02	AAA	—	—	—	—	—
0.02 to <0.03	AA+	—	—	—	—	—
0.03 to <0.04	AA	1,233,902	459	0.04 %	0.03 %	0.10 %
0.04 to <0.05	AA-	35,413	60	0.17 %	0.04 %	0.32 %
0.05 to <0.06	A+	53,383	40	0.07 %	0.05 %	0.47 %
0.06 to <0.09	A	113,564	188	0.17 %	0.08 %	0.47 %
0.09 to <0.11	A-	1,636	3	0.18 %	0.10 %	0.39 %
0.11 to <0.17	BBB+	391,454	1,750	0.45 %	0.16 %	0.69 %
0.17 to <0.24	BBB	997,931	2,286	0.23 %	0.20 %	0.39 %
0.29 to <0.39	BBB-	65,785	192	0.29 %	0.35 %	1.08 %
0.39 to <0.67	BB+	894,821	7,418	0.83 %	0.54 %	1.35 %
0.67 to <1.16	BB	714,879	8,805	1.23 %	0.86 %	1.56 %
1.16 to <1.94	BB-	1,058,738	19,405	1.83 %	1.47 %	2.30 %
1.94 to <3.35	B+	862,010	25,987	3.01 %	2.54 %	3.33 %
3.35 to <5.81	B	1,029,630	43,730	4.25 %	4.42 %	4.78 %
5.81 to <11.61	B-	1,867,564	106,123	5.68 %	7.96 %	7.14 %
11.61 to <100.00	CCC	941,606	193,542	20.55 %	25.22 %	24.04 %
100.00 (default)	D	198,438	6,533	3.29 %	100.00 %	1.55 %

As of December 31, 2022, the total number of short-term wholesale obligors (residual maturity of less than 1 year) whose exposures are calculated under IRB approach rises to approximately 22,000 obligors. The largest proportion of these corresponds to the regulatory categories of Institutions and Central Governments and Central Banks. Additionally, the Group only has one PD model authorized by the Supervisor for each of the aforementioned categories, therefore, 100% of the RWAs are calculated under this PD model.

The comparability of the information and the composition of the time window are conditioned by the following factors:

- Long life cycle between the time the IRB parameters are updated and their final implementation, depending on the materiality of the change, supervisory prioritization for the inspection and decision phases.
- Different nature, risk profile and economic cycles of the different portfolios, especially relevant in cases where several geographies are aggregated in the same exposure class (mainly Corporates and Credit Cards in Spain and Mexico).

Minimum historical depth of 5 years: The annual historical default rates cover more than 5 years, seeking consistency between regulatory and economic capital, as long as the supervisory process for the approval of the changes allows it.

Window overlap: Although there is an overlap of quarterly windows in the calibration of the pools, analysis are carried out to measure and mitigate the possible bias that this overlapping could imply. In the quantification of the long-term PD, however, there are no overlapping windows.

4.2.5.4. Risk weights of specialised lending exposure

The solvency regulation stipulates that the classification of specialised lending companies should apply to legal entities with the following characteristics:

- The exposure is to an entity created specifically to finance and/or operate physical assets.
- The contractual arrangements give the lender a substantial degree of control over the assets and income they generate.
- The primary source of repayment of the obligation is the income generated by the assets being financed, rather than the independent capacity of the borrower.

Corporate specialized lending exposures subject to the IRB Supervisory Slotting Approach, which is used by BBVA for RWA calculations, are assigned to a grade, the determination of which takes into account the following factors:

1. Financial Strength that includes: market conditions, financial ratios, stress analysis and financial structure.

2. Political and legal environment that includes: political risks, country risks, force majeure risks, government support, stability of legal and regulatory environment, local support and legal force of the contracts.
3. Asset and operational characteristics that includes: design and technology risks, permits and license risks, construction risks, completion guarantees, Contractor and Operator qualifications, O&M agreements and supply risks.
4. Strength of the Sponsor that includes: financial strength, experience and support to the project.
5. Legal & Finance Structure that includes: pledges and assignments, covenants and restrictions, DSRA.

Once assigned to a grade, the exposure is risk-weighted in accordance with the risk weight applicable to that grade and remaining maturity banding.

The following tables show information on specialised lending exposures by type according to EBA ITS. as of December 31, 2022 and December 31, 2021:

Table 35. EU CR10 (1-4) - IRB: specialised lending (Million Euros. 12-31-2022)

Specialised lending: Project Finance							
Regulatory categories	Remaining maturity	On-balance sheet amount ⁽¹⁾	Off-balance sheet amount ⁽²⁾	RW	Exposure amount ⁽³⁾	RWAs	Expected losses
Category 1	Less than 2.5 years	93	71	50%	142	68	—
Category 1	Equal to or more than 2.5 years	2,162	287	70%	2,322	1,451	9
Category 2	Less than 2.5 years	177	142	70%	270	162	1
Category 2	Equal to or more than 2.5 years	1,582	1,757	90%	2,500	2,098	20
Category 3	Less than 2.5 years	8	1	115%	9	10	—
Category 3	Equal to or more than 2.5 years	170	52	115%	201	231	6
Category 4	Less than 2.5 years	69	1	250%	70	175	6
Category 4	Equal to or more than 2.5 years	231	23	250%	241	604	19
Category 5	Less than 2.5 years	5	—		5	—	3
Category 5	Equal to or more than 2.5 years	3	—		3	—	2
Total	Less than 2.5 years	352	214		495	415	9
Total	Equal to or more than 2.5 years	4,149	2,119		5,268	4,385	56

⁽¹⁾ Corresponds to the original exposure.

⁽²⁾ Corresponds to the value of off-balance sheet exposure, regardless of credit conversion factors (CCF), or the effect of the Credit Risk Mitigation (CRM) techniques.

⁽³⁾ Corresponds to exposure value after CRM and CCF.

Specialised lending: IPRE & HVCRE

Regulatory categories	Remaining maturity	On-balance sheet amount ⁽¹⁾	Off-balance sheet amount ⁽²⁾	RW	Exposure amount ⁽³⁾	RWAs	Expected losses
Category 1	Less than 2.5 years	123	—	50 %	123	61	—
Category 1	Equal to or more than 2.5 years	367	8	70 %	370	259	1
Category 2	Less than 2.5 years	—	—	70 %	—	—	—
Category 2	Equal to or more than 2.5 years	89	—	90 %	89	80	1
Category 3	Less than 2.5 years	—	—	115 %	—	—	—
Category 3	Equal to or more than 2.5 years	—	—	115 %	—	—	—
Category 4	Less than 2.5 years	—	—	250 %	—	—	—
Category 4	Equal to or more than 2.5 years	—	—	250 %	—	—	—
Category 5	Less than 2.5 years	—	—	—	—	—	—
Category 5	Equal to or more than 2.5 years	—	—	—	—	—	—
Total	Less than 2.5 years	123	—		123	61	—
Total	Equal to or more than 2.5 years	456	8		459	339	2

⁽¹⁾ Corresponds to the original exposure.

⁽²⁾ Corresponds to the value of off-balance sheet exposure, regardless of credit conversion factors (CCF), or the effect of the Credit Risk Mitigation (CRM) techniques.

⁽³⁾ Corresponds to exposure value after CRM and CCF.

Specialised lending: Object Finance

Regulatory categories	Remaining Maturity	On-balance sheet amount ⁽¹⁾	Off-balance sheet amount ⁽²⁾	RW	Exposure Amount ⁽³⁾	RWAs	Expected Losses
Category 1	Less than 2.5 years	59	1	50 %	59	29	—
Category 1	Equal to or more than 2.5 years	109	—	70 %	109	76	—
Category 2	Less than 2.5 years	—	—	70 %	—	—	—
Category 2	Equal to or more than 2.5 years	—	—	90 %	—	—	—
Category 3	Less than 2.5 years	—	—	115 %	—	—	—
Category 3	Equal to or more than 2.5 years	—	—	115 %	—	—	—
Category 4	Less than 2.5 years	—	—	250 %	—	—	—
Category 4	Equal to or more than 2.5 years	—	—	250 %	—	—	—
Category 5	Less than 2.5 years	—	—	—	—	—	—
Category 5	Equal to or more than 2.5 years	—	—	—	—	—	—
Total	Less than 2.5 years	59	1		59	29	—
Total	Equal to or more than 2.5 years	109	—		109	76	—

⁽¹⁾ Corresponds to the original exposure.

⁽²⁾ Corresponds to the value of off-balance sheet exposure, regardless of credit conversion factors (CCF), or the effect of the Credit Risk Mitigation (CRM) techniques.

⁽³⁾ Corresponds to exposure value after CRM and CCF.

Specialised lending: Commodities Finance

Regulatory categories	Remaining Maturity	On-balance sheet amount ⁽¹⁾	Off-balance sheet amount ⁽²⁾	RW	Exposure Amount ⁽³⁾	RWAs	Expected Losses
Category 1	Less than 2.5 years	—	—	50%	—	—	—
Category 1	Equal to or more than 2.5 years	—	—	70%	—	—	—
Category 2	Less than 2.5 years	—	—	70%	—	—	—
Category 2	Equal to or more than 2.5 years	—	—	90%	—	—	—
Category 3	Less than 2.5 years	—	—	115%	—	—	—
Category 3	Equal to or more than 2.5 years	—	—	115%	—	—	—
Category 4	Less than 2.5 years	—	—	250%	—	—	—
Category 4	Equal to or more than 2.5 years	—	—	250%	—	—	—
Category 5	Less than 2.5 years	—	—	—	—	—	—
Category 5	Equal to or more than 2.5 years	—	—	—	—	—	—
Total	Less than 2.5 years	—	—		—	—	—
Total	Equal to or more than 2.5 years	—	—		—	—	—

⁽¹⁾ Corresponds to the original exposure.

⁽²⁾ Corresponds to the value of off-balance sheet exposure, regardless of credit conversion factors (CCF), or the effect of the Credit Risk Mitigation (CRM) techniques.

⁽³⁾ Corresponds to exposure value after CRM and CCF.

EU CR10 (1-4) - IRB: specialised lending (Million Euros. 12-31-2021)

Specialised lending: Project Finance

Regulatory categories	Remaining Maturity	On-balance sheet amount ⁽¹⁾	Off-balance sheet amount ⁽²⁾	RW	Exposure Amount ⁽³⁾	RWAs	Expected Losses
Category 1	Less than 2.5 years	103	5	50%	108	51	—
Category 1	Equal to or more than 2.5 years	2,793	212	70%	2,917	1,850	11
Category 2	Less than 2.5 years	88	15	70%	99	59	—
Category 2	Equal to or more than 2.5 years	1,493	560	90%	1,782	1,402	13
Category 3	Less than 2.5 years	46	1	115%	47	53	1
Category 3	Equal to or more than 2.5 years	396	64	115%	436	502	12
Category 4	Less than 2.5 years	9	—	250%	9	23	1
Category 4	Equal to or more than 2.5 years	312	12	250%	319	796	26
Category 5	Less than 2.5 years	6	—		6	—	3
Category 5	Equal to or more than 2.5 years	38	3		40	—	20
Total	Less than 2.5 years	252	20		269	186	5
Total	Equal to or more than 2.5 years	5,032	850		5,493	4,550	82

⁽¹⁾ Corresponds to the original exposure.

⁽²⁾ Corresponds to the value of off-balance sheet exposure, regardless of credit conversion factors (CCF), or the effect of the Credit Risk Mitigation (CRM) techniques.

⁽³⁾ Corresponds to exposure value after CRM and CCF.

Specialised lending: IPRE & HVCRE

Regulatory categories	Remaining Maturity	On-balance sheet amount ⁽¹⁾	Off-balance sheet amount ⁽²⁾	RW	Exposure Amount ⁽³⁾	RWAs	Expected Losses
Category 1	Less than 2.5 years	163	2	50 %	165	83	—
Category 1	Equal to or more than 2.5 years	206	4	70 %	208	145	1
Category 2	Less than 2.5 years	1	5	70 %	3	2	—
Category 2	Equal to or more than 2.5 years	50	7	90 %	54	48	—
Category 3	Less than 2.5 years	—	—	115 %	—	—	—
Category 3	Equal to or more than 2.5 years	—	—	115 %	—	—	—
Category 4	Less than 2.5 years	—	—	250 %	—	—	—
Category 4	Equal to or more than 2.5 years	—	—	250 %	—	—	—
Category 5	Less than 2.5 years	—	—		—	—	—
Category 5	Equal to or more than 2.5 years	—	—		—	—	—
Total	Less than 2.5 years	164	7		168	85	—
Total	Equal to or more than 2.5 years	256	11		261	194	1

⁽¹⁾ Corresponds to the original exposure.

⁽²⁾ Corresponds to the value of off-balance sheet exposure, regardless of credit conversion factors (CCF), or the effect of the Credit Risk Mitigation (CRM) techniques.

⁽³⁾ Corresponds to exposure value after CRM and CCF.

Specialised lending: Object Finance

Regulatory categories	Remaining Maturity	On-balance sheet amount ⁽¹⁾	Off-balance sheet amount ⁽²⁾	RW	Exposure Amount ⁽³⁾	RWAs	Expected Losses
Category 1	Less than 2.5 years	18	—	50 %	18	9	—
Category 1	Equal to or more than 2.5 years	14	—	70 %	14	10	—
Category 2	Less than 2.5 years	71	1	70 %	71	50	—
Category 2	Equal to or more than 2.5 years	100	—	90 %	100	90	1
Category 3	Less than 2.5 years	—	—	115 %	—	—	—
Category 3	Equal to or more than 2.5 years	—	—	115 %	—	—	—
Category 4	Less than 2.5 years	—	—	250 %	—	—	—
Category 4	Equal to or more than 2.5 years	—	—	250 %	—	—	—
Category 5	Less than 2.5 years	—	—		—	—	—
Category 5	Equal to or more than 2.5 years	—	—		—	—	—
Total	Less than 2.5 years	90	1		90	59	—
Total	Equal to or more than 2.5 years	115	—		115	100	1

⁽¹⁾ Corresponds to the original exposure.

⁽²⁾ Corresponds to the value of off-balance sheet exposure, regardless of credit conversion factors (CCF), or the effect of the Credit Risk Mitigation (CRM) techniques.

⁽³⁾ Corresponds to exposure value after CRM and CCF.

Specialised lending: Commodities Finance

Regulatory categories	Remaining Maturity	On-balance sheet amount ⁽¹⁾	Off-balance sheet amount ⁽²⁾	RW	Exposure Amount ⁽³⁾	RWAs	Expected Losses
Category 1	Less than 2.5 years	—	—	50%	—	—	—
Category 1	Equal to or more than 2.5 years	—	—	70%	—	—	—
Category 2	Less than 2.5 years	—	—	70%	—	—	—
Category 2	Equal to or more than 2.5 years	—	—	90%	—	—	—
Category 3	Less than 2.5 years	—	—	115%	—	—	—
Category 3	Equal to or more than 2.5 years	—	—	115%	—	—	—
Category 4	Less than 2.5 years	—	—	250%	—	—	—
Category 4	Equal to or more than 2.5 years	—	—	250%	—	—	—
Category 5	Less than 2.5 years	—	—		—	—	—
Category 5	Equal to or more than 2.5 years	—	—		—	—	—
Total	Less than 2.5 years	—	—		—	—	—
Total	Equal to or more than 2.5 years	—	—		—	—	—

⁽¹⁾ Corresponds to the original exposure.

⁽²⁾ Corresponds to the value of off-balance sheet exposure, regardless of credit conversion factors (CCF), or the effect of the Credit Risk Mitigation (CRM) techniques.

⁽³⁾ Corresponds to exposure value after CRM and CCF.

For risk measurement of the Specialised Lending portfolio, the Group uses the "slotting criteria" approach, which classifies exposures into different regulatory categories based on the risk assessment performed by the entity and the residual maturity. In terms of the type of specialised lending, project finance represents 88% of total portfolio with a total exposure of €5,763 million and RWAs consumption of €4,800 million.

During the second half of the year there were no significant movements in the portfolio.

4.2.5.5. Equity exposure by method

The following table shows equity exposure by the following approaches: internal, PD/LGD and simple method (in this case, broken down by risk weights), as of December 31, 2022 and as of December 31, 2021.

Table 36. EU CR10 (5) - IRB: equity (Million Euros. 12-31-2022)

Categories	Equity under the IRB approach					
	On-balance sheet amount ⁽¹⁾	Off-balance sheet amount ⁽²⁾	RW	Exposure Amount ⁽³⁾	RWAs	Expected Losses
Simple method - Private Equity Exposures	790	—	190 %	790	1,500	6
Simple method - Exchange-traded equity exposures	190	—	290 %	190	551	2
Simple method - Other Equity Exposures	140	—	370 %	140	519	3
Total	1,120	—		1,120	2,570	11

⁽¹⁾ Corresponds to the original exposure.

⁽²⁾ Corresponds to the value of off-balance sheet exposure, regardless of credit conversion factors (CCF), or the effect of the Credit Risk Mitigation (CRM) techniques.

⁽³⁾ Corresponds to exposure value after CRM and CCF.

EU CR10 (5) - IRB: equity (Million Euros. 12-31-2021)

Categories	Equity under the IRB approach					
	On-balance sheet amount ⁽¹⁾	Off-balance sheet amount ⁽²⁾	RW	Exposure Amount ⁽³⁾	RWAs	Expected Losses
Simple method - Private Equity Exposures	711	—	190 %	711	1,351	6
Simple method - Exchange-traded equity exposures	242	—	290 %	242	702	2
Simple method - Other Equity Exposures	105	—	370 %	105	389	2
Total	1,058	—		1,058	2,442	10

⁽¹⁾ Corresponds to the original exposure.

⁽²⁾ Corresponds to the value of off-balance sheet exposure, regardless of credit conversion factors (CCF), or the effect of the Credit Risk Mitigation (CRM) techniques.

⁽³⁾ Corresponds to exposure value after CRM and CCF.

During 2022 there is no relevant changes in the composition of equity exposures using the simple method.

Additionally, section 4.4.3 shows detailed information on the structural risk of equities.

4.2.6. Information on counterparty credit risk

Counterparty credit risk exposure involves that part of the original exposure corresponding to derivative instruments, repurchase and reverse repurchase transactions, securities or commodities lending transactions and deferred settlement transactions.

4.2.6.1. Policies for managing counterparty risk

4.2.6.1.1. Methodology: allocation of internal capital and limits to exposure subject to counterparty risk

The Group has an economic model for calculating internal capital through exposure to counterparty risk in treasury operations. This model has been implemented in the Risk unit systems in Market areas. It is used to estimate the credit exposure for each of the counterparties for which the entity operates.

Exposure is generated in a manner consistent with those used for the monitoring and control of credit risk limits. The time horizon is divided up into intervals, and the market risk factors (interest rates, exchange rates, etc.) underlying the instruments that determine their valuation are simulated for each interval.

Exposure is obtained based on the 2000 different scenarios generated using the Monte Carlo method for risk factors (subject to counterparty risk) and applying the corresponding mitigating factors to each counterparty (i.e. applying collateral and/or compensation arrangements, or netting, as applicable).

The correlations, loss given defaults, internal ratings and associated probabilities of default are consistent with the Group's economic model for general credit risk.

The capital for each counterparty is then calculated using the exposure profile and taking into account the analytical formula adopted by Basel. This figure is modified by an adjustment factor for possible subsequent maturity after one year of the operations, in a similar vein to the general approach adopted by Basel for the treatment of credit risk.

Counterparty limits are specified within the financial programs authorised for each subsidiary within the line item of treasury limits. It stipulates both the limit and the maximum maturity for the transaction.

Small businesses Transactions that generate counterparty risk are subject to risk limits that control both bilateral risk and risk with CCPs. When setting these limits for each business area and segment, and to ensure their correct application, the corresponding capital consumption and revenue generated by this operation are taken into account.

There is also a risk committee that individually analyzes the most significant transactions to assess (among other aspects) the relationship between profitability and risk.

The consumption of transactions within the limits is measured in terms of market capitalisation (mark to market) plus the potential risk with Monte Carlo Simulation methodology (95% confidence level or above if there are mitigating agreements or a risk of adverse links) and considering possible mitigating factors (such as netting, break clauses and collateral contracts).

Management of consumption by lines in the Markets area is carried out through a corporate platform that enables online monitoring of the limits and liquid assets established for the different counterparties and customers. This control is completed by independent units of the business area to guarantee proper segregation of functions.

4.2.6.1.2. Policies for ensuring the effectiveness of collateral and setting the value adjustments for impairment losses to cover this risk

The Group negotiates agreements with its customers to mitigate counterparty risk within the legal frameworks applicable in each of the countries where it operates. These agreements regulate the exchange of guarantees as a mechanism to reduce exposure derived from transactions that generate counterparty risk.

The assets covered by these agreements include cash, as well as financial assets with a high credit quality. In addition, the agreements with customers include mechanisms that allow the immediate replacement of the collateral if its quality is impaired (for example, a reduction in the market capitalisation or adverse changes in the asset rating).

Mitigation by compensation or netting transactions and by collateral only reduces the consumption of limits and capital if there is a positive opinion on their immediate effectiveness in case of the counterparty's default or insolvency.

An internal tool has been specifically designed to store and process the collateral contracts concluded with counterparties. This application enables the existence of collateral to be taken into account at the transaction level (useful for controlling and monitoring the status of specific operations) as well as at the counterparty level. Furthermore, this tool feeds the applications responsible for estimating counterparty risk by providing all the necessary parameters for considering the impact of mitigation in the portfolio due to the agreements signed.

Likewise, there is also application process that reconciles and adjusts the positions serving the Collateral and Risk units.

In order to guarantee the effectiveness of collateral contracts, the Group carries out daily monitoring of the market values of operations governed by such contracts and of the deposits made by the counterparties. Once the amount of the collateral to be delivered or received is obtained, the collateral demand (margin call), or the demand received, is carried out at the intervals established in the contract, usually daily.

If significant variations arise from the process of reconciliation between the counterparties, after a reconciliation in economic terms, they are reported by the Collateral unit to the Risk unit for subsequent analysis and monitoring. Within the control process, the Collateral unit issues a daily report on the guarantees which includes a description by counterparty of the exposure and deposited collateral, making special reference to those guarantee deficits at or beyond the set warning levels.

Financial assets and liabilities may be the object of compensation, or netting, in other words presentation for a net amount in the consolidated balance sheet, only when the Group's entities comply with the provisions laid down in IAS 32 - Paragraph 42, and thus have the legally obliged right to offset the amounts recognised, and the intention to settle the net amount or to divest the asset and pay the liability at the same time.

In addition, the Group has assets and liabilities on the balance sheet that are not netted and for which there are master netting agreements, but for which there is neither the intention nor the right to settle. The most common types of events that trigger the compensation of reciprocal obligations include the bankruptcy of the credit institution in question, swiftly accumulating indebtedness, default, and the restructuring or dissolution of the entity.

In the current market context, derivatives are arranged under a variety of framework contracts, with the most general being those developed by the International Swaps and Derivatives Association (ISDA), and for the Spanish market the Framework Agreement for Financial Transactions (FAFT). Practically all portfolio derivative operations have been concluded under these master contracts, including in them the netting clauses referred to in the above point as Master Netting Agreements, considerably reducing the credit exposure in these instruments. Furthermore, in the contracts concluded with professional counterparties, annexes are included with collateral agreements called Credit Support Annexes (CSA), thus minimizing exposure to a possible counterparty insolvency.

At the same time, the Group has a high volume of assets sold under repurchase agreements traded through clearing houses that use mechanisms to reduce counterparty risk, as well as through various master contracts in bilateral operations, the most common being the Global Master Repurchase Agreement (GMRA), which is published by the International Capital Market

Association (ICMA). This tends to have clauses added relating to the exchange of collateral within the main body of the master contract itself.

4.2.6.1.3. Policies on the risk of adverse effects due to correlations

Derivatives contracts may give rise to potential adverse correlation effects between the exposure to the counterparty and its credit quality (wrong-way-exposure).

The Group has specific policies for handling these type of exposures, which establish:

- How to identify transactions subject to adverse correlation risk.
- A specific transaction-by-transaction admission procedure.
- Measurements appropriate to the risk profile with adverse correlation and sanctioned in the corresponding decision-making areas.
- Control and monitoring of the transaction.

4.2.6.1.4. Impact of collateral in the event of a downgrade in credit quality

In derivatives transactions, as a general policy the Group does not subscribe collateral contracts that involve an increase in the amount to be deposited in the event of the Group being downgraded.

The general criteria applied to date with banking counterparties is to establish a zero threshold within collateral contracts, irrespective of the mutual rating; provision will be made as collateral of any difference that arises through market capitalisation (mark to market).

Since 2018, with the entry into force of the regulatory obligations for exchange of margins for derivatives that are not offset in the clearing houses, all the collateral annexes have been adapted to the characteristics required by the regulation, among which is that of establishing a zero threshold. Furthermore, the obligation to exchange initial margins with the main financial counterparties to overcollateralize exposure was added in 2019.

4.2.6.2. Amounts of counterparty risk

The exposure value of derivative instruments will be determined based on one of the following methods established in sections 3 to 6 of chapter 6 of the CRR: standard method for counterparty credit risk, simplified standard method for credit risk counterparty, original risk method or internal models method.

The exposure value of the securities financing transactions (SFTs) is determined in accordance with the methods provided in the preceding paragraph or using those provided for in Chapter 4 of the CRR.

In this regard, the BBVA S.A. Group calculates the exposure value of derivative instruments in accordance with the standardised method for counterparty credit risk (SA-CCR) which is applicable since June 2021.

The SA-CCR framework calculates the aforementioned exposure by each netting set of the entity. The SA-CCR method defines the exposure value as the product of a surcharge (α) applied to the sum of the replacement cost

(RC) and the potential future exposure (PFE). Where α is equal to 1.4.

$$\text{Exposure value} = \alpha * (\text{RC} + \text{PFE})$$

The BBVA Group S.A. calculates the exposure value of the repurchase operations in accordance with the provisions of chapter 4 on credit risk mitigation and in accordance with the financial collateral comprehensive method.

A breakdown of the original exposure, EAD and RWAs under counterparty credit risk (including exposures to Central Counterparties) is below:

Table 37. Positions subject to counterparty credit risk in terms of OE, EAD and RWAs (Million Euros. 12-31-2022)

Exposure Class and risk types	Securities financing transactions			Derivatives and transactions with deferred settlement			Total		
	OE	EAD	RWAs	OE	EAD	RWAs	OE	EAD	RWAs
Central governments or central banks	10,860	992	208	366	479	155	11,226	1,471	363
Regional governments or local authorities	10	—	—	95	2	1	105	2	2
Public sector entities	360	10	5	35	35	33	394	45	38
Multilateral Development Banks	—	—	—	2	2	—	2	2	—
International Organisations	—	—	—	—	—	—	—	—	—
Institutions	6,336	220	62	1,373	1,373	551	7,709	1,593	613
Corporates	8,599	915	825	3,016	3,016	1,734	11,616	3,931	2,559
Retail	31	14	11	49	49	36	80	63	46
Secured by mortgages on immovable property	—	—	—	—	—	—	—	—	—
Exposures in default	—	—	—	4	4	6	4	4	6
Exposures associated with particularly high risk	—	—	—	—	—	—	—	—	—
Covered bonds	—	—	—	—	—	—	—	—	—
Short-term claims on institutions and corporate	—	—	—	—	—	—	—	—	—
Collective investments undertakings	—	—	—	—	—	—	—	—	—
Other exposures	—	—	—	2	2	2	2	2	2
Total counterparty risk by standardised approach	26,197	2,152	1,111	4,940	4,960	2,518	31,137	7,112	3,629
Central governments or central banks	70	70	2	6	6	—	75	75	3
Institutions	86,213	86,213	1,140	8,010	7,991	1,597	94,224	94,204	2,737
Corporates	97	97	—	6,977	6,977	2,968	7,074	7,074	2,968
Of which: SMEs	—	—	—	107	107	86	107	107	86
Of which: specialised lending	—	—	—	148	148	129	148	148	129
Of which: other	97	97	—	6,721	6,721	2,753	6,819	6,819	2,753
Retail	—	—	—	2	2	1	2	2	1
Of which: Secured by immovable property	—	—	—	—	—	—	—	—	—
Of which: Qualifying revolving	—	—	—	—	—	—	—	—	—
Of which: Other retail	—	—	—	2	2	1	2	2	1
Other retail: SMEs	—	—	—	1	1	—	1	1	—
Other retail: Non SMEs	—	—	—	—	—	—	—	—	—
Total counterparty risk by IRB approach	86,381	86,381	1,142	14,994	14,974	4,566	101,375	101,355	5,708
Total counterparty risk	112,578	88,532	2,253	19,934	19,934	7,084	132,512	108,467	9,337

Positions subject to counterparty credit risk in terms of OE, EAD and RWAs (Million Euros. 12-31-2021)

Exposure Class and risk types	Securities financing transactions			Derivatives and transactions with deferred settlement			Total		
	OE	EAD	RWAs	OE	EAD	RWAs	OE	EAD	RWAs
Central governments or central banks	16,430	2,716	300	1,419	1,601	1,117	17,848	4,317	1,417
Regional governments or local authorities	—	—	—	2	2	1	2	2	1
Public sector entities	26	1	1	31	31	29	57	32	29
Multilateral Development Banks	—	—	—	—	—	—	—	—	—
International Organisations	—	—	—	—	—	—	—	—	—
Institutions	6,954	311	84	2,912	2,912	2,127	9,866	3,223	2,211
Corporates	2,862	112	87	2,528	2,528	2,098	5,390	2,640	2,185
Retail	10	2	1	16	16	11	26	18	12
Secured by mortgages on immovable property	—	—	—	—	—	—	—	—	—
Exposures in default	—	—	—	8	8	12	8	8	12
Exposures associated with particularly high risk	—	—	—	34	34	52	34	34	52
Covered bonds	—	—	—	—	—	—	—	—	—
Short-term claims on institutions and corporate	—	—	—	—	—	—	—	—	—
Collective investments undertakings	—	—	—	—	—	—	—	—	—
Other exposures	—	—	—	—	—	—	—	—	—
Total counterparty risk by standardised approach	26,282	3,141	473	6,950	7,132	5,446	33,231	10,273	5,919
Central governments or central banks	5,536	5,536	21	11	11	3	5,548	5,548	25
Institutions	83,461	83,461	1,091	7,752	7,569	1,506	91,213	91,031	2,598
Corporates	236	236	—	5,484	5,484	2,755	5,720	5,720	2,756
Of which: SMEs	—	—	—	136	136	164	136	136	164
Of which: specialised lending	—	—	—	839	839	675	839	839	675
Of which: other	236	236	—	4,509	4,509	1,916	4,745	4,745	1,917
Retail	—	—	—	3	3	1	3	3	1
Of which: Secured by immovable property	—	—	—	—	—	—	—	—	—
Of which: Qualifying revolving	—	—	—	—	—	—	—	—	—
Of which: Other retail	—	—	—	3	3	1	3	3	1
Other retail: SMEs	—	—	—	3	3	1	3	3	1
Other retail: Non SMEs	—	—	—	—	—	—	—	—	—
Total counterparty risk by IRB approach	89,234	89,234	1,113	13,250	13,067	4,266	102,483	102,301	5,379
Total counterparty risk	115,515	92,375	1,586	20,199	20,199	9,712	135,714	112,574	11,298

Exposures subject to counterparty risk increased in 2022 with the increase in securities financing transactions to central counterparties under the advanced approach during the first half of the year. This favourable evolution is slightly boosted by the evolution of the value of the exposure from derivatives transactions. Risk-weighted assets evolved in line with exposures and due to the improved risk profile of transactions subject to counterparty credit risk under the standardized approach.

From the amounts shown in the table above, those referring to the counterparty risk of trading book exposures in terms of capital requirements are shown below:

Table 38. Amounts of counterparty risk in the trading book (Million Euros)

Counterparty Risk Trading Book Activities	Capital requirements			
	2022		2021	
	SA-CCR Method	Internal Models (IMM)	SA-CCR Method	Internal Models (IMM)
Standardised Approach	211		444	
Advanced Approach	419		406	
Total	630		850	

The Group currently has a totally immaterial amount of own funds requirements for settlement risk of the trading portfolio.

and the main parameters of each method (excluding requirements for CVA and exposure cleared through a CCP, which are shown in tables CCR2 and CCR8, respectively).

Below is an overview of the methods used to calculate the regulatory requirements for counterparty credit risk

Table 39. EU CCR1 - Analysis of CCR exposure by approach (Million Euros)

	12-31-2022							RWEA
	Replacement cost (RC)	Potential future exposure (PFE)	Expected Effective Positive Exposure (EEPE)	Alpha	Exposure value pre-CRM	Exposure value post-CRM	Exposure value (without CVA)	
EU - Original Exposure Method (for derivatives)	—	—		1.40	—	—	—	—
EU - Simplified SA-CCR (for derivatives)	—	—		1.40	—	—	—	—
SA-CCR (for derivatives)	5,871	6,905		1.40	19,621	19,621	18,166	6,725
IMM (for derivatives and SFTs)			—	—	—	—	—	—
Of which securities financing transactions netting sets			—		—	—	—	—
Of which derivatives and long settlement transactions netting sets			—		—	—	—	—
Of which from contractual cross-product netting sets			—		—	—	—	—
Financial collateral simple method (for SFTs)					—	—	—	—
Financial collateral comprehensive method (for SFTs)					80,795	64,687	64,363	2,210
VaR for SFTs					—	—	—	—
Total					100,416	84,308	82,528	8,935

EU CCR1 - Analysis of CCR exposure by approach (Million Euros)

	12-31-2021							
	Replacement cost (RC)	Potential future exposure (PFE)	Expected Effective Positive Exposure (EEPE)	Alpha	Exposure value pre-CRM	Exposure value post-CRM	Exposure value (without CVA)	RWEA
EU - Original Exposure Method (for derivatives)	—	—	—	1.40	—	—	—	—
EU - Simplified SA-CCR (for derivatives)	—	—	—	1.40	—	—	—	—
SA-CCR (for derivatives)	5,393	7,273	—	1.40	19,135	19,221	19,135	9,662
IMM (for derivatives and SFTs)	—	—	—	—	—	—	—	—
Of which securities financing transactions netting sets	—	—	—	—	—	—	—	—
Of which derivatives and long settlement transactions netting sets	—	—	—	—	—	—	—	—
Of which from contractual cross-product netting sets	—	—	—	—	—	—	—	—
Financial collateral simple method (for SFTs)	—	—	—	—	—	—	—	—
Financial collateral comprehensive method (for SFTs)	—	—	—	—	96,621	75,680	75,680	1,551
VaR for SFTs	—	—	—	—	—	—	—	—
Total					115,756	94,901	94,815	11,213

During 2022, the exposure to counterparty risk excluding exposures to central counterparties is reduced both under the SA-CCR method for derivatives and under the comprehensive approach for SFTs. In addition, an improvement in the risk profile of transactions subject to the SA-CCR method contributes to the fall of capital requirements.

4.2.6.2.1. Counterparty credit risk by standardised approach

The following table shows a breakdown of exposure to counterparty credit risk (following credit risk mitigation and CCF techniques) calculated using the standardised approach, by exposure category and risk weights (excluding exposures to central counterparties):

Table 40. EU CCR3 - Standardised approach - CCR exposures by regulatory portfolio and risk (Million Euros. 12-31-2022)

Exposure Class	Risk weight											Total
	0%	2%	4%	10%	20%	50%	70%	75%	100%	150%	Others	
Central governments or central banks	863	—	—	—	2	486	—	—	120	—	—	1,471
Regional government or local authorities	—	—	—	—	—	—	—	—	1	—	—	2
Public sector entities	—	—	—	—	1	13	—	—	31	—	—	45
Multilateral development banks	2	—	—	—	—	—	—	—	—	—	—	2
International organisations	—	—	—	—	—	—	—	—	—	—	—	—
Institutions	—	43	98	—	608	712	—	—	130	—	—	1,593
Corporates	—	—	—	—	1,288	747	—	—	1,817	80	—	3,931
Retail	—	—	—	—	—	—	—	63	—	—	—	63
Institutions and corporates with a short term credit assessment	—	—	—	—	—	—	—	—	—	—	—	—
Other items	—	—	—	—	—	—	—	—	2	4	—	6
Total	865	43	98	—	1,899	1,959	—	63	2,101	84	—	7,112

EU CCR3 - Standardised approach - CCR exposures by regulatory portfolio and risk (Million Euros. 12-31-2021)

Exposure Class	Risk weight											Total
	0%	2%	4%	10%	20%	50%	70%	75%	100%	150%	Others	
Central governments or central banks	2,491	—	—	—	3	814	—	—	1,010	—	—	4,317
Regional government or local authorities	—	—	—	—	—	1	—	—	—	—	—	2
Public sector entities	—	—	—	—	—	5	—	—	27	—	—	32
Multilateral development banks	—	—	—	—	—	—	—	—	—	—	—	—
International organisations	—	—	—	—	—	—	—	—	—	—	—	—
Institutions	—	127	86	—	277	1,167	—	—	1,566	—	—	3,223
Corporates	—	—	—	—	19	915	—	—	1,641	65	—	2,640
Retail	—	—	—	—	—	—	—	18	—	—	—	18
Institutions and corporates with a short term credit assessment	—	—	—	—	—	—	—	—	—	—	—	—
Other items	—	—	—	—	—	—	—	—	—	42	—	42
Total	2,491	127	86	—	298	2,902	—	18	4,244	107	—	10,273

For information on counterparty trading activity under the standardised approach of credit risk, see comments on Table 37.

4.2.6.2.2. Composition of collateral for counterparty risk exposure

A table with a breakdown of collaterals contributed or received by the Group to strengthen or reduce exposure to counterparty credit risk related to derivatives transactions and securities financing transactions as of December 31, 2022 and as of December 31, 2021 is presented below:

Table 41. EU CCR4 - IRB approach: CCR exposures by portfolio and PD scale (Million Euros. 12-31-2022)

PD scale ⁽¹⁾⁽⁵⁾	EAD post-CRM	Average PD ⁽²⁾	Number of Obligors	Average LGD ⁽³⁾	Average Maturity (days) ⁽⁴⁾	RWAs	RWA Density
Total AIRB approach	76,763	0.17 %	2,922	13.38 %		5,533	7 %
Central governments or central banks	75	0.19 %	3	9.09 %	—	3	3 %
0,00 <0,15	6	0.05 %	2	40.47 %	—	—	5 %
0,15 <0,25	70	0.20 %	1	6.58 %	—	2	3 %
0,25 <0,50	—	—	—	—	—	—	—
0,50 <0,75	—	—	—	—	—	—	—
0,75 <2,50	—	—	—	—	—	—	—
2,50 <10,00	—	—	—	—	—	—	—
10,00 <100,00	—	—	—	—	—	—	—
100,00 (Default)	—	—	—	—	—	—	—
Institutions	69,761	0.15 %	792	10.27 %	—	2,690	4 %
0,00 <0,15	57,262	0.07 %	505	11.33 %	—	2,021	4 %
0,15 <0,25	7,700	0.20 %	88	5.76 %	—	375	5 %
0,25 <0,50	2,864	0.34 %	47	4.20 %	—	115	4 %
0,50 <0,75	917	0.56 %	21	3.71 %	—	50	5 %
0,75 <2,50	872	1.13 %	119	6.88 %	—	111	13 %
2,50 <10,00	123	2.82 %	6	5.26 %	—	15	12 %
10,00 <100,00	—	41.58 %	2	45.00 %	4	—	289 %
100,00 (Default)	21	100.00 %	4	45.00 %	—	3	14 %
Corporate - SMEs	107	6.39 %	876	41.57 %	1	86	81 %
0,00 <0,15	6	0.11 %	73	40.16 %	1	1	13 %
0,15 <0,25	3	0.20 %	54	40.60 %	1	1	21 %
0,25 <0,50	6	0.36 %	226	42.40 %	2	3	43 %
0,50 <0,75	17	0.51 %	114	41.03 %	1	7	43 %
0,75 <2,50	40	1.17 %	183	41.52 %	1	26	65 %
2,50 <10,00	11	4.00 %	139	41.60 %	2	10	89 %
10,00 <100,00	23	23.43 %	72	42.66 %	1	39	171 %
100,00 (Default)	—	100.00 %	15	26.60 %	1	—	15 %
Corporate - Non-SMEs	6,819	0.28 %	1,045	44.77 %	4	2,753	40 %
0,00 <0,15	3,312	0.11 %	138	43.67 %	6	1,001	30 %
0,15 <0,25	2,901	0.19 %	356	45.87 %	2	1,205	42 %
0,25 <0,50	291	0.37 %	181	45.87 %	2	186	64 %
0,50 <0,75	61	0.59 %	116	46.06 %	2	44	71 %
0,75 <2,50	106	1.37 %	147	44.85 %	3	114	108 %
2,50 <10,00	144	4.05 %	82	44.79 %	2	197	137 %
10,00 <100,00	3	22.40 %	17	43.50 %	2	6	231 %
100,00 (Default)	1	100.00 %	8	44.91 %	—	—	14 %
Retail - Other SMEs	1	2.15 %	196	39.98 %	—	—	33 %
0,00 <0,15	—	0.10 %	39	40.00 %	—	—	10 %
0,15 <0,25	—	0.20 %	11	40.00 %	—	—	13 %
0,25 <0,50	—	0.31 %	26	40.00 %	—	—	18 %
0,50 <0,75	—	0.51 %	12	40.00 %	—	—	23 %
0,75 <2,50	1	1.38 %	41	40.00 %	—	—	38 %
2,50 <10,00	—	4.93 %	57	40.00 %	—	—	48 %
10,00 <100,00	—	11.91 %	6	40.00 %	—	—	50 %
100,00 (Default)	—	100.00 %	4	25.94 %	—	—	—

PD scale ⁽¹⁾⁽⁵⁾	EAD post-CRM	Average PD ⁽²⁾	Number of Obligors	Average LGD ⁽³⁾	Average Maturity (days) ⁽⁴⁾	RWAs	RWA Density
Retail - Other Non-SMEs	—	2.17 %	10	40.00 %	—	—	40 %
0,00 <0,15	—	0.10 %	3	40.00 %	—	—	10 %
0,15 <0,25	—	—	—	—	—	—	—
0,25 <0,50	—	—	—	—	—	—	—
0,50 <0,75	—	—	—	—	—	—	—
0,75 <2,50	—	—	—	—	—	—	—
2,50 <10,00	—	2.55 %	7	40.00 %	—	—	45 %
10,00 <100,00	—	—	—	—	—	—	—
100,00 (Default)	—	—	—	—	—	—	—
Total AIRB Approach	76,763	0.17 %	2,922	13.38 %		5,533	7 %

⁽¹⁾ Exposures of less than 500,000 euros which are rounded down to zero are shown with a dash.

⁽²⁾ PD intervals established by the EBA ITS (Implementing Regulation 2021/637 of 15 March 2021).

⁽³⁾ Corresponds to obligor grade PD weighted by EAD.

⁽⁴⁾ Corresponds to obligor grade LGD weighted by EAD.

⁽⁵⁾ Corresponds to the maturity of the obligor in years weighted by EAD. In accordance with Regulation (EU) 680/2014, it is reported only for those categories where average maturities are relevant for the calculation of RWAs. Residual maturities of less than one year are rounded to 1.

⁽⁶⁾ Specialised lending exposures are included in the FIRB approach. The Group has chosen to use the supervisory category criteria method, in line with the provisions of article 153.5 of the CRR, therefore, following the EBA ITS, Specialised Lending exposures are not included in this table.

EU CCR4 - IRB approach: CCR exposures by portfolio and PD scale (Million Euros. 12-31-2021)

PD scale ⁽¹⁾⁽⁵⁾	EAD post-CRM	Average PD ⁽²⁾	Number of Obligors	Average LGD ⁽³⁾	Average Maturity (days) ⁽⁴⁾	RWAs	RWA Density
Total AIRB approach	83,933	0.21%	3,505	10.04%		4,651	6 %
Central governments or central banks	5,548	0.05%	6	2.61%	—	25	— %
0,00 <0,15	5,469	0.05 %	4	2.45 %	—	18	—
0,15 <0,25	79	0.20 %	2	13.47 %	—	6	8 %
0,25 <0,50	—	—	—	—	—	—	—
0,50 <0,75	—	—	—	—	—	—	—
0,75 <2,50	—	—	—	—	—	—	—
2,50 <10,00	—	—	—	—	—	—	—
10,00 <100,00	—	—	—	—	—	—	—
100,00 (Default)	—	—	—	—	—	—	—
Institutions	73,502	0.14%	1,095	8.40%	—	2,545	3 %
0,00 <0,15	49,121	0.06 %	708	10.23 %	—	1,437	3 %
0,15 <0,25	12,123	0.19 %	105	5.13 %	—	489	4 %
0,25 <0,50	10,534	0.34 %	42	3.62 %	—	366	3 %
0,50 <0,75	1,181	0.56 %	27	2.51 %	—	46	4 %
0,75 <2,50	458	1.05 %	192	24.64 %	—	189	41 %
2,50 <10,00	80	3.35 %	10	3.76 %	—	8	11 %
10,00 <100,00	4	37.90 %	9	40.13 %	—	10	250 %
100,00 (Default)	1	100.00 %	2	45.00 %	—	—	14 %
Corporate - SMEs	136	10.77%	941	42.61%	3	164	121 %
0,00 <0,15	1	0.12 %	48	40.36 %	1	—	15 %
0,15 <0,25	1	0.20 %	40	40.39 %	1	—	20 %
0,25 <0,50	12	0.35 %	186	41.53 %	4	8	65 %
0,50 <0,75	14	0.54 %	110	42.96 %	3	10	75 %
0,75 <2,50	34	1.24 %	220	42.56 %	3	28	82 %
2,50 <10,00	41	4.90 %	199	41.56 %	2	44	106 %
10,00 <100,00	32	35.32 %	115	44.17 %	3	74	232 %
100,00 (Default)	1	100.00 %	23	51.59 %	4	—	26 %
Corporate - Non-SMEs	4,745	1.09%	960	43.16%	5	1,917	40 %
0,00 <0,15	1,786	0.11 %	138	40.38 %	10	480	27 %
0,15 <0,25	2,246	0.18 %	303	44.41 %	2	773	34 %
0,25 <0,50	340	0.37 %	167	47.10 %	3	253	74 %
0,50 <0,75	52	0.60 %	84	44.94 %	2	38	74 %
0,75 <2,50	221	1.36 %	107	45.46 %	3	249	112 %
2,50 <10,00	56	5.89 %	109	45.16 %	3	96	172 %
10,00 <100,00	9	33.80 %	40	41.94 %	3	22	247 %
100,00 (Default)	35	100.00 %	12	46.02 %	—	5	15 %

PD scale ⁽¹⁾⁽⁵⁾	EAD post-CRM	Average PD ⁽²⁾	Number of Obligors	Average LGD ⁽³⁾	Average Maturity (days) ⁽⁴⁾	RWAs	RWA Density
Retail - Other SMEs	3	4.39%	431	40.16%	—	1	32 %
0,00 <0,15	—	0.10 %	81	40.00 %	—	—	6 %
0,15 <0,25	—	0.20 %	19	40.00 %	—	—	11 %
0,25 <0,50	—	0.31 %	17	40.00 %	—	—	16 %
0,50 <0,75	1	0.51 %	114	40.89 %	—	—	25 %
0,75 <2,50	—	1.12 %	84	40.00 %	—	—	34 %
2,50 <10,00	1	5.74 %	93	40.06 %	—	—	49 %
10,00 <100,00	—	33.16 %	9	40.00 %	—	—	87 %
100,00 (Default)	—	100.00 %	14	26.38 %	—	—	13 %
Retail - Other Non-SMEs	—	5.69%	72	40.00%	—	—	38 %
0,00 <0,15	—	0.10 %	14	40.00 %	—	—	5 %
0,15 <0,25	—	—	—	—	—	—	—
0,25 <0,50	—	—	—	—	—	—	—
0,50 <0,75	—	0.51 %	6	40.00 %	—	—	14 %
0,75 <2,50	—	1.50 %	2	40.00 %	—	—	—
2,50 <10,00	—	6.41 %	3	40.00 %	—	—	50 %
10,00 <100,00	—	37.80 %	47	40.00 %	—	—	125 %
100,00 (Default)	—	—	—	—	—	—	—
Total AIRB Approach	83,933	0.21%	3,505	10.04%	—	4,651	6 %

⁽¹⁾ Exposures of less than 500,000 euros which are rounded down to zero are shown with a dash.

⁽¹⁾ PD intervals established by the EBA ITS (Implementing Regulation 2021/637 of 15 March 2021).

⁽²⁾ Corresponds to obligor grade PD weighted by EAD.

⁽³⁾ Corresponds to obligor grade LGD weighted by EAD.

⁽⁴⁾ Corresponds to the maturity of the obligor in years weighted by EAD. In accordance with Regulation (EU) 680/2014, it is reported only for those categories where average maturities are relevant for the calculation of RWAs. Residual maturities of less than one year are rounded to 1.

⁽⁵⁾ Specialised lending exposures are included in the FIRB approach. The Group has chosen to use the supervisory category criteria method, in line with the provisions of article 153.5 of the CRR, therefore, following the EBA ITS, Specialised Lending exposures are not included in this table.

As of December 31, 2022, exposures to central counterparties included in EU CCR8 table are excluded from this table. For more information on counterparty

trading activity under the standardized approach to credit risk, see table 37.

4.2.6.2.3. Composition of collateral for counterparty risk exposure

A table with a breakdown of collaterals contributed or received by the Group to strengthen or reduce exposure to counterparty credit risk related to derivatives

transactions and securities financing transactions as of December 31, 2022 is presented below:

Table 42. EU CCR5 - Composition of collateral for exposure to Counterparty Credit Risk (Million Euros. 12-31-2022)

	Collateral used in derivative transactions				Collateral used in SFTs			
	Fair Value of Collateral received		Fair Value of posted Collateral ⁽¹⁾		Fair Value of Collateral received		Fair Value of posted Collateral	
	Segregated ⁽²⁾	Unsegregated ⁽³⁾	Segregated ⁽²⁾	Unsegregated ⁽³⁾	Segregated ⁽²⁾	Unsegregated ⁽³⁾	Segregated ⁽²⁾	Unsegregated ⁽³⁾
Cash- domestic currency	—	3,515	—	5,148	300	30,343	43	32,425
Cash- other currencies	184	2,906	112	1,638	13	23,797	—	14,477
Domestic sovereign debt	113	2,475	1,351	252	—	9,271	610	10,706
Other sovereign debt	632	355	181	10	13	33,672	—	32,402
Government agency debt	—	—	—	—	—	—	—	—
Corporate bonds	254	374	56	—	—	6,883	—	14,922
Equity securities	—	—	—	—	—	—	—	—
Other collateral	—	—	—	—	—	—	—	2,882
Total	1,184	9,624	1,700	7,048	326	103,966	653	107,814

⁽¹⁾ In accordance with Articles 279 and 298 of Regulation (EU) 2015/13 regarding the treatment of collateral for the purpose of calculating counterparty risk, the amount of collateral provided as collateral for the netting of derivative liability arrangements has been taken into account in the EAD calculation.

⁽²⁾ Refers to collateral that is held in a bankruptcy-remote manner.

⁽³⁾ Refers to collateral that is not held in a bankruptcy-remote manner.

EU CCR5 - Composition of collateral for exposure to Counterparty Credit Risk (Million Euros. 12-31-2021)

	Collateral used in derivative transactions				Collateral used in SFTs			
	Fair Value of Collateral received		Fair Value of posted Collateral ⁽¹⁾		Fair Value of Collateral received		Fair Value of posted Collateral	
	Segregated ⁽²⁾	Unsegregated ⁽³⁾	Segregated ⁽²⁾	Unsegregated ⁽³⁾	Segregated ⁽²⁾	Unsegregated ⁽³⁾	Segregated ⁽²⁾	Unsegregated ⁽³⁾
Cash- domestic currency	—	2,773	—	6,270	300	30,824	26	40,342
Cash- other currencies	170	1,223	933	976	12	22,945	—	13,609
Domestic sovereign debt	63	2,744	2,101	494	—	13,726	548	15,685
Other sovereign debt	1,052	231	179	23	12	34,635	—	25,320
Government agency debt	—	—	—	—	—	2,198	—	630
Corporate bonds	147	480	4	28	—	5,498	—	11,213
Equity securities	—	—	—	—	—	—	—	—
Other collateral	—	—	—	—	—	—	—	—
Total	1,433	7,451	3,216	7,791	324	109,826	574	106,800

⁽¹⁾ In accordance with Articles 279 and 298 of Regulation (EU) 2015/13 regarding the treatment of collateral for the purpose of calculating counterparty risk, the amount of collateral provided as collateral for the netting of derivative liability arrangements has been taken into account in the EAD calculation.

⁽²⁾ Refers to collateral that is held in a bankruptcy-remote manner.

⁽³⁾ Refers to collateral that is not held in a bankruptcy-remote manner.

As of December 31, 2022, the composition of collateral for counterparty risk exposures in derivative transactions and securities financing transactions (SFTs) evolves without major changes and remains at similar levels to those recorded as of December 31, 2021.

4.2.6.2.4. Credit derivatives transactions

The table below shows the amounts of credit derivative transactions, broken down into purchased and sold derivatives:

Table 43. EU CCR6 - Credit derivatives exposures (Million Euros. 12-31-2022)

	Credit derivative hedges	
	Protection Bought	Protection Sold
Notionals		
Single-name credit default swaps	5,244	6,343
Index credit default swaps	14,428	15,745
Total return swaps	—	1,665
Credit options	—	—
Other credit derivatives	25	—
Notionals Total	19,697	23,753
Fair Values		
Positive fair value (asset)	162	138
Negative fair value (liability)	(258)	(125)

EU CCR6 - Credit derivatives exposures (Million Euros. 12-31-2021)

	Credit derivative hedges	
	Protection Bought	Protection Sold
Notionals		
Single-name credit default swaps	5,246	5,408
Index credit default swaps	3,570	3,898
Total return swaps	—	1,815
Credit options	—	—
Other credit derivatives	—	—
Notionals Total	8,816	11,121
Fair Values		
Positive fair value (asset)	236	—
Negative fair value (liability)	(38)	(452)

During 2022 there has been a rise in the index credit default swaps due to the increase in bond hedges as a

consequence of higher volatility and economic uncertainty.

Additionally, at the end of 2022 and 2021, the Group has no credit derivatives used as collateral in brokerage activities.

4.2.6.3. CVA charge requirements

The CVA surcharge in Capital refers to the additional capital requirements to cover unexpected losses due to credit valuation adjustments, for which there are two approaches:

- Standardised Approach (Art. 384 CRR): application of a standard regulatory formula. The formula applied is an analytical approximation to the calculation of the CVA VaR by supposing that the counterparty spreads depend on a single systematic risk factor and on its own idiosyncratic factor, both variables distributed by independent normal distributions, assuming a 99% confidence level.
- Advanced Approach (Art 383 CRR): based on the market risk VaR methodology, which requires a calculation of the "CVA VaR", assuming the same confidence level (99%) and time horizon (10 days), as well as a stressed scenario. As of December 31, 2022 and as of December 31, 2021, the Group has no surcharge for CVA calculated under the advanced approach.

Procedures for calculating the valuation adjustments and reserves

The fair value of liabilities should reflect the entity's default risk, which includes, among other components, its own credit risk. Taking this into account, the Group makes valuation adjustments for credit risk in the estimates of the fair value of its assets and liabilities.

These adjustments are calculated by estimating Exposure At Default, Probability of Default and Loss Given Default, which are based on the recovery levels for all derivative products on any instrument, deposits and repos at the legal entity level (all counterparties under a same master agreement), in which BBVA has exposure.

Credit Valuation Adjustment (hereinafter "CVA") and Debit Valuation Adjustments (hereinafter "DVA") are included in the valuation of derivatives, both assets and liabilities, to reflect the impact on the fair value of the counterparty credit risk and its own, respectively. The Group incorporates in its valuation, for all exposures classified in any of the categories valued at fair value, both the counterparty credit risk and its own. In the trading portfolio, and in the specific case of derivatives, credit risk is recognized through such adjustments.

As a general rule, the calculation of CVA is the sum of the expected positive exposure in time t, the probability of default between t-1 and t, and the Loss Given Default of the counterparty. Consequently, the DVA is calculated as the sum of the expected negative exposure in time t, the probability of default of BBVA between t-1 and t, and the Loss Given Default of BBVA. Both calculations are performed throughout the entire period of potential exposure.

The calculation of the expected positive and negative exposure is done through a Montecarlo simulation of the market variables involved in all trades' valuation under the same legal netting set.

The information needed to calculate the probability of default and the loss given default of a counterparty comes from the credit markets. The counterparty's Credit Default Swaps are used if liquid quotes are available. If a market price is not available, BBVA has implemented a mapping process based on the sector, rating and geography of the counterparty to assign probabilities of default and loss given default calibrated directly to market.

An additional adjustment for Own Credit Adjustment (OCA) is applied to the instruments accounted for by applying the Fair Value Option permitted by IFRS 9.

The credit valuation adjustments in million euros as of December 31, 2022 and as of December 31, 2021 are shown below:

Table 44. EU CCR2 - CVA Capital Charge (Million Euros)

	12-31-2022		12-31-2021	
	Exposure value	RWA	Exposure value	RWA
Total portfolios subject to the advanced method	—	—	—	—
(i) VaR component (included 3x multiplier)		—		—
(ii) SVaR component (included 3x multiplier)		—		—
All portfolios subject to the standardised method	7,606	1,741	6,977	2,518
Portfolios subject to alternative approach (based on original exposure method)	—	—	—	—
Total subject to the CVA capital charge	7,606	1,741	6,977	2,518

As of December 31, 2022, BBVA calculates the capital requirements for credit valuation adjustment (CVA) according to the standard method described in Part

Three, Title VI of the CRR in accordance with Regulation (EU) 2019/876.

The value of the exposure used to calculate the CVA capital requirements is calculated in accordance with the standardized method for counterparty credit risk.

The variations in terms of RWAs during 2022 are presented below:

Table 45. Flow statements CVA RWAs (Million Euros)

CVA	
RWAs as of December 31, 2021	2,518
Asset size	(603)
Foreign exchange movements	(174)
Other	—
RWAs as of December 31, 2022	1,741

As of December 31, 2022, the CVA own funds requirements are mainly affected by the increase in the exposure value as a result of a greater position in derivative instruments. This increase is partially offset by

a reduction in the EAD driven by a decrease in the amount of the guarantees considered in the calculation of the replacement cost.

4.2.6.4. Exposure to central counterparty clearing houses

The following table presents a complete overview of the exposure to central counterparty clearing houses by type of exposure (arising from transactions, margins, or

contributions to the default fund) and their corresponding capital requirements:

Table 46. EU CCR8 - Exposures to CCPs (Million Euros)

	12-31-2022		12-31-2021	
	EAD post CRM	RWA	EAD post CRM	RWA
Exposures to QCCPs (total)		103		129
Exposures for trades at QCCPs (excluding initial margin and default fund contributions); of which	24,553	49	17,730	58
(i) OTC Derivatives	310	10	726	17
(ii) Exchange-traded derivatives	79	2	309	6
(iii) Securities financing transactions (SFTs)	24,164	37	16,695	35
(iv) Netting sets where cross-product netting has been approved	—	—	—	—
Segregated initial margin	1,093	—	1,075	—
Non-segregated initial margin	574	19	617	17
Pre-funded default fund contributions	140	36	247	54
Alternative calculation of own funds requirements for exposures	281	—	482	—
Exposures to non-QCCPs (total)		599		27
Exposures for trades at non-QCCPs (excluding initial margin and default to contributions); of which	1,385	353	29	27
(i) OTC Derivatives	93	82	11	1
(ii) Exchange-traded derivatives	1,286	265	18	26
(iii) Securities financing transactions (SFTs)	6	6	—	—
(iv) Netting sets where cross-product netting has been approved	—	—	—	—
Segregated initial margin	—	—	—	—
Non-segregated initial margin	531	128	—	—
Pre-funded default fund contributions	9	118	—	—
Unfunded default fund contributions	—	—	—	—

As of December 31, 2022, the exposures through central counterparties have grown compared to December 2021 due to the increase in securities financing transactions during the first half of the year. In addition, during 2022, the extension of the transitional treatment of capital requirements for central counterparties has ended, after which, those exposures to non-EU central counterparties that have not been recognized by ESMA, cannot benefit from the capital requirements of qualified entities.

4.2.7. Information on securitisation

4.2.7.1. General characteristics of securitisation

4.2.7.1.1. Purposes of securitisation

The Group's current securitisation policy considers a recurrent issuance program with a deliberate diversification of securitised assets that adjusts their volume to the Bank's capital requirements and to market conditions.

This program is complemented by all the other finance and capital instruments, thereby diversifying the need to resort to wholesale markets.

The definition of the strategy and the execution of the operations, as with all other wholesale finance and capital management, is supervised by the Assets & Liabilities Committee, with the pertinent internal authorisations obtained directly from the Board of Directors or from the Executive Committee.

The main objective of securitisation is to serve as an instrument for the efficient management of the balance sheet, mainly as a source of liquidity at an efficient cost, obtaining liquid assets through eligible collateral, as a complement to other financial instruments. In addition, there are other secondary objectives associated with the use of securitisation instruments, such as the freeing up of regulatory capital by transferring risk, and the freeing of potential excess over the expected loss, as long as the volume of the first-loss tranche and risk transfer allow it.

In accordance with the STS (Simple, Transparent and Standardized) securitisation framework, the Group does not take into account the STS classification when selecting the portfolios to be securitised.

Main risks exposed in securitisation operations.

1. Default risk

It is the risk that the debtor does not pay the assumed contractual obligations by the due date and in the correct manner (for example, potential non-payment of instalments).

In the particular case of securitisation, the entities provide information to investors on the situation of the securitised loan portfolio. In this respect, it is worth noting that transactions transferred to the Securitisation Fund do not include defaults, or at most, if there is one, in no case do they exceed 30 days of non-payment, demonstrating the high quality of securitised transactions. The rating agencies take this element closely into account when analysing the credit risk of transactions.

BBVA monitors the changes in these indicators with the aim of establishing specific action plans in the different products, in order to correct any deviations that are leading to a deterioration in credit quality.

In order to monitor these indicators, monthly, and in some cases, daily information is available. It includes flows of additions, recoveries, irregular investments and non-performing loans. The information is obtained through different applications and reports prepared in the Risk area.

BBVA's policy of recovery for impaired loans consists of defining an operating system that allows a speedy and efficient correction of the irregular situation. It is based on a highly personalised management, with a key role being played by the Recovery Manager and his close and ongoing relationship with the debtor.

The main guarantee is always mortgage on the asset subject of the transaction, or on the main residence. In addition, there are frequent personal guarantees issued by the holders of the loan or the guarantors, which reinforce the repayment of the debt and quality of the risk. The rights to collection before insurance companies are also subrogated in favour of the Bank in cases where there is damage to the mortgaged building due to fire or other duly stipulated causes.

2. Early repayment risk

This derives from the potential total or partial prepayment by the debtor of the amounts corresponding to the (fully or partially) securitised loans, which could imply that the maturity of the securitisation bonds calculated at the time of the issue is shorter than the maturity of the loans transferred to the Fund.

This risk is mainly due to the variations of market interest rates, but despite its importance it is not the only determining factor; to this have to be added other more personal elements, such as inheritance, divorce, change of residence, etc.

In the specific case of the Group's securitisations, this risk is very limited, as the maturity date of the securitisation Bonds is set according to the maturity of the last loan of the securitised portfolio.

3. Liquidity risk

At times it is noted that a possible limited liquidity of the markets in which the Bonds are traded could constitute a risk derived from the securitisation processes.

Although an entity may not undertake contracts in the secondary market of Bonds issued by the Securitisation Fund, and thus provide liquidity to the funds, the securitisation process itself consists of converting illiquid assets that form part of the Bank's balance sheet into liquid assets in the form of securitisation Bonds, which give the possibility of trading and transferring them in a

regulated market. This would not be the case if they were not subject to the securitisation process.

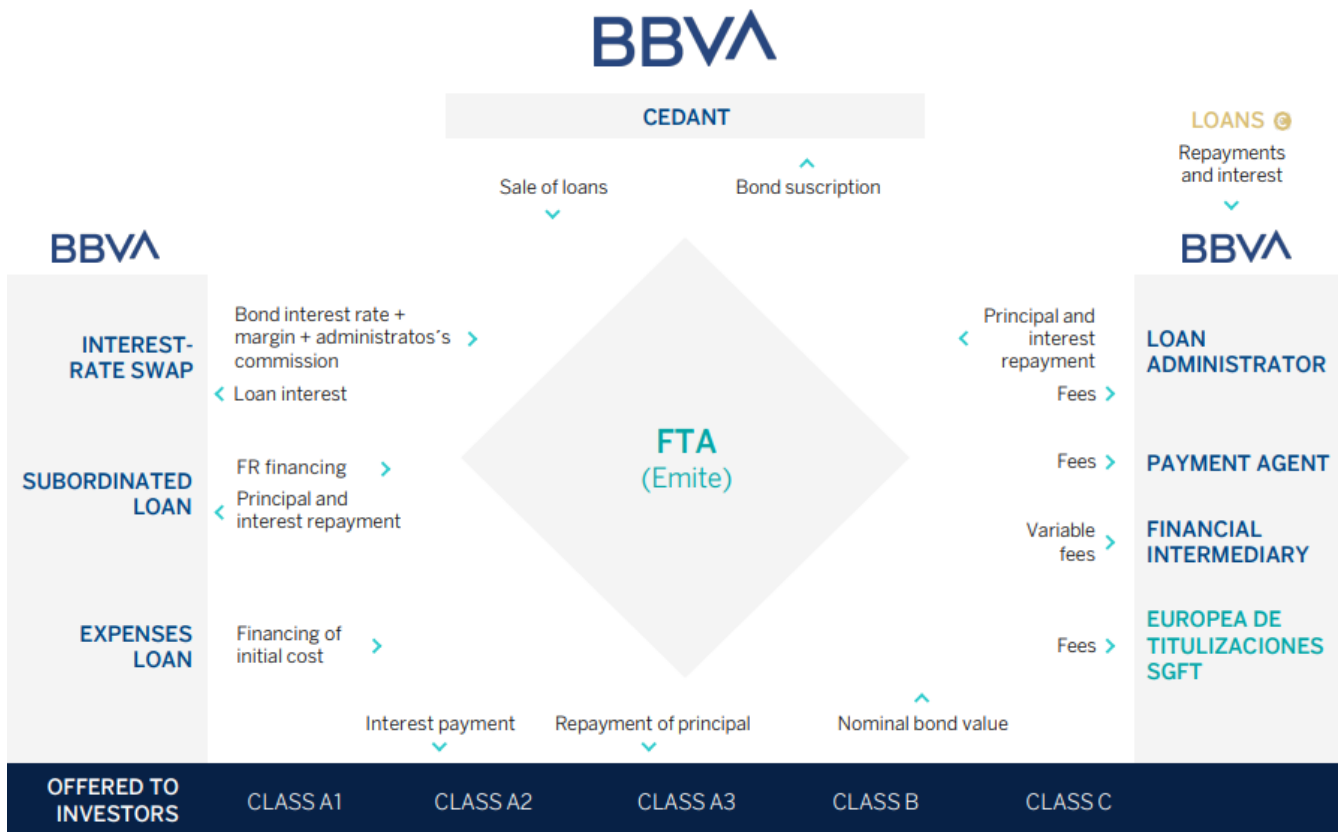
In addition, understanding liquidity risk as the possible time mismatch between the maturities of the collections generated by the loans and the payments the Bonds originate, BBVA has not so far made any securitisation issues in which there is a divergence between collections and payments. The entities that have programs for debt security issues, in which this risk is typically present,

mitigate it with the use of liquidity lines that are included in the structure of the Fund.

4.2.7.1.2. Functions performed by the securitisation process and degree of involvement

The Group's involvement degree in its securitisation funds is not usually restricted to the mere role of assignor and administrator of the securitised portfolio.

Chart 14. Functions performed in the securitization process and Group's level of involvement



As can be seen in the above chart, the Group has usually taken additional roles such as:

- Payment Agent.
- Provider of treasury account.
- Provider of the subordinated loan and of the financing of initial costs, being the one that finances the first-loss tranche, and the latter financing the fund's fixed expenditure.
- Administrative agent of the securitised portfolio.

The Group has not assumed the role of sponsor of securitisation originated by third-party institutions.

The Group's balance sheet maintains the first-loss tranches of all securitisation that has been carried out.

It is worth noting that the Group has maintained a consistent line on generating securitisation operations since the credit crunch, which began in July 2007.

In addition, the Group has performed various Synthetic Securitisation operations to date, introducing this new operation as an additional source of regulatory capital release.

4.2.7.1.3. Methods used for the calculation of risk-weighted exposure in securitisation transactions.

When securitisation positions meet the criteria for significant and effective risk transfer as defined by Articles 244 and 245 of Regulation 2017/2401, under the securitisation framework set in Regulation 2017/2402, the Group calculates the capital requirements of these securitisations by applying the following methods, which apply to both originated securitisations and investment positions in securitisation funds originated by third parties:

- IRBA method (Article 259): When according to the securitisation features, all information on the underlying loans of the securitised portfolio is accessible, and at least for 95% of the loans the risk weights are calculated under IRB approach.
- SA method (Article 261): When information is available on the underlying loans of the securitised portfolio, but the threshold of 95% of the loans under the IRB approach is not reached.
- ERBA method (Article 263): When information on the underlying securitisation loans is not accessible, and it is necessary to use external rating data.

4.2.7.1.4. Transfer of risk in securitisation activities and criteria for recognition of gains on sales

The Group considers that the risks and benefits of the securitisations are substantially retained if the subordinated bonds are held and/or if subordination funding has been granted to those securitisation funds, which means that the credit loss risk of the securitised assets will be assumed. Consequently, the Group is not derecognizing those transferred loan portfolios.

In addition, the Group recognizes the gains on sales of securitised assets when they are derecognised from the balance sheet, which implies to comply with the substantial transfer of risks and benefits requirements described above.

The result will be recognised in the income statement and calculated as the difference between the carrying amount and the sum of the amount received, including any new asset received minus liabilities assumed.

When the amount of the transferred financial asset matches the total amount of the original financial asset, the new financial assets, financial liabilities and service-delivery liabilities, which, if any, arise as a result of the transfer, shall be recorded at fair value..

4.2.7.2. Securitisation exposure in the banking and trading book

The Group has carried out seven securitisations in 2022, three of them in cash or traditional format and the other four in synthetic securitisation format. The most of them with risk transfer, excluding two cash operations.

The first of them in March, from a portfolio of Mortgage loans portfolio (BBVA RMBS 21 FT) amounting to €12.4 billion, the second in June, for an amount of €1,200 million (BBVA Autos 2022-1 FT), from a portfolio of auto loans, the third one, a synthetic operation (VELA SME 2022-1) also in June, for an amount of €675 million from a portfolio of loans to SMEs and corporates. During the Q4 the last four securitizations were carried out. One in November (BBVA RMBS 22 FT), for an amount of €1.4 billion from a mortgage loans portfolio, and during December the remaining three in synthetic securitisation format, amounting €2,080 million from a corporate loan portfolio.

Given that there is no risk transfer for the BBVA RMBS 21 FT and for BBVA RMBS 22 FT securitisation, these two operations are not included in the securitisation framework defined by the CRR, the calculation of its risk-weighted assets are based on the underlying loans.

Table EU SEC1 below shows the exposure to securitisations of the banking book, broken down by type of underlying asset, indicating whether it is traditional or synthetic securitisations, and identifying the functions (origination, sponsorship and investment). In the "Bank

acts as originator" block, the figures presented in the total columns are the total securitised amounts, obtained as the sum of the amount corresponding to the first loss tranche, and those with risk transfer:

The EU SEC2 table below shows the amounts in terms of net positions of the securitisation positions in the trading book, broken down by type of underlying asset of

the securitization, indicating whether it is traditional or synthetic securitisations, and identifying the functions (origination, sponsorship and investment):

Table 48. EU SEC2 - Securitisation exposures in the trading portfolio (Million Euros. 12-31-2022)

	Bank acts as originator				Bank acts as sponsor				Bank acts as investor			
	Traditional		Synthetic	Subtotal	Traditional		Synthetic	Subtotal	Traditional		Synthetic	Subtotal
	STS	Non-STS			STS	Non-STS			STS	Non-STS		
Total	—	—	—	—	—	—	—	—	—	7	—	7
Retail (total) - of which	—	—	—	—	—	—	—	—	—	7	—	7
Residential mortgage	—	—	—	—	—	—	—	—	—	7	—	7
Credit card	—	—	—	—	—	—	—	—	—	—	—	—
Other retail exposures	—	—	—	—	—	—	—	—	—	—	—	—
Re-Securitisation	—	—	—	—	—	—	—	—	—	—	—	—
Wholesale (total)- of which	—	—	—	—	—	—	—	—	—	—	—	—
Loans to corporates	—	—	—	—	—	—	—	—	—	—	—	—
Commercial mortgage	—	—	—	—	—	—	—	—	—	—	—	—
Lease and receivables	—	—	—	—	—	—	—	—	—	—	—	—
Other wholesale	—	—	—	—	—	—	—	—	—	—	—	—
Re-Securitisation	—	—	—	—	—	—	—	—	—	—	—	—

(^c) It includes securitisation positions in the trading portfolio.

EU SEC2 - Securitisation exposures in the trading portfolio (Million Euros. 12-31-2021)

	Bank acts as originator				Bank acts as sponsor				Bank acts as investor			
	Traditional		Synthetic	Subtotal	Traditional		Synthetic	Subtotal	Traditional		Synthetic	Subtotal
	STS	Non-STS			STS	Non-STS			STS	Non-STS		
Total	—	—	—	—	—	—	—	—	—	7	—	7
Retail (total) - of which	—	—	—	—	—	—	—	—	—	7	—	7
Residential mortgage	—	—	—	—	—	—	—	—	—	7	—	7
Credit card	—	—	—	—	—	—	—	—	—	—	—	—
Other retail exposures	—	—	—	—	—	—	—	—	—	—	—	—
Re-Securitisation	—	—	—	—	—	—	—	—	—	—	—	—
Wholesale (total)- of which	—	—	—	—	—	—	—	—	—	—	—	—
Loans to corporates	—	—	—	—	—	—	—	—	—	—	—	—
Commercial mortgage	—	—	—	—	—	—	—	—	—	—	—	—
Lease and receivables	—	—	—	—	—	—	—	—	—	—	—	—
Other wholesale	—	—	—	—	—	—	—	—	—	—	—	—
Re-Securitisation	—	—	—	—	—	—	—	—	—	—	—	—

(^c) It includes securitisation positions in the trading portfolio.

The securitisation positions in the trading book have been stable along 2022.

4.2.7.3. Securitisation – Group acting as originator

4.2.7.3.1. Rating agencies used

The external credit assessment institutions (ECAI) involved in the rating of those securitisations originated by the Group which fulfill the criteria of risk transfer and falling within the securitisation solvency framework are, generally, Fitch, Moody's, S&P, and DBRS. The types of securitisation exposure for which each agency is used are, with no differentiation between the different agencies, all the asset types that tend to be used as residential mortgage loans to Corporates and SMEs, consumer finance and autos and leasing.

In all the securitisation funds, the agencies have assessed the risk of the entire issuance structure:

- Awarding ratings to all bond tranches.
- Establishing the volume of the credit enhancement.
- Establishing the necessary triggers (early termination of the restitution period, pro-rata depreciation of AAA classes, pro-rata amortization of series subordinated to AAA and amortization of the reserve fund, amongst others).

For each issue, in addition to the initial rating, the agencies carry out regular quarterly monitoring.

4.2.7.3.2. Positions in securitisation originated by the Group

The table below shows the EAD and RWAs of securitisation positions originated by the Group in the banking book, broken down by type of securitised exposure, tranches and risk weight ranges and their corresponding capital requirements as of December 31, 2022 and as of December 31, 2021.

Table 49. EU SEC3 - Securitisation exposures in the banking book and associated regulatory capital requirements – bank acting as originator or as sponsor (Million Euros. 12-31-2022)

	Exposure values (by RW bands)				Exposure values (by regulatory approach)				RWA (by regulatory approach)				Capital requirement after cap				
	≤20% RW	>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW / deductions	SEC-IRBA	SEC-ERBA & SEC-IAA	SEC-SA	1250% RW / deductions	SEC-IRBA	SEC-ERBA & SEC-IAA	SEC-SA	1250% RW / deductions	SEC-IRBA	SEC-ERBA & SEC-IAA	SEC-SA	1250% RW / deductions
Total Exposures	3,997	78	—	—	1	4,075	—	—	1	438	—	—	—	35	—	—	—
Traditional Securitisation	274	78	—	—	1	352	—	—	1	43	—	—	—	3	—	—	—
Of which Securitisation	274	78	—	—	1	352	—	—	1	43	—	—	—	3	—	—	—
Of which retail underlying	274	78	—	—	1	352	—	—	1	43	—	—	—	3	—	—	—
Of which STS	274	78	—	—	1	352	—	—	1	43	—	—	—	3	—	—	—
Of which wholesale	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Of which STS	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Of which re-Securitisation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Synthetic Securitisation	3,723	—	—	—	—	3,723	—	—	—	395	—	—	—	31	—	—	—
Of which Securitisation	3,723	—	—	—	—	3,723	—	—	—	395	—	—	—	31	—	—	—
Of which retail underlying	3,695	—	—	—	—	3,695	—	—	—	391	—	—	—	31	—	—	—
Of which wholesale	28	—	—	—	—	28	—	—	—	4	—	—	—	—	—	—	—
Of which re-Securitisation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

⁽¹⁾Securitisations with a risk weight of 1,250% are deducted from own funds, as explained in section m) of chapter 3.2 of this report.

EU SEC3 - Securitisation exposures in the banking book and associated regulatory capital requirements – bank acting as originator or as sponsor (Million Euros. 12-31-2021)

	Exposure values (by RW bands)				Exposure values (by regulatory approach)				RWA (by regulatory approach)				Capital requirement after cap				
	≤20% RW	>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW / deductions	SEC-IRBA	SEC-ERBA & SEC-IAA	SEC-SA	1250% RW / deductions	SEC-IRBA	SEC-ERBA & SEC-IAA	SEC-SA	1250% RW / deductions	SEC-IRBA	SEC-ERBA & SEC-IAA	SEC-SA	1250% RW / deductions
Total Exposures	2,378	156	—	—	22	2,534	—	—	22	300	—	—	—	24	—	—	—
Traditional Securitisation	—	156	—	—	1	156	—	—	1	40	—	—	—	3	—	—	—
Of which Securitisation	—	156	—	—	1	156	—	—	1	40	—	—	—	3	—	—	—
Of which retail underlying	—	156	—	—	1	156	—	—	1	40	—	—	—	3	—	—	—
Of which STS	—	156	—	—	1	156	—	—	1	40	—	—	—	3	—	—	—
Of which wholesale	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Of which STS	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Of which re-Securitisation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Synthetic Securitisation	2,378	—	—	—	21	2,378	—	—	21	260	—	—	—	21	—	—	—
Of which Securitisation	2,378	—	—	—	21	2,378	—	—	21	260	—	—	—	21	—	—	—
Of which retail underlying	2,378	—	—	—	21	2,378	—	—	21	260	—	—	—	21	—	—	—
Of which wholesale	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Of which re-Securitisation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

⁽¹⁾Securitisations with a risk weight of 1,250% are deducted from own funds, as explained in section m) of chapter 3.2 of this report.

In the case of securitisations where the Group acts as originator, the variation of the requirements in 2022 is explained by the securitisations mentioned above which complied with the risk transfer requirements set in the applicable regulatory provision. The net effect on the Group's RWAs by changing the capital consumption of the underlying assets under the credit risk framework to the capital consumption under the securitisation framework is a reduction of approximately €1.9 billion.

4.2.7.3.3. Breakdown of securitised positions by type of asset

The table below shows the outstanding amount, non-performing exposures and impairment losses recognised in the period by underlying assets of originated securitisation operations which meet the risk transfer criteria, broken down by asset type as of December 31, 2022 and as of December 31, 2021.

Table 50. EU SEC5 - Exposures securitised by the institution - Exposures in default and specific credit risk adjustments (Million Euros. 12-31-2022)

	Nominal amount	Of which exposures in default	credit risk adjustments made during the period ⁽¹⁾
Total	31,778	333	224
Retail exposure	30,916	313	199
Residential mortgage	23,609	150	44
Credit card	—	—	—
Other retail exposures	7,307	163	155
Re-securitisation	—	—	—
Wholesale exposure	862	20	26
Loans to corporates	—	—	—
Commercial mortgage	—	—	—
Lease and receivables	862	20	26
Other wholesale	—	—	—
Re-securitisation	—	—	—

⁽¹⁾ Negative amounts indicate an increase in credit risk adjustments during the period.

EU SEC5 - Exposures securitised by the institution - Exposures in default and specific credit risk adjustments (Million Euros. 12-31-2021)

	Nominal amount	Of which exposures in default	credit risk adjustments made during the period ⁽¹⁾
Total	36,079	231	41
Retail exposure	34,644	206	47
Residential mortgage	26,690	193	35
Credit card	—	—	—
Other retail exposures	7,954	12	12
Re-securitisation	—	—	—
Wholesale exposure	1,434	25	(6)
Loans to corporates	—	—	—
Commercial mortgage	—	—	—
Lease and receivables	1,434	25	(6)
Other wholesale	—	—	—
Re-securitisation	—	—	—

⁽¹⁾ Negative amounts indicate an increase in credit risk adjustments during the period.

The above tables include balances of all securitised exposures, regardless of whether they meet the risk transfer criteria.

The table below shows the outstanding balance corresponding to the underlying assets of securitisation originated by the Group, which do not meet the risk transfer criteria, and which, therefore, are not included in the securitisation framework, but rather for which the capital calculation of the exposure is carried out as if it had not been securitised:

Table 51. Outstanding balance corresponding to the underlying assets of the Group's originated securitisations, in which risk transfer criteria are not fulfilled (Million Euros)

Type of asset	Outstanding amount	
	2022	2021
Commercial and residential mortgages	23,609	26,690
Credit cards	—	—
Financial leasing	781	1,434
Lending to corporates and SMEs	2	37
Consumer finance	2,455	3,822
Receivables	—	—
Securitisation balances	—	—
Mortgage-covered bonds	—	—
Others	—	—
Total	26,847	31,983

4.2.7.4. Securitisation - Group acting as investor

The amounts in terms of EAD and RWAs of the securitisation positions of the banking book where the Group acts as investor are shown below, broken down by type of underlying asset, tranches and risk weight bands that correspond to the securitisations and their corresponding capital requirements at December 31, 2022 and December 31, 2021.

Table 52. EU SEC4 - Securitisation exposures in the banking book and associated capital requirements – bank acting as investor (Million Euros. 12-31-2022)

	Exposure values (by RW bands)				Exposure values (by regulatory approach)				RWA (by regulatory approach)				Capital requirement after cap				
	≤20% RW	>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW	SEC-IRBA	SEC-ERBA & SEC-IAA	SEC-SA	1250% RW	SEC-IRBA	SEC-ERBA & SEC-IAA	SEC-SA	1250% RW	SEC-IRBA	SEC-ERBA & SEC-IAA	SEC-SA	1250% RW
Total Exposures	81	5	3	—	—	—	89	—	—	—	17	—	—	—	1	—	—
Traditional Securitisation	81	5	3	—	—	—	89	—	—	—	17	—	—	—	1	—	—
Of which Securitisation	81	5	3	—	—	—	89	—	—	—	17	—	—	—	1	—	—
Of which retail underlying	81	5	—	—	—	—	86	—	—	—	14	—	—	—	1	—	—
Of which STS	81	—	—	—	—	—	81	—	—	—	12	—	—	—	1	—	—
Of which wholesale	—	—	3	—	—	—	3	—	—	—	2	—	—	—	—	—	—
Of which STS	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Of which re-Securitisation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Securitisation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Of which Securitisation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Of which retail underlying	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Of which wholesale	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Of which re-Securitisation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

⁽¹⁾ Securitisations with a risk weight of 1250% are deducted from own funds, as explained in section m) of chapter 3.2 of this report.

EU SEC4 - Securitisation exposures in the banking book and associated capital requirements – bank acting as investor (Million Euros, 12-31-2021)

	Exposure values (by RW bands)				Exposure values (by regulatory approach)				RWA (by regulatory approach)				Capital requirement after cap				
	≤20% RW	>20% to 50% RW	>50% to 100% RW	>100% to <1250% RW	1250% RW	SEC-IRBA	SEC-ERBA & SEC-IAA	SEC-SA	1250% RW	SEC-IRBA	SEC-ERBA & SEC-IAA	SEC-SA	1250% RW	SEC-IRBA	SEC-ERBA & SEC-IAA	SEC-SA	1250% RW
Total Exposures	114	13	7	—	—	—	134	—	—	—	25	—	—	—	2	—	—
Traditional Securitisation	114	13	7	—	—	—	134	—	—	—	25	—	—	—	2	—	—
Of which Securitisation	114	13	7	—	—	—	134	—	—	—	25	—	—	—	2	—	—
Of which retail underlying	114	13	—	—	—	—	127	—	—	—	22	—	—	—	2	—	—
Of which STS	114	—	—	—	—	—	114	—	—	—	16	—	—	—	1	—	—
Of which wholesale	—	—	7	—	—	—	7	—	—	—	4	—	—	—	—	—	—
Of which STS	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Of which re-Securitisation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Synthetic Securitisation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Of which Securitisation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Of which retail underlying	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Of which wholesale	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Of which re-Securitisation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

⁽¹⁾ Securitisations with a risk weight of 1250% are deducted from own funds, as explained in section m) of chapter 3.2 of this report.

4.2.8. Hedging and risk reduction policies. Supervision strategies and processes

In certain cases, maximum credit risk exposure is reduced by collateral, credit enhancements and other actions which mitigate the Group's exposure. The BBVA Group applies a credit risk hedging and mitigation policy deriving from a banking approach focused on relationship banking. The existence of guarantees could be a necessary but not sufficient instrument for accepting risks, as the assumption of risks by the Group requires prior evaluation of the debtor's capacity for repayment, or that the debtor can generate sufficient resources to allow the amortization of the risk incurred under the agreed terms.

The policy of accepting risks is therefore organized into three different levels in the BBVA Group:

- Analysis of the financial risk of the transaction, based on the debtor's capacity for repayment or generation of funds.
- The constitution of guarantees that are adequate, or at any rate generally accepted, for the risk assumed, in any of the generally accepted forms: monetary, secured, personal or hedge guarantees; and finally
- Assessment of the repayment risk (asset liquidity) of the guarantees received.

This is carried out through a prudent risk policy that consists of the analysis of the financial risk, based on the capacity for reimbursement or generation of resources of the borrower, the analysis of the guarantee, assessing, among others, the efficiency, the robustness and the risk, the adequacy of the guarantee with the operation and other aspects such as the location, currency, concentration or the existence of limitations. Additionally, the necessary tasks for the constitution of guarantees must be carried out - in any of the generally accepted forms (collaterals, personal guarantees and financial hedge instruments) - appropriate to the risk assumed.

The procedures for the management and valuation of collateral are set out in the corporate general policies (retail and wholesale), which establish the basic principles for credit risk management, including the management of collaterals assigned in transactions with customers. The criteria for the systematic, standardized and effective treatment of collateral in credit transaction procedures in BBVA Group's wholesale and retail banking are included in the Specific Collateral Rules.

The methods used to value the collateral are in line with the best market practices and imply the use of appraisal

of real-estate collateral, the market price in market securities, the trading price of shares in mutual funds, etc. All the collaterals received must be correctly assigned and entered in the corresponding register. They must also have the approval of the Group's legal units.

The valuation of the collateral is taken into account in the calculation of the expected losses. The Group has developed internal models to estimate the realization value of the collaterals received, the time that elapses until then, the costs for their acquisition, maintenance and subsequent sale, from real observations based on its own experience. This modeling is part of the LGD estimation processes that are applied to the different segments, and is included within the annual review and validation procedures.

The following is a description of the main types of collateral for each financial instrument class:

- Debt instruments held for trading: The guarantees or credit enhancements obtained directly from the issuer or counterparty are implicit in the clauses of the instrument (mainly guarantees of the issuer).
- Derivatives and hedging derivatives: In derivatives, credit risk is minimized through contractual netting agreements, where positive and negative-value derivatives with the same counterparty are offset for their net balance. There may likewise be other kinds of guarantees and collaterals, depending on counterparty solvency and the nature of the transaction (mainly collaterals).
- Other financial assets designated at fair value through profit or loss and financial assets at fair value through other comprehensive income: The guarantees or credit enhancements obtained directly from the issuer or counterparty are inherent to the structure of the instrument (mainly personal guarantees).
- Financial assets at amortized cost:
 - a. Loans and advances to credit institutions: These usually have the counterparty's personal guarantee or pledged securities in the case of repos.
 - b. Loans and advances to customers: Most of these loans and advances are backed by personal guarantees extended by the customer. There may also be collateral to secure loans and advances to customers (such as mortgages, cash collaterals, pledged securities and other collateral), or to obtain other credit enhancements (bonds or insurances).

- c. Debt securities: The guarantees or credit enhancements obtained directly from the issuer or counterparty are inherent to the structure of the instrument.
- Financial guarantees, other contingent risks and drawable by third parties: these have the counterparty's personal guarantee or other types of collaterals.

4.2.9. Information on credit risk mitigation techniques

4.2.9.1. Hedging based on on-balance sheet and off-balance sheet netting

Within the limits established by the netting rules in each operating country, the Group negotiates with its customers the assignment of the derivatives business to master agreements (e.g., ISDA or CMOF) by including the netting of off-balance sheet transactions.

The specific clauses of each agreement determine the transactions subject to netting.

The mitigation of counterparty risk exposure stemming from the use of mitigation techniques (netting plus the use of collateral agreements) leads to a reduction in overall exposure (mark to market plus add-on).

As pointed out above, financial assets and liabilities may be netted in certain cases. In particular, they are presented for a net amount on the consolidated balance sheet only when the Group's entities satisfy the provisions of IAS 32-Paragraph 42, so they have both the legal right to net recognised amounts, and the intention of settling the net amount or of realizing the asset and simultaneously paying the liability.

4.2.9.2. Hedging based on collateral

4.2.9.2.1. Management and valuation policies and procedures

The procedures for management and valuation of collateral are included in the Specific Collateral Rules, or in the Policies and Procedures for Retail and Wholesale Credit Risk.

These Policies and Procedures lay down the basic principles of credit risk management, which includes the management of the collateral assigned in transactions with customers.

Accordingly, the risk management model jointly values the existence of a suitable cash flow generation by the debtor that enables them to service the debt, together with the existence of suitable and sufficient guarantees

that ensure the recovery of the credit when the debtor's circumstances render them unable to meet their obligations.

The valuation of collaterals is carried out in a rigorous and prudent manner, with the necessary information to determine it and with extreme caution in the use of appraisal values and any other type of valuation by independent experts. At the time of granting credit, unless local regulations provide for a shorter term, individual appraisals / independent expert appraisals must be available for a maximum age of one year in new origination proposals or that imply an increase in the amount over the existing risk; and three years in proposals on existing risk such as subrogations, forbearance, financing of assets on the group's balance sheet, etc. In the case of non-performing assets, as well as in restructuring and refinancing, the appraisal review period will be twelve months.

The milestones under which the valuations of the collaterals must be updated in accordance with local regulation are established under these prudential principles.

Random or rotating case assignment processes must be established to ensure the independence in the activity of the professionals or companies in charge of the appraisal with respect to the credit originating units. The valuation of non-real estate guarantees will also be carried out considering the general principles of prudence and rigour. Similarly, the independence and objectivity of the valuations is a critical factor that must be guaranteed through the use of external sources or the value contrast with them. Given the heterogeneity of this type of guarantees, in general the validity of the valuations must be ensured through documentation (for example, pro-forma invoices for movable property, certificates of deposits) or through consultation processes of market values (eg. in securities accounts, investment funds).

With respect to the entities that carry out the valuation of the collateral, principles are in place in accordance with local regulations that govern the level of customer loyalty and dependence on the Group, along with related processes. These valuations will be updated by statistical methods, indices or appraisals of goods, consultation of internal and external sources, etc. which shall be carried out under the generally accepted standards in each market and in accordance with local regulations.

For the validation of the collaterals, the Legal Services, support in the formalisation process ensuring that the requirements are met so that the guarantees are duly established in the corresponding jurisdiction. The guarantees are required to be included in the corresponding policies, duly guarded and registered in the official formats and bodies established, in order to fully preserve their recovery effectiveness. In general, these policies must include the general circumstances of the guarantees, the description of the assets that act as

collateral, the obligations and rights of the parties involved and the related insurance.

Additionally, a critical review of the valuation is carried out, focusing in particular on aspects such as its understandability, the prudence of the assumptions and the clear and reasonable identification of other comparable properties used as a reference to determine the appraised value. In the wholesale sphere, the possibility of carrying out a due diligence will be considered when the risk or complexity of the operation so requires.

4.2.9.2.2. Types of collateral

As collateral for the purpose of calculating bank capital, the Group uses the hedging established in the solvency regulations. The following are the main types of collateral available in the Group:

- **Mortgage Guarantees:** *The collateral is the property upon which the loan is arranged.*
- **Financial guarantees:** *Their object is any one of the following financial assets, as per articles 197 and 198 of the solvency regulation.*
 - Cash deposits, deposit certificates or similar instruments.
 - Debt securities issued for the different categories.
 - Shares or convertible bonds.
- **Other goods and rights used as a real collateral:** *The following property and rights are considered acceptable as collateral as per Article 200 of the solvency regulation.*

- Cash deposits, deposit certificates or similar instruments held in third-party institutions other than the lending credit institution, when these are pledged in favour of the latter.
- Life insurance policies pledged in favour of the lending credit institution.
- Debt securities issued by other institutions, provided that these securities are to be repurchased at a pre-set price by the issuing institutions at the request of the holder of the securities.

4.2.9.3. Hedging based on personal guarantees

According to the solvency regulations, unfunded credit protection consists of personal guarantees, including those arising from credit insurance, that have been granted by the providers of protection defined in Articles 201 and 202 of the solvency regulation.

In the category of Retail exposure under the advanced measurement approach, unfunded credit protection impacts the PD and does not reduce the amount of the credit risk in EAD.

In line with the EBA standards published in June 2020 (EBA/ITS/2020/04), the following table shows the book value of secured and unsecured exposures, including all guarantees recognised for accounting purposes, regardless of their use for capital purposes. The main change with respect to the previous version is the inclusion of a row to breakdown non-performing exposures.

Table 53. EU CR3 - CRM techniques - overview (Million Euros. 12-31-2022)

	Exposures unsecured - carrying amount ⁽¹⁾	Exposures secured - Carrying amount ⁽¹⁾	Exposures secured by collateral	Exposures secured by financial guarantees ⁽²⁾	Exposures secured by credit derivatives
Total Loans	285,109	166,011	125,961	40,050	—
Total debt securities	80,952	—	—	—	—
Total exposures	366,061	166,011	125,961	40,050	—
Of which: non performing	1,805	4,422	3,438	984	—
Of which: defaulted	1,805	4,422	3,438	984	—

⁽¹⁾ Includes net carrying amount of the "amortised cost" portfolio, the "fair value through other comprehensive income" portfolio and the "fair value through P&L" portfolios, as well as cash and balances with central banks.

⁽²⁾ Excluding personal guarantees (unfunded credit protection which impacts on the PD but not in EAD).

EU CR3 - CRM techniques - overview^(*) (Million Euros. 12-31-2021)

	Exposures unsecured - carrying amount ⁽¹⁾	Exposures secured - Carrying amount ⁽¹⁾	Exposures secured by collateral	Exposures secured by financial guarantees ⁽²⁾	Exposures secured by credit derivatives
Total Loans	233,294	166,038	117,359	48,680	—
Total debt securities	73,597	—	—	—	—
Total exposures	306,891	166,038	117,359	48,680	—
Of which: non performing	2,753	4,880	3,989	891	—
Of which: defaulted	2,753	4,880	3,989	891	—

^(*) The 2021 figures have been restated to bring the information in line with the updated mapping tool published by the EBA on May 23, 2022, which modifies the approach of the table to include carrying amount (net of value adjustments), instead of gross.

⁽¹⁾ Includes net carrying amount of the "amortised cost" portfolio, the "fair value through other comprehensive income" portfolio and the "fair value through P&L" portfolios, as well as cash and balances with central banks.

⁽²⁾ Excluding personal guarantees (unfunded credit protection which impacts on the PD but not in EAD).

During 2022, no significant variations have been observed in the coverage level, which reached a percentage of 31% similar to 2021.

The breakdown of the specific credit mitigation techniques used in the IRB credit risk approach is below.

Table 54. EU CR7-A - IRB approach – Disclosure of the extent of the use of CRM techniques (Million Euros, 12-31-2022)

Exposure class	Total exposures	Funded credit Protection (FCP)							Unfunded credit Protection (UFCP)		RWEA without substitution effects (reduction effects only)	RWEA with substitution effects (both reduction and substitution effects)
		Part of exposures covered by Financial Collaterals (%)	Part of exposures covered by Other eligible collaterals (%)			Part of exposures covered by Other funded credit protection (%)			Part of exposures covered by Guarantees (%)	Part of exposures covered by Credit Derivatives (%)		
			Part of exposures covered by Immovable property Collaterals (%)	Part of exposures covered by Receivables (%)	Part of exposures covered by Other physical collateral (%)	Part of exposures covered by Cash on deposit (%)	Part of exposures covered by Life insurance policies (%)	Part of exposures covered by Instruments held by a third party (%)				
Central governments and central banks	–	–	–	–	–	–	–	–	–	–	–	–
Institutions	–	–	–	–	–	–	–	–	–	–	–	–
Corporates	6,364	–	–	–	–	–	–	–	–	–	6,611	5,177
Of which Corporates – SMEs	–	–	–	–	–	–	–	–	–	–	–	–
Of which Corporates – Specialised lending	6,364	–	–	–	–	–	–	–	–	–	6,611	5,177
Of which Corporates – Other	–	–	–	–	–	–	–	–	–	–	–	–
Total FIRB	6,364	–	–	–	–	–	–	–	–	–	6,611	5,177
Central governments and central banks	12,159	–	–	–	–	–	–	–	–	–	1,523	1,103
Institutions	16,914	1.95 %	1.20 %	1.03 %	–	0.17 %	–	–	–	–	13,360	4,598
Corporates	147,750	0.26 %	5.01 %	2.32 %	0.07 %	2.62 %	–	–	–	–	108,434	72,364
Of which Corporates – SMEs	18,095	1.07 %	23.04 %	11.88 %	0.41 %	10.75 %	–	–	–	–	22,917	12,810
Of which Corporates – Specialised lending	–	–	–	–	–	–	–	–	–	–	–	–
Of which Corporates – Other	129,655	0.15 %	2.49 %	0.98 %	0.02 %	1.49 %	–	–	–	–	85,516	59,554
Retail	98,196	0.03 %	65.41 %	65.22 %	–	0.19 %	–	–	–	–	35,101	24,482
Of which Retail – Immovable property SMEs	941	–	92.21 %	92.21 %	–	–	–	–	–	–	1,511	1,078
Of which Retail – Immovable property non-SMEs	68,906	–	91.51 %	91.50 %	–	0.01 %	–	–	–	–	9,333	8,916
Of which Retail – Qualifying revolving	12,741	–	–	–	–	–	–	–	–	–	17,032	8,868
Of which Retail – Other SMEs	2,816	1.07 %	10.80 %	4.44 %	–	6.36 %	–	–	–	–	2,736	1,157
Of which Retail – Other non-SMEs	12,792	0.01 %	0.03 %	0.01 %	–	0.02 %	–	–	–	–	4,489	4,463
Total AIRB	275,019	0.27 %	26.12 %	24.59 %	0.04 %	1.49 %	–	–	–	–	158,417	102,547

EU CR7-A - IRB approach – Disclosure of the extent of the use of CRM techniques (Million Euros. 12-31-2021)

Exposure class	Total exposures	Funded credit Protection (FCP)							Unfunded credit Protection (UFCP)		RWEA without substitution effects (reduction effects only)	RWEA with substitution effects (both reduction and substitution effects)
		Part of exposures covered by Financial Collaterals (%)	Part of exposures covered by Other eligible collaterals (%)			Part of exposures covered by Other funded credit protection (%)			Part of exposures covered by Guarantees (%)	Part of exposures covered by Credit Derivatives (%)		
			Part of exposures covered by Immovable property Collaterals (%)	Part of exposures covered by Receivables (%)	Part of exposures covered by Other physical collateral (%)	Part of exposures covered by Cash on deposit (%)	Part of exposures covered by Life insurance policies (%)	Part of exposures covered by Instruments held by a third party (%)				
Central governments and central banks	–	–	–	–	–	–	–	–	–	–	–	–
Institutions	–	–	–	–	–	–	–	–	–	–	–	–
Corporates	5,556	–	–	–	–	–	–	–	–	–	5,935	4,498
Of which Corporates – SMEs	–	–	–	–	–	–	–	–	–	–	–	–
Of which Corporates – Specialised lending	5,556	–	–	–	–	–	–	–	–	–	5,935	4,498
Of which Corporates – Other	–	–	–	–	–	–	–	–	–	–	–	–
Total FIRB	5,556	–	–	–	–	–	–	–	–	–	5,935	4,498
Central governments and central banks	11,678	–	–	–	–	–	–	–	–	–	1,027	958
Institutions	15,088	2.15 %	0.88 %	0.73 %	–	0.15 %	–	–	–	–	11,389	4,630
Corporates	127,375	0.32 %	6.00 %	2.82 %	0.05 %	3.13 %	–	–	–	–	99,295	68,300
Of which Corporates – SMEs	18,031	1.66 %	25.62 %	13.52 %	0.25 %	11.84 %	–	–	–	–	26,448	14,858
Of which Corporates – Specialised lending	–	–	–	–	–	–	–	–	–	–	–	–
Of which Corporates – Other	109,343	0.10 %	2.77 %	1.06 %	0.02 %	1.69 %	–	–	–	–	72,848	53,442
Retail	98,833	0.05 %	67.66 %	67.34 %	–	0.32 %	–	–	–	–	33,740	23,726
Of which Retail – Immovable property SMEs	1,101	–	92.31 %	92.28 %	–	0.03 %	–	–	–	–	1,946	1,347
Of which Retail – Immovable property non-SMEs	71,292	–	91.52 %	91.51 %	–	0.02 %	–	–	–	–	10,068	9,681
Of which Retail – Qualifying revolving	10,315	–	–	–	–	–	–	–	–	–	13,511	6,541
Of which Retail – Other SMEs	3,590	1.27 %	16.48 %	8.11 %	–	8.36 %	–	–	–	–	3,531	1,519
Of which Retail – Other non-SMEs	12,535	0.05 %	0.13 %	0.06 %	–	0.07 %	–	–	–	–	4,684	4,639
Total AIRB	252,973	0.31 %	29.51 %	27.77 %	0.03 %	1.71 %	–	–	–	–	145,452	97,614

The table includes all collaterals meeting the eligibility criteria for solvency purposes, and have an effect on EAD or other parameters such as LGD in the case of credit risk exposures under internal models (IRB).

Currently, the Group does not use credit derivatives as a credit risk mitigation technique, so the EU CR7 table "IRB Approach - Effect on RWAs of credit derivatives used as credit risk mitigation techniques" is not applicable.

4.2.9.4. Risk concentration

BBVA has established the measurement, monitoring and reporting criteria for the analysis of large credit exposures that could represent a concentration risk, with the aim of ensuring their alignment with the risk appetite framework defined in the Group.

Particularly, measurement and monitoring criteria are established for large exposures at the level of individual concentrations, concentrations of retail portfolios, wholesale sectors and geographies.

A quarterly measurement and monitoring process has been established for reviewing concentration risk.

The main measures to prevent risk concentration in BBVA are:

- At both the Group level and the subsidiaries belonging to the banking group, the information of customers (groups) that hold the largest exposures (greater than 10% of fully loaded Tier1; in the subsidiaries their level of own funds are used) is available. If a customer presents a concentration that exceeds the thresholds, the reasonableness of maintaining this exposure must be justified, or the measures to reduce the exposure be explained (for example, cancellation of risk) in writing every year.
- As an additional support to management, the portfolio concentration is calculated using the Herfindahl index. To date, the concentration at Group level is "very low".
- The credit risk mitigation does not have a significant impact on the Group's large exposures, being used solely as a mechanism for mitigating intra-group risk ("standby letters of credit" issued by BBVA in favor of the banking Group's subsidiaries).
- The concentration to different industries is calculated based on the risk aggregation by economic activity. BBVA uses a classification that groups activities into 15 sectors. All of them are under the acceptable thresholds at the Group level.
- In retail portfolios, the analysis is carried out at subportfolio level (mortgages and non-mortgage retail). Both are below the acceptable thresholds at the Group level.

4.3. Market Risk

4.3.1. Scope and nature of the market risk measurement and reporting systems

Market risk is the possibility that there may be losses in the value of positions held due to movements in the market variables that affect the valuation of financial products and assets.

The scope of market risk in the Group's trading portfolios is mainly defined by the portfolios originated by Global Markets valued at fair value and maintained for the purpose of trading and generates short term results. The market risk in the banking book is clearly delimited and separated in the structural risk of interest and credit spread, exchange rate and equity, which are broken down in section 4.4.

The main market risks can be classified into the following groups:

- Interest-rate risk: This arises as a result of exposure to movements in the different interest-rate curves involved in trading. Although the typical products that generate sensitivity to the movements in interest rates are money-market products (deposits, interest-rate futures, call money swaps, etc.) and traditional interest-rate derivatives (swaps and interest-rate options such as caps, floors, swaptions, etc.), practically all the financial products are exposed to interest-rate movements due to the effect that such movements have on the valuation of the financial discount.
- Equity risk: This arises as a result of movements in share prices. This risk is generated in spot positions in shares or any derivative products whose underlying asset is a share or an equity index. Dividend risk is a sub-risk of equity risk, arising as an input for any equity option. Its variation may affect the valuation of positions and it is therefore a factor that generates risk on the books.
- Exchange-rate risk: This is caused by movements in the exchange rates of the different currencies in which a position is held. As in the case of equity risk, this risk is generated in spot currency positions, and in any derivative product whose underlying asset is an exchange rate. In addition, the quanto effect (operations where the underlying asset and the instrument itself are denominated in different currencies) means that in certain transactions in which the underlying asset is not a currency, an exchange-rate risk is generated that has to be measured and monitored.
- Credit-spread risk: Credit spread is an indicator of an issuer's credit quality. Spread risk occurs due to variations in the levels of spread of both corporate and government issues, and affects positions in bonds and credit derivatives.
- Volatility risk: This occurs as a result of changes in the levels of implied price volatility of the different market instruments on which derivatives are traded. This risk, unlike the others, is exclusively a component of trading in derivatives and is defined as a first-order convexity risk that is generated in all possible underlying assets in which there are products with options that require a volatility input for their valuation.

The metrics developed to control and monitor market risk in the BBVA Group are aligned with market practices and are implemented consistently across all the local market risk units.

Measurement procedures are established in terms of the possible impact of negative market conditions on the trading portfolio of the Group's Global Markets units, both under ordinary circumstances and in situations of heightened risk factors.

In addition, in Chapter 4.3.4.2 more information about the risk measurement models used in the Group, focused on internal models approved by the supervisor for BBVA S.A. and BBVA Mexico to calculate regulatory capital requirements on trading portfolios is detailed. For the other geographic areas (mainly South America and Garanti BBVA), the calculation of own funds requirements for trading portfolios is carried out using the standardised approach.

Analysis of the Group's RWA structure shows that almost 4% corresponds to Market Risk (including structural exchange risk).

4.3.2. Differences in the trading book under accounting and prudential regulation

According to the solvency regulations, trading book shall be made up of all the positions on financial instruments and commodities that the credit institution holds for the purpose of trading or that act as hedging for other elements in this portfolio.

With respect to this portfolio, the rule also refers to the need to establish clearly defined policies and procedures.

For this purpose, regulatory trading book defined by the Group includes the positions managed by the Group's Trading units, for which market risk limits are set and

then monitored daily. Moreover, they comply with the other requirements defined in the solvency regulations.

In accounting, Financial assets are recorded under the heading "Financial assets held for trading" if the

objective of the business model is to generate gains by buying and selling these financial instruments or generate short-term results.

4.3.3. Standardised approach

Market risk-weighted assets under the standardised approach (including structural exchange rate risk) account for 36% of total market risk-weighted assets.

The amounts in terms of RWAs and market risk capital requirements calculated by standardised approach as of December 31, 2022 and as of December 31, 2021 are below.

Table 55. EU MR1 - Market risk under the standardised approach (Million Euros. 12-31-2022)

	RWAs	Capital Requirements
Outright Products	3,809	305
Interest Rate Risk	1,180	94
Equity Risk	246	20
Foreign Exchange Risk	2,383	191
Commodity Risk	—	—
Options	—	—
Simplified approach	—	—
Delta-plus method	—	—
Scenario approach	—	—
Securitisation	907	73
Total	4,716	377

EU MR1 - Market risk under the standardised approach (Million Euros. 12-31-2021)

	RWAs	Capital Requirements
Outright Products	3,889	311
Interest Rate Risk	1,414	113
Equity Risk	353	28
Foreign Exchange Risk	2,059	165
Commodity Risk	63	5
Options	—	—
Simplified approach	—	—
Delta-plus method	—	—
Scenario approach	—	—
Securitisation	557	45
Total	4,445	356

During 2022, the equity requirements for market risk under standardised approach are mainly affected by changes in positions subject to correlation risk in the trading portfolio (including in row "Securitisation"), as well as by currency fluctuations.

4.3.4. Internal models

4.3.4.1. Scope of application

For the purposes of calculating own funds requirements as approved by the supervisor, the scope of application of the internal market risk model extends to BBVA S.A. and BBVA Mexico trading activity.

As explained in the following section, most of the items on the Group's consolidated balance sheet that are subject to market risk are positions whose principal metric used to measure their market risk is VaR.

4.3.4.2. Characteristics of the models used

Measurement procedures are established in terms of the possible impact of negative market conditions on the trading portfolio of the Group's Global Markets units, both under ordinary circumstances and in situations of heightened risk factors.

The standard metric used to measure market risk is Value at Risk (hereinafter "VaR"), which indicates the maximum loss that may occur in the portfolios at a given confidence level (99%) and time horizon (one day).

This statistic value is widely used in the market and has the advantage of summing up in a single metric the risks inherent to trading activity, taking into account how they are related and providing a prediction of the loss that the trading book could sustain as a result of fluctuations in equity prices, interest rates, foreign exchange rates and credit spreads. Additionally, for certain positions, other risks need to be considered, such as a credit spread, base, volatility or correlation risk.

With respect to the risk measurement models used in the Group, the supervisor has authorised the use of the internal model to determine the regulatory capital requirements deriving from risk positions on the BBVA, S.A. and BBVA Mexico trading book, which together, account for around 63% of the Group's trading book market risk at December 31, 2022.

BBVA uses a single model to calculate the regulatory requirements by risk, taking into account the correlation between the assets and thus recognizing the diversification effect of the portfolios. The model used estimates the VaR in accordance with the "historical simulation" methodology, which involves estimating the profit and loss that would have been incurred in the current portfolio if the changing market conditions that occurred over a given period of time were repeated. Based on this information, it infers the maximum foreseeable loss in the current portfolio with a given level of confidence.

Absolute and relative returns are used in simulating the potential variation of the risk factors, depending on the

type of risk factor. Relative returns are used in the case of equity and foreign currency; while absolute returns are used in the case of spreads and interest rates.

The decision on the type of return to apply is made according to the risk factor metric subject to variation. The relative return is used in the case of price risk factors, while for interest-rate risk factors it is absolute returns.

The model has the advantage of accurately reflecting the historical distribution of the market variables and of not requiring any specific distribution assumption. The historical period used in this model is two years.

The VaR figures are estimated through the VaR without smoothing methodology, which awards equal weight to the daily information for the previous two years. This is currently the official methodology for measuring market risks for the purpose of monitoring compliance with risk limits.

At the same time, and following the guidelines established by the Spanish and European authorities, BBVA incorporates metrics in addition to VaR with the aim of meeting the Bank of Spain's regulatory requirements with respect to the calculation of bank capital for the trading book. Specifically, the measures incorporated in the Group since December 2011 (stipulated by Basel 2.5) are:

- VaR: In regulatory terms, the VaR charge incorporates the stressed VaR charge, and the sum of the two (VaR and stressed VaR) is calculated. This quantifies the losses associated with the movements of the risk factors inherent to market operations (including interest-rate risk, exchange-rate risk, equity risk and credit risk, among others). Both VaR and stressed VaR are rescaled by a regulatory multiplier (between three and four) and by the square root of ten to calculate the capital charge.
- Specific Risk - Incremental Risk Capital ("IRC"). Quantification of the risks of default and changes of the credit ratings of the bond and derivative positions and debt funds with daily look-through or significant benchmark (correlation > 90%) in the trading portfolio. The IRC charge is exclusively applied in entities in respect of which the internal market risk model is used (i.e. BBVA, S.A. and BBVA Mexico). The IRC charge is determined based on the associated losses (calculated at 99.9% confidence level over a one year horizon under the hypothesis of constant risk) due to a rating change and/or default of the issuer with respect to an asset. In addition, the price risk is included in sovereign positions for the specified items.

- Specific Risk: Securitization, correlation portfolios and Investment funds without look-through. Capital charges for securitizations and correlation portfolios are assessed based on the potential losses associated with the occurrence of a credit event in the underlying exposures. They are calculated by the standard model. The scope of the correlations portfolios refers to the First To Default (FTD)-type market operation and/or tranches of market CDOs and only for positions with an active market and hedging capacity. Capital charge for Funds include losses associated with volatility and credit risk of the underlying positions of the fund. All charges are calculated by the standard model.

The capital charge is determined based on the associated losses (at 99.9% over a time horizon of 1 year under the assumption of constant risk) resulting from the rating migration and/or default of the asset's issuer. Also included is the price risk in sovereign positions for the indicated items.

The calculation methodology is based on the Monte Carlo simulation of the impact of defaults and rating transitions on the portfolio subject to incremental risk capital. The model defining the transition and default process of a counterparty is based on the changes in a counterparty's credit quality. Under a one-factor Merton model, which underlies the Basel or Creditmetrics model, this credit quality will correspond to the value of the issuer's assets, depending on a systemic factor that is common to all the issuers, and an idiosyncratic factor specific to each.

All that is needed to simulate the rating and default transition process for the issuers is to simulate the systemic factor and the idiosyncratic component. Once the underlying variable is available, the final rating can be obtained. The individual credit quality simulation of the issuers allows losses due to systemic risk and idiosyncratic risk to be obtained.

Transition matrices

The transition matrix used for calculation is estimated based on the external information about the rating transitions provided by the rating agencies. Specifically, the information provided by the Standard & Poor's agency is used.

The appropriateness of using information on external transitions is justified by:

- The internal ratings for the Sovereign, Emerging Sovereign Country, Financial Institution and Corporate segments (which constitute the core positions subject to incremental risk capital) are aligned with the external ratings. By way of example, the internal rating system for financial institutions is based on an algorithm that uses external ratings.
- The rating agencies provide sufficient historical information to cover a complete economic cycle (rating transition information is available dating back to the 1981 financial year) and obtain a long-term transition matrix in the same way that long-term probabilities of default are required for the calculation of the regulatory capital for credit risk in the banking book.

This depth level of historical information is not available for the internal rating systems.

Although external data are used for determining the transitions between ratings, to establish the default, the probabilities used are assigned by the BBVA master scale, which ensures consistency with the probabilities used for the calculations of capital in the banking book.

The transition matrix is recalibrated every year, based on information on transitions provided by Standard & Poor's. A procedure has been defined to readjust the transitions in accordance with the probability of default assigned by the master scale.

Liquidity horizons

The calculation of incremental risk capital used by BBVA explicitly includes the use of positions with a hypothesis of a constant level of risk and quarterly liquidity horizons of less than one year. The average liquidity horizon is in the range of 3-6 months.

The establishment of liquidity horizons follows the guidelines/criteria established by Basel in its guidelines for computing capital for incremental risk.

First, a criterion has been used of capacity for managing positions through liquid instruments that allow their inherent risk to be hedged. The main instrument for hedging the price risk for rating transitions and defaults is the Credit Default Swap (CDS). The existence of this hedging instrument serves as a justification for considering a short term liquidity horizon.

However, in addition to considering the existence of a liquid CDS, a distinction has to be made according to the issuer's rating (this factor is also mentioned in the aforementioned guidelines). Specifically, between investment grade issuers or those with a rating of BBB- or above, and issuers below this limit.

According to these criteria, the issuers are mapped to standard liquidity horizons of 3, 6 or 12 months.

Correlation

The calculation methodology is based on a single-factor model, in which there is one factor common to all the counterparties. The coefficient of the model is determined by the correlation curves established by Basel for corporates, financial institutions and sovereigns based on the probability of default.

The use of the Basel correlation curve ensures consistency with the calculation of regulatory capital under the IRB approach for the positions in the banking book.

Validity tests are performed periodically on the risk measurement models used by the Group. They estimate the maximum loss that could have been incurred in the positions assessed with a given level of probability (backtesting), as well as measurements of the impact of extreme market events on the risk positions held (stress testing).

Backtesting is performed at the trading floor level as an additional control measure in order to carry out a more specific monitoring of the validity of the measurement models.

The current structure for market risk management includes monitoring market risk limits, which consists of a system of limits based on metrics of market activities (Value at Risk (VaR), economic capital, as well as stop-loss limits for each of the Group's business units). The global limits are approved by the Executive Committee on an annual basis, once they have been analysed by the Global Risk Management Committee (GRMC). This limits structure is developed by identifying specific risks by type, trading activity and trading floor. The market risk unit also maintains consistency between limits. The control structure in place is supplemented by limits on loss and a system of alert signals to anticipate the effects of adverse situations in terms of risk and/or result.

The review of the quality of the inputs used by the evaluation processes is based on checking the data against other sources of information accepted as standard. These checks detect errors in the historical series such as repetitions, data outside the range, missing data, etc. As well as these periodic checks of the historical data loaded, the daily data that feed these series are subject to a data quality process to guarantee their integrity.

The choice of proxies is based on the correlation detected between the performance of the factor to be entered and the proxy factor. A Simple Linear Regression model is used, selecting the proxy that best represents the determination coefficient (R²) within the whole period for which the performance of both series is available. Next, the performance of the factor on the necessary dates is reconstructed, using the beta parameter estimated in the simple linear regression.

4.3.4.2.1. Valuation methodology and description of the independent price verification process

As part of the process established in the Group for determining the fair value in order to ensure that financial assets and liabilities are properly following the IFRS 13 principles: 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 in the principal market or most advantageous market, at the measurement date.

The fair value is reached without making any deduction in transaction costs that might be incurred due to sale or disposal by other means.

BBVA has established, at a geographical level, a structure of Risk Operational Admission and Product Governance Committees responsible for validating and approving new products or types of financial assets and liabilities before being contracted. Local management responsible for valuation, which are independent from the business are members of these committees.

These areas are required to ensure, prior to the approval stage, the existence of not only technical and human resources, but also adequate informational sources to measure the fair value of these financial assets and liabilities, in accordance with the rules established by the valuation global area and using models that have been validated and approved by the responsible areas complying with the governance of BBVA Group's official models.

Fair value hierarchy

All financial instruments, both assets and liabilities are initially recognized at fair value, which at that point is equivalent to the transaction price, unless there is evidence to the contrary in the market. Subsequently, depending on the type of financial instrument, it may continue to be recognized at amortized cost or fair value through adjustments in the consolidated income statement or equity.

When possible, the fair value is determined as the market price of a financial instrument. However, for many of the financial assets and liabilities of the Group, especially in the case of derivatives, there is no market price available, so its fair value is estimated on the basis of the price established in recent transactions involving similar instruments or, in the absence thereof, by using mathematical measurement models that are sufficiently tried and trusted by the international financial community. The estimates of the fair value derived from the use of such models take into consideration the specific features of the asset or liability to be measured and, in particular, the various types of risk associated with such asset or liability. However, the limitations inherent in the measurement models and possible inaccuracies in the assumptions and parameters required by these models may mean that the estimated fair value of an asset or liability does not exactly match the price for which the asset or liability could be exchanged or settled on the date of its measurement.

Additionally, for financial assets and liabilities that show significant uncertainty in inputs or model parameters used for valuation, criteria is established to measure said uncertainty and activity limits are set based on these.

Finally, these measurements are compared, as much as possible, against other sources such as the measurements obtained by the business teams or those obtained by other market participants.

The process for determining the fair value requires the classification of the financial assets and liabilities according to the measurement processes used as set forth below:

- Level 1: Valuation using directly the quotation of the instrument, observable and readily and regularly available from independent price sources and referenced to active markets that the entity can access at the measurement date. The instruments classified within this level are fixed-income securities, equity instruments and certain derivatives.
- Level 2: Valuation of financial instruments with commonly accepted techniques that use inputs obtained from observable data in markets.
- Level 3: Valuation of financial instruments with valuation techniques that use significant unobservable inputs in the market. As of December 31, 2022, the affected instruments at fair value accounted for approximately 0.57% of financial assets and 0.43% of the Group's financial liabilities. Model selection and validation is undertaken by control areas outside the business areas.

Full revaluation is used for most financial products at BBVA Group.

In addition, the Group calculates Prudent Valuation Adjustments (PVA) for all instruments valued at fair value. PVA is an additional or conservative adjustment to the fair value that allows a more prudent assessment to be obtained by considering sources of risks that exist in the calculation of the fair value (uncertainty inputs, risk model, etc). A detailed breakdown of the method for calculating PVAs for the Group is below:

Table 56. EU PV1 - Prudent Valuation Adjustments (Million Euros, 12-31-2022)

Category level AVA	Risk category					Category level AVA - Valuation uncertainty		Total category level post-diversification	Of which: Total core approach in the trading book	Of which: Total core approach in the banking book
	Equity	Interest Rates	Foreign exchange	Credit	Commodities	Unearned credit spreads AVA	Investment and funding costs AVA			
Market price uncertainty	46	140	36	4	—	3	—	114	94	21
Close-out cost	115	78	46	9	—	9	—	129	109	19
Concentrated positions	19	47	—	—	—	—	—	66	34	32
Early termination	—	1	—	—	—	—	—	1	1	—
Model risk	9	3	—	5	—	9	4	15	15	—
Operational risk	8	11	4	1	—	—	—	24	20	4
Future administrative costs	—	6	—	—	—	—	—	6	6	—
Total Additional Valuation Adjustments (AVAs)								356	280	76

EU PV1 - Prudent Valuation Adjustments (Million Euros, 12-31-2021)

Category level AVA	Risk category					Category level AVA - Valuation uncertainty		Total category level post-diversification	Of which: Total core approach in the trading book	Of which: Total core approach in the banking book
	Equity	Interest Rates	Foreign exchange	Credit	Commodities	Unearned credit spreads AVA	Investment and funding costs AVA			
Market price uncertainty	37	120	21	3	—	4	—	93	75	17
Close-out cost	31	64	32	7	—	5	—	69	60	9
Concentrated positions	26	40	—	—	—	—	—	67	28	39
Early termination	—	—	—	—	—	—	—	—	—	—
Model risk	6	1	—	1	—	8	3	10	10	—
Operational risk	3	9	3	1	—	—	—	16	14	3
Future administrative costs	—	6	—	—	—	—	—	6	6	—
Total Additional Valuation Adjustments (AVAs)								260	193	68

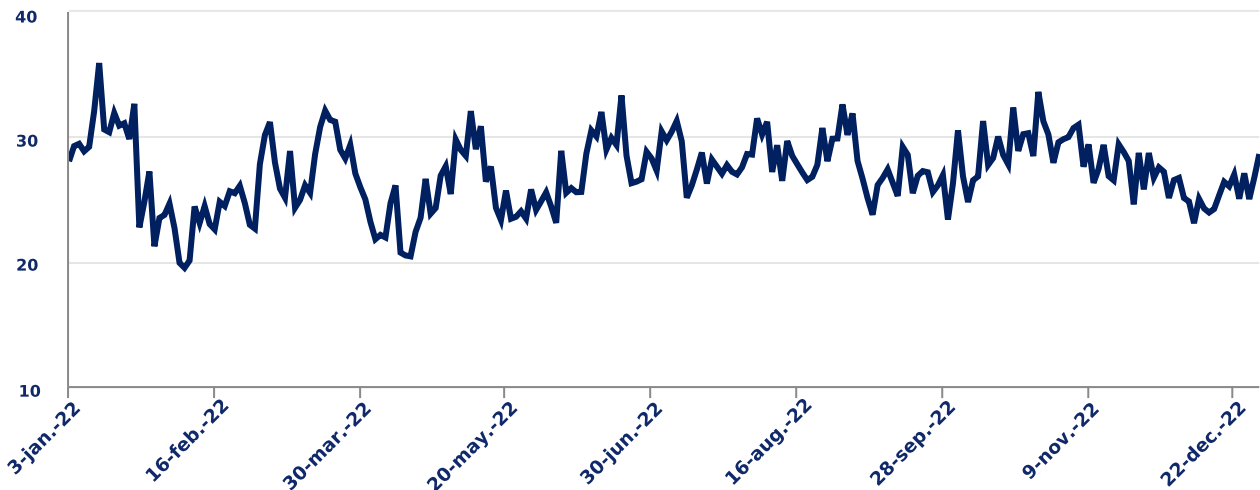
The increase in Total AVAs is mainly due to the general increase in uncertainty valuation factors and the introduction of new AVA concepts with an impact on close-out cost factors.

4.3.4.2.2. Market risk in 2022

The Group's market risk related to its trading portfolio remained in 2022 at low levels compared to other risks managed by BBVA, particularly credit risk. This is due to the nature of the business. In 2022 the average VaR was €27 million, below the figure of 2021, with a maximum

level in the year reached on January 12, 2022 of €36 million. The evolution in the BBVA Group's market risk during 2022, measured as VaR without smoothing (see Glossary) with a 99% confidence level and a 1-day horizon (shown in Millions of Euros) is as follows:

Chart 15. Trading book. Trends in VaR without smoothing



VaR without smoothing figures by risk factors are below:

Table 57. Trading Book. VaR without smoothing by risk factors (Million Euros)

VaR by risk factors	Interest-rate and spread risk	Exchange - rate risk	Equity risk	Vega / correlation risk	Diversification effect ⁽¹⁾	Total
December 2022						
Average VaR for the period	33	8	3	7	(23)	27
Maximum VaR for the period	35	12	2	11	(24)	36
Minimum VaR for the period	25	10	2	11	(28)	19
VaR at the end of the period	32	13	7	5	(28)	29
December 2021						
Average VaR for the period	33	10	2	11	(28)	29
Maximum VaR for the period	32	13	4	1	(14)	36
Minimum VaR for the period	27	9	1	10	(25)	22
VaR at the end of the period	34	9	5	11	(29)	31

⁽¹⁾ The diversification effect is the difference between the sum of the average individual risk factors and the total VaR figure that includes the implied correlation between all the variables and scenarios used in the measurement.

By type of market risk assumed by the Group's trading portfolio, the main risk factor for the Group continued to be that linked to interest rates, with a weight of 57% of the total at December 31, 2022 (this figure includes the spread risk). These figures are similar to the ones as of the end of 2021. Exchange-rate risk accounted for 23% of the total risk, increasing its weight with respect to December 2021 (16%), as well as equity, which increase to 12% as of 2022, from 9% as of 2021, while volatility

and correlation risk has increased 10% from 19% at the end of 2021.

According to article 455, letter d) and e) of the CRR - corresponding to the breakdown of information on internal models of Market Risk-, the elements that make up the Own Funds requirements to which a reference is made in articles 364 and 365 of the CRR, are presented below.

Table 58. EU MR2-A - Market risk under the IMA (Million Euros. 12-31-2022)

	RWAs	Capital Requirements
VaR	1,966	157
Previous day's VaR		59
Average of the daily VaR on each of the preceding sixty business days (VaRavg) x multiplication factor		157
SVaR	4,077	326
Latest SVaR		132
Average of the SVaR during the preceding sixty business days (sVaRavg) x multiplication factor (mc)		326
Incremental risk charge - IRC	2,210	177
Most recent IRC value		154
Average of the IRC number over the preceding 12 weeks		177
Comprehensive Risk Measure- CRM	—	—
Most recent risk number for the correlation trading portfolio over the preceding 12 weeks		—
Average of the risk number for the correlation trading portfolio over the preceding 12 weeks		—
8% of the own funds requirement in SA on most recent risk number for the correlation trading portfolio		—
Others		—
Total	8,252	660

EU MR2-A - Market risk under the IMA (Million Euros. 12-31-2021)

	RWAs	Capital Requirements
VaR	2,634	211
Previous day's VaR		74
Average of the daily VaR on each of the preceding sixty business days (VaRavg) x multiplication factor		211
SVaR	5,431	434
Latest SVaR		143
Average of the SVaR during the preceding sixty business days (sVaRavg) x multiplication factor (mc)		434
Incremental risk charge - IRC	2,201	176
Most recent IRC value		176
Average of the IRC number over the preceding 13 weeks		135
Comprehensive Risk Measure- CRM	—	—
Most recent risk number for the correlation trading portfolio over the preceding 13 weeks		—
Average of the risk number for the correlation trading portfolio over the preceding 13 weeks		—
8% of the own funds requirement in SA on most recent risk number for the correlation trading portfolio		—
Others		—
Total	10,267	821

For more information about RWA and capital requirements under IMA, see Table 60.

Table 59. EU MR3 - IMA values for trading portfolios (Million Euros. 12-31-2022)

IMA values for trading portfolios ⁽¹⁾⁽²⁾	
VaR (10 day 99%)	
Maximum value	72
Average value	52
Minimum value	38
Period value	59
SVar (10 day 99%)	
Maximum value	162
Average value	109
Minimum value	79
Period value	132
IRC (99.9%)	
Maximum value	198
Average value	181
Minimum value	144
Period value	154
CRM (99.9%)	
Maximum value	—
Average value	—
Minimum value	—
Period value	—

⁽¹⁾ Data related to the second half of 2022.

⁽²⁾ As of 31 December 2022, the additional surcharge of 1.60 on the IRC component which apply from 2019 is included.

EU MR3 - IMA values for trading portfolios (Million Euros. 12-31-2021)

IMA values for trading portfolios ⁽¹⁾⁽²⁾	
VaR (10 day 99%)	
Maximum value	95
Average value	70
Minimum value	46
Period value	74
SVar (10 day 99%)	
Maximum value	198
Average value	144
Minimum value	100
Period value	143
IRC (99.9%)	
Maximum value	176
Average value	135
Minimum value	121
Period value	176
CRM (99.9%)	
Maximum value	—
Average value	—
Minimum value	—
Period value	—

⁽¹⁾ Data related to the second half of 2021.

⁽²⁾ As of 31 December 2021, the additional surcharge of 1.60 on the IRC component which apply from 2019 is included.

For more information about RWA and capital requirements under IMA, see Table 60.

The main changes in the market RWAs, calculated using the method based on internal models are below:

Table 60. EU MR2-B - RWA flow statements of market risk exposures under the IMA (Million Euros)

	VaR	SVaR	IRC	CRM	Other	Total RWAs	Total Capital Requirements
RWAs September, 2022	2,456	5,045	2,628	—	—	10,129	810
Regulatory adjustments	(1,740)	(3,641)	—	—	—	(5,382)	(430)
RWAs as of last day of September 2022	716	1,404	2,628	—	—	4,747	380
Level risk variation	(439)	(834)	(439)	—	—	(1,712)	(137)
Model updates	—	—	—	—	—	—	—
Methodology and policy	—	—	—	—	—	—	—
Acquisitions and disposals	—	—	—	—	—	—	—
Foreign Exchange movements	(51)	(135)	(57)	—	—	(243)	(19)
Other	—	—	78	—	—	78	6
RWAs as of last day of December 2022	735	1,653	1,922	—	—	4,310	345
Regulatory adjustments	1,230	2,424	288	—	—	3,943	315
RWAs December, 2022	1,966	4,077	2,210	—	—	8,252	660

In the fourth quarter of 2022, the capital requirements for market risk under the internal model are mainly affected by the decrease in VaR and Stressed VaR capital requirements in BBVA Mexico and the decrease in IRC capital requirements:

Capital requirements in BBVA S.A. decrease in December 2022 mainly as a result of the reduction in corporate positions, which leads to lower IRC capital requirements.

Capital requirements in BBVA Mexico decrease in December 2022, basically due to the decrease in VaR and SVaR capital requirements as a function of the reduction in government rate positions.

The IRC component remains subject to the additional surcharge of 1.60, following the internal model review process in 2019.

The full annual series of RWA flow of market risk under the IMA is available in the editable file "Pillar III 2022 – Tables & Annexes".

4.3.4.2.3 Stress testing

All the tasks associated with stress, methodologies, scenarios of market variables or reports are undertaken in coordination with the Group's Risk Areas.

A number of stress tests are carried out on the BBVA Group's trading portfolios. First, global and local historical scenarios are used that replicate the behavior of an extreme past event, such as for example the collapse of Lehman Brothers or the "Tequilazo" crisis. These stress tests are complemented with simulated scenarios, where the aim is to generate scenarios that have a significant impact on the different portfolios, but without being anchored to any specific historical scenario.

Finally, for some portfolios or positions, fixed stress tests are also carried out that have a significant impact on the market variables affecting these positions.

Historical scenarios

The historical benchmark stress scenario for the BBVA Group is Lehman Brothers, whose sudden collapse in September 2008 led to a significant impact on the behavior of financial markets at a global level. The following are the most relevant effects of this historical scenario:

- Credit shock: reflected mainly in the increase of credit spreads and downgrades in credit ratings.
- Increased volatility in most of the financial markets (giving rise to a great deal of variation in the prices of different assets (currency, equity, debt).
- Liquidity shock in the financial systems, reflected by a major movement in interbank curves, particularly in the shortest sections of the euro and dollar curves.

Table 61. Trading Book. Impact on earnings in Lehman scenario (Million Euros)

Impact on earnings in Lehman scenario		
	12-31-2022	12-31-2021
GM Europe, NY & Asia	(62)	(40)
GM Mexico	(62)	(107)
GM Argentina	—	(1)
GM Chile	—	—
GM Colombia	(3)	(3)
GM Peru	(6)	(3)
GM Venezuela	—	—

Simulated scenarios

Unlike the historical scenarios, which are fixed and therefore not suited to the composition of the risk portfolio at all times, the scenario used for the exercises of economic stress is based on resampling methodology. This methodology is based on the use of dynamic scenarios that are recalculated periodically depending on the main risks affecting the trading portfolios. On a data window wide enough to collect different periods of stress (data are taken from January 1, 2008 until the date of the assessment), a simulation is performed by resampling of historic observations, generating a distribution of losses and gains that serve to analyze the most extreme of births in the selected historical window.

The advantage of this methodology is that the period of stress is not predetermined, but depends on the portfolio maintained at each time, and making a large number of simulations (10,000 simulations) allows a greater

richness of information for the analysis of expected shortfall than what is available in the scenarios included in the calculation of VaR.

The main features of this approach are:

- a) the generated simulations respect the correlation structure of the data
- b) there is flexibility in the inclusion of new risk factors
- c) it allows the introduction of a lot of variability in the simulations (desirable for considering extreme events).

The impact of the stress tests by simulated scenarios (Stress VaR 95% at 20 days, Expected Shortfall 97,5 % at 20 days and Stress VaR 99% at 1 day) is shown below.

Table 62. Trading Book. Stress resampling (Million Euros. 12-31-2022)

	Europe	Mexico	Peru	Venezuela	Argentina	Colombia	Turkey
Expected impact	(86)	(42)	(7)	—	(8)	(4)	(22)

	Stress VaR	Expected Shortfall	Stress Period	Stress VaR 1D
	95 20 D	97.5 20 D		99% Resampling
Total				
GM Europe, NY and Asia	(58)	(86)	11/17/2010 - 10/17/2012	(22)
GM Mexico	(32)	(42)	05/09/2008 - 05/06/2010	(8)

4.3.4.2.4. Backtesting

Introduction

The ex-post or Backtesting validation is based on the comparison of the periodic results of the portfolio with the market risk measures from the established measurement system. The validity of a VaR model is particularly dependent on whether the empirical reality of the results does not enter into open contradiction with what is expected in the model. If the observed results were sufficiently adjusted to what was predicted by the model, it would be rated as good, and if the discrepancy were notable, revisions would be required in order to correct possible errors or modifications and to improve quality.

In order to determine whether the results have been sufficiently adjusted to the risk measurements, it is necessary to establish objective criteria, which are specified in a series of validation tests carried out with a given methodology. In establishing the most appropriate methodology, the criteria recommended by Basel have been largely followed as they are considered appropriate.

Validation test

In the comparison between results and risk measurements, a key element that is of interest is the confidence that the losses do not exceed the VaR risk measurements made more than a number of times according to the level of confidence adopted in the model. The validation test presented below, which focuses on contrasting this aspect, emphasizes that the risk measurement model is underestimating the risk that is actually being borne.

For the establishment of a hypothesis comparison test, we start from the observed results and try to infer whether there is enough evidence to reject the model (the null hypothesis that the trust of the model is established is not met).

In cases where the model functions properly, the VaR measurement indicates that the variation of the value of a portfolio in a given time horizon will not exceed the value obtained in a percentage of times determined by the level of confidence. In other words, the probability of having a loss that is higher than the VaR measurement,

what we will call an exception, will be 1%, and the probability that the exception will not occur will be 99%.

GREEN Zone: model acceptance zone	It is characterised as being an area in which there is a high probability of accepting a suitable model and a low probability of accepting an unsuitable model. This is defined by the set for which the accumulated probability of less than 95%, with the null hypothesis proving correct. It covers a number between zero and four exceptions.
YELLOW zone: ambiguous zone	Possible results for both a suitable and inadequate model. It begins when the accumulated probability is greater than equal to 95% (it must be less than 99.99%), with the null hypothesis proving correct. It covers a number of between five and nine exceptions.
RED zone: model rejection zone	High probability that the model is unsuitable and unlikely to reject if suitable. It is defined by the fact that the level of significance is less than 0.1% or, which is the same, the accumulated probability is greater than or equal to 99.99%, with the null hypothesis proving correct. It corresponds to a number of exceptions equal to or greater than ten.

To carry out this test it is advisable to have, at least, a one-year historical series of both results and risk estimates on a daily basis.

The criterion used is perfectly adapted to the priority of supervisory, which is to avoid situations where excess risk for which the entity is not prepared jeopardizes its survival. However, the use of risk measurements as a tool for managing positions entails a concern that the risk measurements are adjusted to the real risk on both sides: not only is there concern that the risk is being underestimated, but also that it may be overestimating.

At the end of December 31, 2022, the model is in the green zone of acceptance of the model, both in BBVA SA and BBVA Mexico.

Backtesting results

Regulatory backtesting is made up of two types: Hypothetical Backtesting and Actual Backtesting:

- Hypothetical Backtesting is defined as the contrast of the Hypothetical P&L on the estimated VaR, the day before the performance of said result. Actual Backtesting is defined as the contrast with the Actual P&L on the same estimated VaR, the day before the performance of said result.
- Actual Backtesting was implemented and entered into force on January 1, 2013, as a result of the transposition in the national legal order through the Bank of Spain Circular 4/2011 of November 30, of the CRD III that introduces Basel 2.5 in the European Union. The results that are used for the construction of both types of Backtesting are based on the actual results of the management tools.

According to Article 369 of the CRR, the P&L used in Backtesting should have a sufficient level of granularity in order to be shown at the "top-of-house" level, differentiating between Hypothetical and Actual P&L. In addition to the above, the historical Backtesting series will include a minimum of one year.

Actual P&L

The Actual P&L contains the complete management results, including the intraday operation and the daily and non-daily valuation adjustments, discounting the results of the franchises and commissions of each day and each desk.

The valuation functions and the parameters of the valuation models used in the calculation of the Actual P&L are the same as those used in the calculation of the Economic P&L.

Hypothetical P&L

The Hypothetical P&L contains the management results without the P&L of the daily activity, it is said, excluding intraday operations, premiums, and commissions. The data is provided by the management systems and broken down by desk, in adherence with the Volcker Rule on desk distribution.

The valuation functions and the parameters assigned to the valuation models used in the calculation of the Hypothetical P&L are the same as those used in the calculation of the Actual P&L.

The P&L figures used in both Backtesting types exclude Credit Valuation Adjustments (CVA), Debt Valuation Adjustments (DVA) and Additional Valuation Adjustments (AVA). As well as any change in value resulting from migrations from rating to default, except those reflected in prices by the market itself, since the changes in value due to migration from rating to default are included in the Counterparty Credit Risk metrics.

Perimeter of the backtesting and internal model exceptions

The calculation scope of VaR and P&L (Hypothetical and Actual) is limited to the totality of the Trading Book portfolios of the Global Markets Internal Model of BBVA S.A. and BBVA Mexico.

All the positions belonging to the Banking Book, the portfolios under the Standardised Approach and the trading activity with Hedge Funds (this activity was

excluded from the Internal Model in its original approval) are thus excluded from this scope of application.

It is considered that there is an exception at the Top of House level, when the two following circumstances concur in the same internal model and date:

- The Hypothetical P&L and/or the Actual P&L are negative.
- With an amount equal to or greater than the maximum between VaR without smoothing and VaR with smoothing calculated based on the previous day

For the purposes of calculating the number of exceptions of the Regulatory Backtesting, exceptions will only be taken into account within a mobile window of 250 consecutive Business Days at the Top of House level in each respective internal model.

At the end of December 31, 2022, there was not any exception in BBVA SA Backtesting and two exceptions in BBVA Mexico, which are listed below:

BBVA Mexico:

On March 22, 2022, the P&L at the entity or top-of-house level (ie BBVA Mexico) showed a negative result of €-10.1 million and €-9.2 million in terms of hypothetical P&L and actual, respectively; compared to a VaR figure for the previous business day (March 18, 2022) of €-7.9 million. Thus, there was an exception in the Hypothetical and Real backtesting at entity level on that date, 127% and 117 % above the VaR amount.

During the previous weeks, the domestic financial market was affected by two main factors: The global interest rate restrictive cycle, resulting from inflationary pressures; and the geopolitical pressures of the war in Ukraine and related economic sanctions and their impact on commodity prices. Both factors led to an interest rate increase in Mexico. As of March 18, rates had increased 41 basis points for the month. Monday, March 21 was a public holiday in Mexico. The international market continued trading, surrounded by speculation about the possible impact of economic sanctions on the pending monetary policy decisions of the FED and Mexico's central bank (Banxico). On March 22, the market followed the same trend. Mexico's local market that opened on the 22nd adjusted the impact of two sessions in one. The movement of the government curve on March 22 shifted an average of +19bp. However, the middle part of the curve moved up to +24bp. This movement, together with the Global Markets Mexico position, generated the loss.

On June 13, 2022, the entity-level or top-of-house P&L (i.e. BBVA Mexico) showed a negative result of € -10. 5 million and € -10.3 million in terms of Hypothetical and Actual P&L, respectively; compared to a VaR figure of € -8.04 million on the previous business day (June 10,

2022). Thus, there was an exception in the Hypothetical and Actual backtesting at entity level at that date, 131% and 129% above the VaR amount.

In the previous months, the mix of geopolitical trends (post-pandemic economy, Ukraine war, etc.), led to a global inflation increase. As a result, Central Banks started a restrictive cycle. On Friday, June 10, May's inflation in the United States was published: 8.6%, the highest level in the last forty years. On Monday, June 13, the market started speculating on how this information would affect the FED and its next monetary policy announcement, scheduled for June 15. These concerns had a direct impact on the Mexican financial market, as Banxico had scheduled a monetary policy announcement a week after the FED's announcement, on June 23. In the last two years, Banxico maintained a spread of approximately 600 basis points in its benchmark rate, versus the FED's rate, so prospects of a similar increase in local curves were adjusted. On June 13, local interest rate curves rose by an average of 19 basis points. This movement, together with the Global Markets Mexico position, generated the loss

Chart 16. Trading book. Market Risk Model Validation for BBVA S.A. Hypothetical Backtesting (EU MR4)

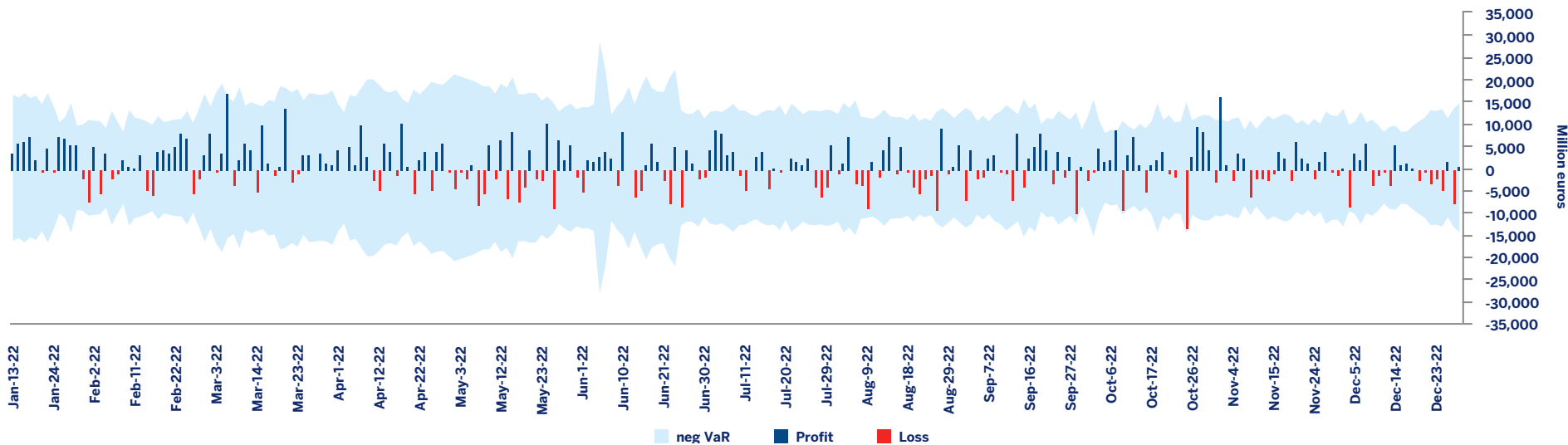


Chart 17. Trading book. Market Risk Model Validation for BBVA S.A. Real Backtesting (EU MR4)

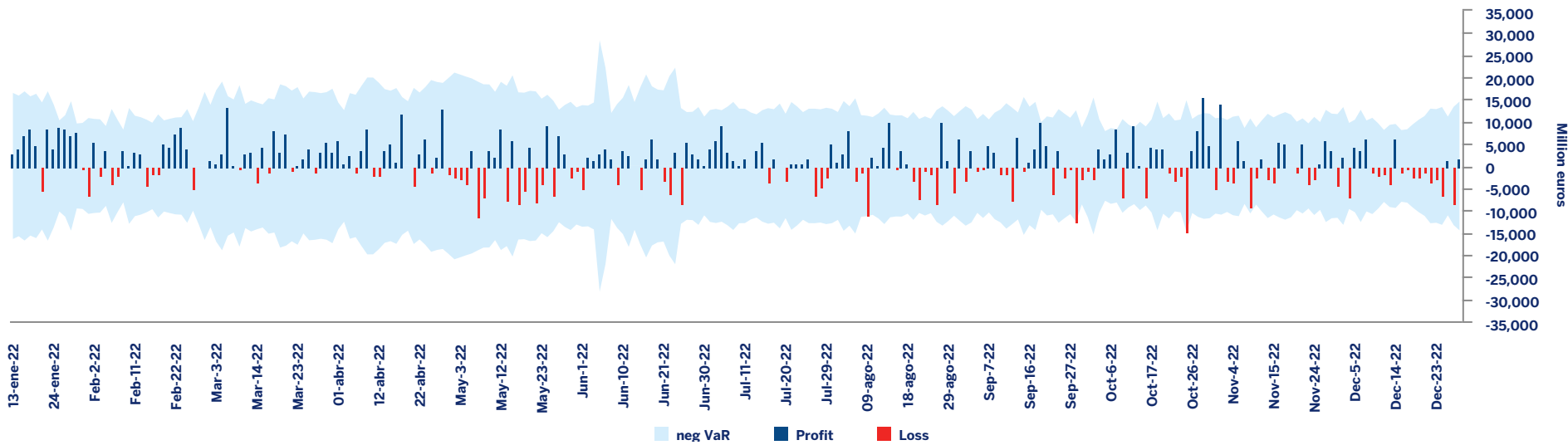


Chart 18. Trading book. Market Risk Model Validation for BBVA Mexico. Hypothetical Backtesting (EU MR4)

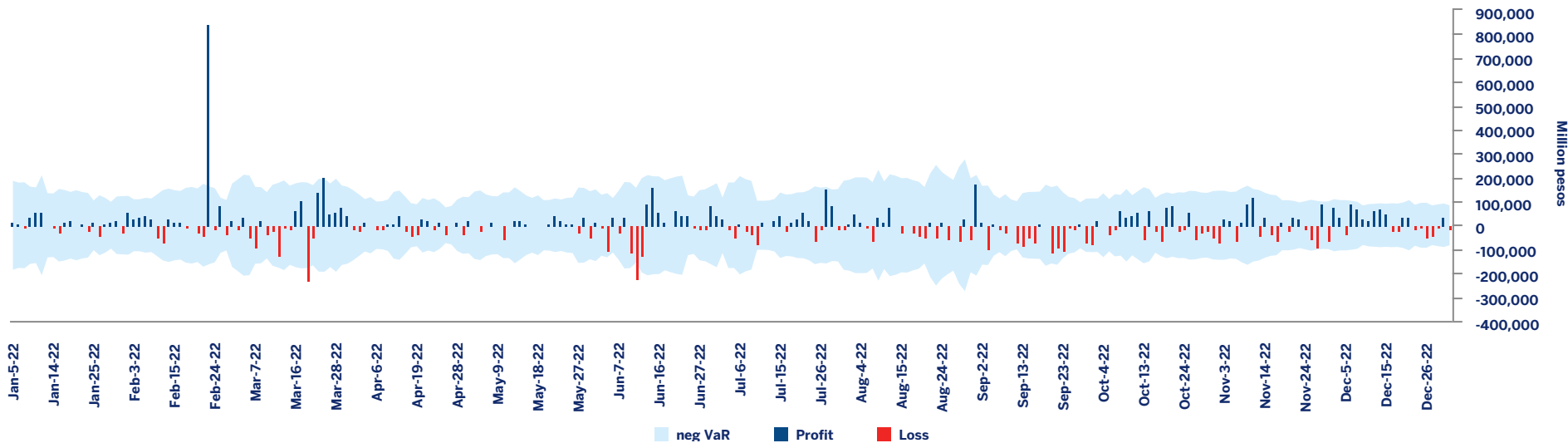
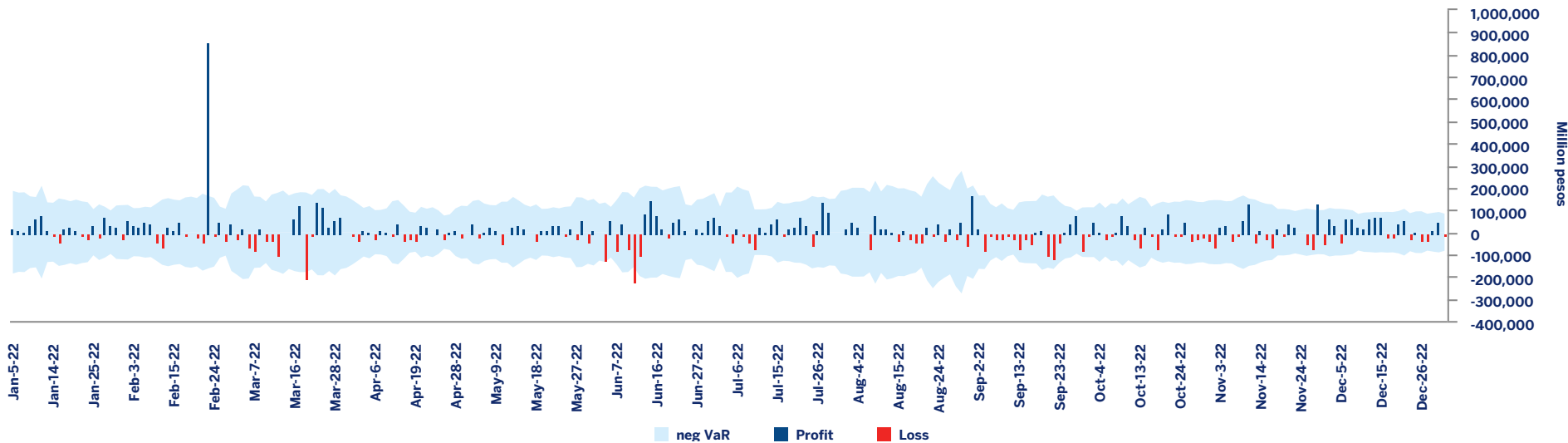


Chart 19. Trading book. Market Risk Model Validation for BBVA Mexico. Real Backtesting (EU MR4)



4.3.4.3. Characteristics of the risk management system

The Group has a risk management system in place which is appropriate for the volume of risk managed, complying with the functions set out in the Corporate Policy on Market Risk in Market Activities.

The risk units must have:

- A suitable organisation (means, resources and experience) in line with the nature and complexity of the business.
- Segregation of functions and independence in decision-making.
- Performance under integrity and good governance principles, driving the best practices in the industry and complying with the rules, both internal (policies, procedures) and external (regulation, supervision, guidelines).
- The existence of channels for communication with the relevant corporate bodies at local level according to their corporate governance system, as well as with the Corporate Area.
- All market risk existing in the business units that carry out trading activity must be adequately identified, measured and assessed, and procedures must be in place for its control and mitigation. On this point according to the Corporate Policy on Market Risk in Market Activities each business unit has established structured limits, sublimits and early alerts having a communication circuit that establishes the responsibilities of information at different levels and actions by the risk areas and business managers.
- The Global Market Risk Unit (GMRU), as the unit responsible for managing market risk at Group level, must promote the use of objective and uniform metrics for measuring the different types of risks.

4.4. Structural risk

The structural risks are defined, in general terms, as the possibility of suffering losses in the banking book due to adverse movements in market risk factors.

In the Group, the following types of structural risks are defined, according to their nature: interest rate risk, credit spread risk, exchange rate risk and equity risk.

The scope of structural risks in the Group excludes market risks in the trading book that are clearly delimited and separated and are part of the Market Risks category.

The Assets and Liabilities Committee (ALCO) is the main responsible body for the management of structural risks regarding liquidity/ funding, interest rate, credit spread, currency, equity and solvency. Every month, with the participation of the CEO and representatives from the areas of Finance, Risks and Business Areas, this committee monitors the structural risks and is presented with proposals with regard to action plans related with its management for its approval. These management proposals are made by the Finance area with a forward-looking focus, maintaining the alignment with the risk appetite framework, trying to guarantee the recurrence of results and financial stability, as well as to preserve the solvency of the entity. All balance sheet management units have a local ALCO, which is permanently attended by members of the Corporate Center, and there is a corporate ALCO where management strategies are monitored and presented in the Group's subsidiaries.

The GRM area acts as an independent unit, ensuring adequate separation between the management and risk control functions, and is responsible for ensuring that the structural risks in the Group are managed according to the strategy approved by the Board of Directors.

Consequently, GRM deals with the identification, measurement, monitoring and control of those risks and their reporting to the corresponding corporate bodies. Through the Global Risk Management Committee (GRMC), it performs the function of control and risk assessment and is responsible for developing the strategies, policies, procedures and infrastructure necessary to identify, evaluate, measure and manage the significant risks that the BBVA Group faces. To this end, GRM, through the corporate unit of Structural Risks, proposes a scheme of limits that defines the risk appetite set for each of the relevant structural risk types, both at Group level and by management units, which will be reviewed annually, reporting the situation periodically to the Group's corporate bodies as well as to the GRMC.

Additionally, both the management system and the control and measurement system for structural risks are necessarily adjusted to the Group's internal control model, complying with the evaluation and certification processes that comprise it. In this sense, the tasks and controls necessary for its scope of action have been

identified and documented, supporting a regulatory framework which includes specific processes and measures for structural risks, from a broad geographical perspective.

Within the three lines of defense scheme in which BBVA's internal control model is based according to the most advanced standards in terms of internal control, the first line of defense is maintained by the Finance area, which is responsible for managing the structural risk.

As a second line of defense, GRM is in charge of identifying risks, and establishing policies and control models, periodically evaluating their effectiveness.

In the second line of defense, there are also the Internal Risk Control units, which independently review the Structural Risk control, and Internal Financial Control, which carries out a review of the design and effectiveness of the operational controls over structural risk management.

The third line of defense is represented by the Internal Audit area, an independent unit within BBVA Group, which is responsible for reviewing specific controls and processes.

4.4.1. Structural interest rate risk

4.4.1.1. Scope and nature of interest rate risk and credit spread risk

The structural interest-rate risk in the Banking Book ("IRRBB") is defined as the potential change on an entity's net interest income and/or economic value of the equity due to variations in market interest rates with an impact on structural balance sheet positions.

Furthermore, the credit spread risk (CSRBB) in the banking book arises from the potential impact on the value of fixed-income portfolios and credit derivatives classified as HtC&S produced by a variation in the level of credit spreads associated with those instruments/ issuers and that are not explained by default risk or by movements in market interest rates.

When managing structural interest rate risk, the effects of interest rate fluctuations are considered from a double perspective: Impact on the economic value of equity and Impact on the net interest income of the entity. In addition, it is assessed the impact on the market value of financial instruments of the banking book that, due to their accounting treatment, could affect P&L and/or equity, as a result of: Interest rate risk fluctuations and Credit spread risk changes.

The banking book instruments accounted for its market value (fair value) are subject to a specific monitoring, due to their impact on risk and on the capital, through OCI (Other Comprehensive Income) or profit and loss (P&L). So, the analysis of the impact of interest rates fluctuations on earnings is completed. Furthermore, the impact on earnings is added to the risk metrics, through the combination of the effect of interest rate shocks on the NII and the impact on the market value of the instruments accounted at fair value.

Likewise, within the evaluation of risk sources, climate change risks (ESG) is considered through the incorporation of their potential effect on structural interest rate risk factors. This risk materializes on IRRBB through the potential impact on the valuation of fixed income portfolios (reflected in their credit spread) due to their exposure to transition risk.

Structural interest rate risk perimeter is limited to the structural balance sheet (banking book), and includes all those entities whose structural balance sheet contributes to the banking book of the Group, as well as their banking subsidiaries. All trading activities (trading book), developed by the Global Markets unit, are excluded from the scope, as they are included in the market risk monitoring and control process.

The exposure of a financial entity to adverse interest rates movements is a risk inherent to the development of the banking business, which is also, in turn, an opportunity to create economic value. Therefore, interest rate risk must be effectively managed so that it is limited in accordance with the entity's equity and in line with the expected economic result.

In BBVA, the purpose of structural interest rate risk management is to maintain the stability of the net interest income and the long-term sustainability of the equity in the event of interest rate fluctuations. It contributes to a recurrent generation of earnings, limits the capital consumption due to structural interest rate risk and monitors potential mark-to-market (MtM) impacts on "held to collect and sell" (HtC&S) portfolios. Likewise, the spread risk management in banking book portfolios is aimed at limiting the impact on the valuation of fixed income instruments, which are used for balance sheet liquidity and interest rate risk management purposes in order to increase diversification, and at reducing the concentration of each issuer, maintaining the spread risk at levels aligned with the total volume of the investment portfolio and the equity of the Group.

In order to manage the structural interest rate risk so that it remains within the approved limits, Global ALM (Balance-sheet management) uses fixed-rate bond portfolios with a conservative risk profile, as they are mainly invested in the country's sovereign bonds, which can be classified for accounting under the HTC&S or HTC modality. Additionally, financial derivatives are also used, which have hedge accounting treatment of both Fair Value Hedge and Cash Flow Hedge. Derivative

instruments (like swaps, forward agreements or interest rate options) may be used, always complying with the accounting requirements regarding their treatment as hedges minimizing the P&L impacts. Before being implemented, these tools have to be previously analysed and approved in the assets and liabilities committees (both at the local level and at the holding level) and are subsequently followed up in the next committees.

Structural interest rate risk is embedded in the economic capital adequacy process, in order to assure that it is adequately considered during the general allocation of capital of the entity.

IRRBB management is decentralized, and is carried out independently in each Group's entity, keeping the exposure to interest rates and credit spreads movements aligned with the strategy and the target risk profile of the Group, and in compliance with the regulatory requirements according to the EBA guidelines and the different local and supranational supervisory authorities. Besides, in order to preserve the capital position of the Group, the corporate unit of GRM-SSRR monitors the banking book exposure to interest rates at a consolidated level.

4.4.1.2. Nature of IRRBB and CSRBB

Structural interest rate risk may arise from different sources, which are part of the four types of risk faced by the entities:

- Repricing Risk: arises due to different maturity (fixed-rate products) or repricing (variable rate products) periods of assets, liabilities and off-balance sheet positions.
- Curve risk: arises from a change on the slope and/or curvature of the yield curve as a result of different fluctuations in each time slot.
- Basis risk: arises from imperfect correlation between changes on the reference interest rates for different instruments with similar repricing and maturity characteristics.
- Option risk: arises from the (implicit or explicit) options associated with certain balance sheet transactions that may change their future flows and generate mismatches in their maturities.

To monitor and control IRRBB and CSRBB, a comprehensive set of metrics is assessed on a regular basis, from a dual perspective of economic value (EVE) and net interest income (NII), including sensitivity and probabilistic measures.

Among others, EVE and NII sensitivity measures to parallel interest rate shifts are calculated, broken down by currency and yield curve. In addition, the aggregate cross-currency sensitivity is calculated in order to obtain

a figure of the total sensitivity of the entity to parallel shifts in multiple interest rate curves (currencies), considering the volatility of the currencies and their correlation among each other.

Scenarios of parallel and sudden rate shifts of different magnitudes are evaluated. The general shift reference is +/-100 bps, as well as the specific shock size calibrated for each currency according to its volatility, which is used to obtain the aggregate sensitivity. Negative rates scenarios are allowed until plausible levels according to the observed volatility.

Likewise, MtM sensitivity to parallel interest rates shocks is monitored in isolation for the structural balance sheet assets accounted at fair value, including fixed-income portfolios and derivatives. Furthermore, credit spread sensitivities are also estimated by comparing the MtM of the baseline scenario with the MtM recalculated after applying a consistent shock to the credit spreads of the discount rates curve of each security (market spread).

These metrics are complemented by the sensitivity on earnings, which adds the impact of a parallel and instantaneous interest rate shock, on the net interest income and on the future market value of the instruments of the Banking Book accounted at fair value, at the end of the projection horizon, generally 12 months.

The probabilistic measures are the main monitoring metrics, and they are included in the Risk Appetite by type of risk metrics. These measures complete the sensitivity analysis metrics as they consider additional effects like changes on the slope and shape of the curve or the basis among interest rate yield curves ("risk free"), as well as ramp shocks (gradual) of interest rates and credit spread shocks. The simulation methodology is based on an analysis of the major IRs components, on the basis of which different scenarios are generated for each currency with a specific probability of occurrence, calculating then the impact in terms of value and income for each scenario.

The IRRBB probabilistic metrics are composed by the Economic Capital (EC), and the Earnings at risk (EaR), and they estimate the maximum negative impact for a given horizon and confidence level, on the Economic Value and the projected NII, respectively.

Additionally, the Economic Capital for credit spread risk, quantifies the maximum negative variation in the MtM of the fixed income portfolios, accounted at fair value, that would arise due to credit spread shocks, with a given confidence level, and time horizon.

The periodicity of the calculation of the main risk measures is monthly, except for the contribution of the fair value instruments which is monitored on a weekly basis.

These measures are complemented with the periodical calculation of other scenarios that complete the analysis

of the entity risk, such as, changes of the slope/curvature, gradual shifts (ramps), individual shifts by tenor, individual shocks by curve (basis), or changes in model assumptions.

In addition to the analysis under normal conditions, stress tests are regularly run to assess the level of exposure to interest rate risk under stress scenarios of market variables. The stress scenarios are simulated based on historical information, and consider directional movements, changes in the slope, curvature and basis of the yield curves according to market stress conditions. These scenarios are evaluated from the two risk perspectives, economic value and net interest income.

The stress exercise is completed with a reverse stress test whose objective is to identify those scenarios capable of producing a certain impact within a set range of values.

Likewise, the stress scenarios of the market variables are complemented with stress tests to the main assumptions of the model.

Finally, the analysis of IRRBB scenarios under the ICAAP (Internal Capacity Adequacy Assessment Process) and GRM Stress Program processes are carried out, which assess, on a regular basis, global stress situations under a comprehensive view for the set of financial risks.

4.4.1.3. Key assumptions of the model

In order to measure structural interest rate risk, the setting of assumptions on the evolution and behaviour of certain balance sheet items is particularly relevant, especially those related to products without an explicit or contractual maturity which characteristics are not established in their contractual terms and must be therefore estimated

The assumptions that characterize these balance sheet items must be understandable for the areas and bodies involved in risk management and control and remain duly updated, justified and documented. The modelling of these assumptions must be conceptually reasonable and consistent with the evidence based on historical experience, reviewed at least once a year and, if any, the behaviour of the customers induced by the business areas. These assumptions are regularly subject to a sensitivity analysis to assess and understand the impact of the modelling on the risk metrics.

In view of the heterogeneity of the financial markets, customers and products in the multiple jurisdictions, each one of the entities of the Group is responsible for determining the behaviour assumptions to be applied to the balance sheet items, always under the guidelines and the applicability of the corporate models existing in the Group.

To calculate IRRBB measures, internal models are used to set the behavioural assumptions. The key modelling assumptions applied are:

Treatment of balance sheet items without a contractual maturity date:

- Non-maturity Deposits (NMDs)

The NMDs internal model distinguishes between volatile and stable deposits.

The volatile portion of NMDs is stripped out using the moving average of the historical series, which is shifted down according to the volatility of the error of the regression. The volatile part of deposits is assumed that matures at short term (<1 Month).

Meanwhile, the stable amount of deposits is run off to long term following a decay distribution estimated according to the conditional probabilities of maturity during the life of the product. Besides, based on the observed data and applying a conservatism criterion, a maximum life of 25 years is assumed, preventing the maturing cash flows to extend beyond that time.

The following table shows the average maturities obtained by the NMDs internal model:

Table 63. Average Maturities for NMDs (Years. 12-31-2022)

	Core deposits ⁽¹⁾	Full amount of deposits
Retail transactional	2.40	2.00
Retail non-transactional	3.20	2.40
Wholesale	3.30	1.60

⁽¹⁾ For Retail transactional includes stable deposits in current conditions, that may migrate to a different type of deposits in a higher interest rate environment.

Furthermore, the model also estimates the evolution of the mix of customer deposits, considering the potential migration between different types of deposits (demand / time deposits) under different interest rates scenarios. The potential asymmetry between the behaviour of balance stability in interest rate increase and decrease scenarios is considered in the analysis.

Finally, for those deposits with administered rates, the model estimates the translation dynamic of interest rates shocks to these accounts' remuneration, based on the analysis of its relationship with the evolution of market interest rates. For retail accounts a general floor is set at 0% assuming that retail customer rate will never be negative.

- Revolving Credit cards

They mature gradually according to the monthly expected average repayment rate.

Expectations about the exercise of interest rate options (explicit and implicit), both purchased or sold, under different interest rate scenarios:

- Loans subject to prepayment risk

The balance is segmented into several categories based on the characteristics of the loan and/or the client (that is, loan rate, original face amount, original maturity, scoring, etc.)

The "prepayment" behaviour, understood as all extraordinary payments over those established in the regular payment schedule and that therefore changes the contractual payment scheme, is then analysed in order to be modelled. The model captures total and partial prepayments, if relevant.

The potential link with the interest rates evolution is also examined, and incorporated in the model when the incentive of the client to pre-cancel determines the prepayment speed.

- Customer deposits with early redemption optionality

An early cancellation assumption is established for those deposits with a redemption option before maturity. The cancellation rate is based on the economic incentive of the client, and linked to the level of market interest rates, if applicable.

- Treatment of Non performing exposures (NPEs)

The amount of NPEs, net of provisions, is considered interest rate sensitive, while the provisioned amount is considered non-earning, consistently with the treatment of the allowances in the liability side. A maturity ladder is assigned to the expected recovery flows of the NPEs. The future cash flows distribution is estimated according to the internal Loss Given Default recovery model.

The governance of structural interest rate risk models is subject to internal model risk regulation, under the scope of GRM-Analytics. In this way, they must be properly inventoried and catalogued and comply with the requirements for their development, updating and management of the changes included in the internal procedures. Likewise, they are subject to the corresponding internal validations and monitoring requirements established based on their relevance, as well as back-testing procedures against experience to confirm the validity of the assumptions applied.

4.4.1.4. Evolution of IRRBB and CSRBB

2022 has been characterized by a change in monetary policy cycle as a consequence of the high inflation levels observed in most western economies. The impacts coming from the high energy prices and from the lingering bottlenecks in the supply chain caused by the COVID-19 pandemic, were amplified in March with the outbreak of the conflict between Russia and Ukraine. In this context, many Central Banks resorted to a tightening monetary policy with an upward trend of interest rates,

which is still ongoing and is expected to continue for most of 2023..

The European Central Bank decided in July to put an end to 8 years of negative levels in the Deposit Facility Rate, raising its reference rates by 50 basis points. Subsequently, in response to the high inflation projections, the ECB tightened its tone with two additional hikes in September and November, of 75 basis points each. Finally, they closed the year with a more contained increase of 50 basis points reaching the level of 2.50%, although stressing the message that this upward trend is set to continue in 2023.

Regarding Mexico, the Central Bank increases its efforts to contain inflation setting the monetary policy rate at 10.50% after 8 hikes in 2022 from a starting point of 5.50%.

In Turkey, the Central Bank cut interest rates by 500 basis points in several meetings throughout the second half of the year.

In South America, the monetary policy was restrictive, with Colombia and Peru raising their reference rates 900 and 500 basis points respectively, impacted by high inflation levels. With regard to Argentina, the reference rate increased by 3,700 basis points up to the 75% current level, also with the aim to curb inflation.

The BBVA Group, at an aggregate level, continues to maintain a moderate risk profile, in accordance with the established objective, showing a favourable position of net interest income to a rise in interest rates. Effective management of the balance sheet structural risk enabled the Group to mitigate the negative impact of the low interest rates in previous exercises, as well as to take advantage of the change in trend and benefit from the significant increases in 2022, which is reflected in the strength and recurrence of the net interest income:

The balance sheet in Spain is characterized by a high proportion of variable-rate loans (basically mortgages and corporate lending) and liabilities are composed mainly of demand customer deposits. The ALCO portfolio acts as a management lever and hedging for the balance sheet, mitigating its sensitivity to interest rate fluctuations. The balance sheet's interest rate profile has remained stable during the year, whereas the net interest income sensitivity has decreased slightly as interest rates rose. Nevertheless, Spain remains the Group's franchise with the highest positive sensitivity to rising rates.

Mexico, continues to show an equilibrium between balances referenced to fixed and variable interest rates.

Among the most sensitive assets to interest rate movements, the portfolio of corporate loans stands out, while consumer and mortgages are mostly at a fixed rate. With regard to liabilities, it is worth noting the relevant proportion of non-earning demand deposits, which are

not sensitive to interest rates movements. The ALCO portfolio is mainly invested in fixed-rate sovereign bonds with limited durations. The sensitivity of the net interest income continues to be limited, with a positive impact of 100 basis points increases in Mexican pesos around 2.2%.

In Turkey, the sensitivity of loans, mostly fixed-rate but with relatively short maturities, and the ALCO portfolio, contribute to offset the sensitivity from the deposits on the liability side. In this way, the net interest income sensitivity remains limited, both in Turkish lira and in foreign currency. The economic value sensitivity though, increases in 2022 mainly driven by the mandatory purchases of bonds required by the local Supervisor.

In South America, the risk profile on interest rates continues to be low, as most of the countries in the area have a fixed-variable mix and a maturity profile very similar between assets and liabilities, resulting in a limited net interest income sensitivity. Likewise, in countries with where balances-sheets are denominated in several currencies, interest rate risk is also managed for each of the currencies, showing a very low level of risk.

The table below shows the profile of average structural interest rate risk and credit spread risk of fixed income portfolio in the banking book classified as HtC&S in terms of sensitivities of the main currencies for the BBVA Group in 2022:

Table 64. Sensitivity to interest-rate and credit spread analysis (12-31-2022)

	Interest rate				Credit spread
	Impact on net interest income ⁽¹⁾		Impact on economic value ⁽²⁾		Impact on economic value ⁽²⁾
	100 basis-point increase	100 basis-point decrease ⁽³⁾	100 basis-point increase	100 basis-point decrease ⁽³⁾	100 basis-point increase
EUR	[1,5% , 3,5%]	[-1,5% , -0,5%]	[0,5% , 1,5%]	[-1,5% , -0,5%]	[-1,5% , -0,5%]
MXN	[0,5% , 1,5%]	[-1,5% , -0,5%]	[-1,5% , -0,5%]	[0,5% , 1,5%]	[-0,5% , 0,5%]
USD	[0,5% , 1,5%]	[-1,5% , -0,5%]	[0,5% , 1,5%]	[-1,5% , -0,5%]	[-0,5% , 0,5%]
TRY	[-0,5% , 0,5%]	[-0,5% , 0,5%]	[-0,5% , 0,5%]	[-0,5% , 0,5%]	[-0,5% , 0,5%]
Other	[-0,5% , 0,5%]	[-0,5% , 0,5%]	[-0,5% , 0,5%]	[-0,5% , 0,5%]	[-0,5% , 0,5%]
BBVA Group	[3,5% , 5,5%]	[-5,5% , -3,5%]	[0,5% , 1,5%]	[-1,5% , -0,5%]	[-3,5% , -1,5%]

⁽¹⁾Percentage of "12 months" net interest income for the BBVA Group.

⁽²⁾Percentage of CET1 (Fully Loaded) for BBVA Group.

⁽³⁾In EUR and USD (and GBP included in "Other"), negative interest rate scenarios are allowed up to plausible levels lower than current rates.

The key modelling and parametric assumptions used for internal calculations are the same as those used for the prescribed for the SOT(Supervisory Outlier Test) regulatory IRRBB metrics, except for the following settings:

- Multiple risk free discount curves are used in order to capture basis risk, instead of one single curve as for the SOT calculations.
- Floors applied to negative rates in the internal risk scenarios are different from the one prescribed for EBA SOT scenarios.
- Cross-currency aggregation methods, based on historical correlation among currencies, are used.

4.4.1.5. IRRBB SOT regulatory metrics

As described above, the structural interest rate risk in the banking book (IRRBB) is part of the entity's risk management framework and is included in the internal capital self-assessment process as part of Pillar 3.

The table below shows the changes in the economic value of equity (EVE) and in net interest income (NII):

Table 65. EU IRRBB1 - Interest rate risk in the banking book

Currency	Δ EVE	Δ EVE	Δ NII	Δ NII
	12-31-2022	6-30-2022	12-31-2022	6-30-2022
Parallel up	(2.58)%	(1.97)%	3.31 %	5.47 %
Parallel down	(0.15)%	(3.62)%	(8.56)%	(13.01)%
Steeper	1.37 %	1.09 %		
Flattener	(3.40)%	(2.86)%		
Short rates up	(3.97)%	(3.09)%		
Short rates down	1.78 %	0.83 %		

The SOT regulatory metrics have been calculated as described in the guidelines.

IRRBB measures cover the four principal material currencies (EUR, USD, MXN and TRY) up to a cumulative percentage of the banking book above 90%.

Reported changes of the economic value of equity (EVE) are calculated as follows:

- Changes in EVE under the six supervisory interest rate shock scenarios
- The supervisory maturity-dependent post-shock interest rate floor has been applied for each currency

- Changes in EVE are expressed as a percentage of BBVA's TIER 1 fully loaded at the reporting date
- Aggregate EVE change for each interest rate shock scenario has been calculated by adding together any negative and positive changes to EVE occurring in each currency. Positive changes have been weighted by a factor of 50%.
- Run-off balance sheet assumption: existing positions mature and are not replaced
- Own equity has been excluded from the computation of the exposure level
- Commercial margins are included in the interest cash flows

- Cash flows have been discounted using a risk-free rate yield curve

Reported changes of the net interest income (NII) are calculated as follows:

- Changes in projected NII over a forward-looking rolling 12-month period under the two parallel supervisory interest rate shock scenario out of the six supervisory shock scenarios for EVE
- The supervisory maturity-dependent post-shock interest rate floor has been applied for each currency
- Instantaneous shocks are applied
- Changes in NII are expressed as a percentage of BBVA's Net Interest Income of the last 12 months
- Aggregate NII change for each interest rate shock scenario has been calculated by adding together any negative and positive changes to NII occurring in each currency. Positive changes have been weighted by a factor of 50%.
- Dynamic balance sheet assumption
- New exposures are repriced considering the margin of new productions at the reporting date.
- Commercial margins are included in the interest cash flows
- Fees and commissions attributable for interest rate changes are not included

SOT metrics significance and evolution

SOT IRRBB metrics at Group level maintain a medium-low risk level, maintaining the negative exposure to parallel down scenario for the NII approach, while in the case of the EVE, the worst scenario among the 6 prescriptive scenarios becomes the scenario of rising short-term rates.

From both perspectives, the most significant impacts in the worst-case scenario come mainly from the local currency balance sheet of BBVA Mexico, where larger shocks are applied in the prescriptive scenarios, and to a lesser extent from the euro balance sheet of BBVA S.A.. In addition, the dollar balance sheet of both entities contributes negatively to the impacts on NII.

When compared to June-22 results, risk remains at moderate levels, with a slight worsening in the most damaging EVE scenario, and an improvement from the NII point of view. The most significant change occurs in the scenario of parallel down shock, with a decrease in risk from both perspectives. Several factors contribute to this development, the main ones being: the rise in market interest rates in euro, mainly due to its effect on demand deposits, and the higher sensitivity of TLTRO III following

the change in treatment as of November 24th. For the ratio levels, the increase in NII corresponding to the last 12 months compared to June-22 (+18%) is equally relevant.

4.4.2. Structural exchange rate risk

Structural exchange rate risk, is defined as the possibility of impacts on solvency, equity value and results driven by fluctuations in the exchange rates due to exposures in foreign currencies.

Structural exchange rate risk is inherent to the business of international banking groups, such as BBVA, that develop their activities in different geographies and currencies. At a consolidated level, structural exchange-rate risk arises from the consolidation of holdings in subsidiaries with functional currencies other than the euro. Its management is centralized in order to optimize the joint management of permanent foreign currency exposures, taking diversification into account.

The purpose of structural exchange rate risk management is protecting solvency by limiting volatility of the consolidated CET1 ratio and income to consolidate denominated in a currency other the euro in the Group, as well as to limit the capital requirements under exchange rate fluctuations to which the Group is exposed due to its international diversification. The ALM Global corporate unit, through the ALCO, is responsible for the management of this risk all through an active hedging policy, deliberately taken for each objective, and fully aligned with the management strategy.

At the corporate level, the risk monitoring metrics included in the limits framework are aligned with the Risk Appetite Framework, and are targeted to control the effects on the solvency through the economic capital metric and the fluctuations in the Common Equity Tier I fully loaded (CET1 fully loaded) consolidated ratio, as well as the maximum deviation in the Group's attributable profit. The probabilistic metrics make it possible to estimate the joint impact of exposure to different currencies taking into account the different variability in exchange rates and their correlations. These metrics are supplemented with additional assessment indicators.

The suitability of these risk assessment metrics is reviewed on a regular basis through backtesting exercises. The final element of structural exchange-rate risk control is the stress and scenario analysis aimed to assess the vulnerabilities of foreign currency structural exposure not contemplated by the risk metrics and to serve as an additional tool when making management decisions. The scenarios are based both on historical situations simulated by the risk model and on the risk scenarios provided by BBVA Research.

The purpose of the exchange rate risk management of BBVA's long term investments, which arises mainly from

its foreign franchises, is to preserve the capital ratios of the Group and to maintain the stability of the profits. The year 2022 was characterized by the weakness of the euro, especially pronounced in the first nine months of the year. Thus, the US dollar, which for some part of the year was trading below parity, closed the year with an appreciation of 6.2% against the euro. Among the emerging currencies, the Mexican peso appreciated strongly (11.0% against the euro) on the back of the positive perception of the country's fundamentals and the aforementioned weakness of the euro. The lira was again penalized in 2022 (-23.7%) by an unorthodox economic policy in a context of high inflation. As for the performance of South American currencies, the Peruvian sol was solid (11.0%), while the Chilean peso, somewhat more volatile, managed to appreciate against the euro (4.4%). The Colombian peso (-12.1%) and the Argentine peso (-38.3%) depreciated against the euro.

BBVA maintains management policies for the main investments in emerging countries in respect of, in average terms, between 40% and 50% of the aggregate attributable profit in non-euro currencies expected to be generated by the group in the next twelve months and around 70% of the aggregate excess capital in non-euro currencies. In relation to the CET1 capital ratio, the estimated impact at the end of 2022 of a 10% depreciation in the relevant currency was as follows: Mexican peso (-5 basis points); Turkish lira (-5 basis points) and U.S. dollar (+19 basis points).

The evolution of the structural exchange risk requirements in 2022 is in section 4.3.3. of this Report.

For the years 2022 and 2021, the estimated sensitivities of the result attributable to the parent company are shown below, taking into account the coverage, against depreciations and appreciations of 1% of the average rate in the main currencies. To the extent that hedging positions are periodically modulated, the sensitivity estimate attempts to reflect an average (or effective) sensitivity in the year:

Table 66. Sensitivity to 1% change (Million euros)

Currency	2022	2021
Mexican peso	19.1	14.0
Turkish lira	3.5	4.7
Peruvian sol	0.7	0.3
Chilean peso	0.4	0.6
Colombian peso	0.9	1.1
Argentine peso	1.9	0.6
US Dollar	—	—

4.4.3. Structural equity risk

Equity risk in the banking book refers to the possibility of suffering losses in the value of positions in shares and other equity instruments held in the banking book with long or medium term investment horizons due to fluctuations in the value of equity indexes or shares.

BBVA Group's exposure to structural equity risk arises largely from minority shareholdings held on industrial and financial companies, and in new business (innovation). This exposure is modulated in some portfolios with positions held on derivative instruments on the same underlying assets, in order to adjust the portfolio sensitivity to potential changes in equity prices.

The structural equity risk management is aimed at increasing the income-generating capacity of those shares held by the Group, limiting the capital requirements for equity risk and narrowing the impact on the solvency level through a proactive management of the portfolio using hedges. The function of managing the main structural equity portfolios is a responsibility of the specialized units of the corporate areas of Global ALM, Strategy & M&A and Client Solutions (Banking for Growth Companies). Their activity is subject to the corporate structural equity risk management policy, complying with the defined management principles and Risk Appetite Framework.

The structural equity risk metrics, designed by GRM according to the corporate model, contribute to the effective monitoring of the risk by estimating the sensitivity and the capital necessary to cover the possible unexpected losses due to changes in the value of the shareholdings in the Group's investment portfolio, with a level of confidence that corresponds to the objective rating of the entity, taking into account the liquidity of the positions and the statistical behavior of the assets to be considered

In order to analyze the risk profile in depth, stress tests and scenario analysis of sensitivity to different simulated scenarios are carried out. They are based on both past crisis situations and forecasts made by BBVA Research. These analyses are carried out regularly to assess the vulnerabilities of structural equity exposure not contemplated by the risk metrics and to serve as an additional tool when making management decisions.

Backtesting is carried out on a regular basis on the risk measurement model used.

Equity markets in Europe and the United States were negatively affected in 2022 by the tightening of financial conditions carried out by the Central Banks due to the rise in inflation. In many cases, the adjustment in share prices is attributed mainly to a correction in the valuation metrics than to a significant deterioration in relation to the expectation of corporate profits. The Spanish stock market closed the year with smaller falls than those presented by the main indices of other geographies in the euro area.

Structural equity risk, measured in terms of economic capital, has raised during the last year due to the higher exposure taken. The aggregate sensitivity of the BBVA Group's consolidated equity to a 1% fall in the price of shares of the companies making up the equity portfolio increased to €-24 million as of December 31, 2022,

compared to €-27 million as of December 31, 2021. This estimation takes into account the exposure in shares valued at market prices, or if not applicable, at fair value (excluding the positions in the Treasury Area portfolios) and the net delta-equivalent positions in derivatives on the same underlyings.

4.4.3.1. Classification of equity exposure not included in the trading book

The Group distinguishes between equity exposures in investments in associates, capital instruments classified as financial assets at fair value through other comprehensive income and non-trading financial assets mandatory at fair value through profit or loss.

The investments in associates are the investments in entities over which the Group has a significant influence. It is presumed that there is significant influence when 20% or more of the voting rights of the subsidiary are held, directly or indirectly, unless it can be clearly demonstrated that such influence does not exist. There are certain exceptions to this criterion that do not constitute significant amounts for the Group. These investments in associates are valued using the equity method.

The remaining capital instruments not held for trading are classified as:

The financial assets recorded in the heading "Non-trading financial assets mandatorily at fair value through

profit or loss" are derived from a business model which objective is to obtain the contractual cash flows and / or to sell those instruments but its contractual cash flows do not comply with the requirements of the SPPI test.

Financial assets are classified in "Financial assets designated at fair value through profit or loss" only if it eliminates or significantly reduces a measurement or recognition inconsistency that would otherwise arise from recognizing or measuring such financial assets on different bases.

Assets recognized under this heading in the consolidated balance sheets are measured at their fair value. This category of valuation implies the recognition of the information in the income statement as if it were an instrument valued at amortized cost, while the instrument is valued at fair value in the balance sheet. At the time of initial recognition of specific investments in equity instruments, the BBVA Group may make the irrevocable decision to present subsequent changes in fair value in other comprehensive income.

4.4.3.2. Risk-weighted assets of investments in associates and capital instruments

A breakdown of the RWAs to investments in associates and capital instruments by accounting portfolio and applicable method as of December 31, 2022 and as of December 31, 2021 is shown below:

Table 67. Breakdown of RWAs, equity investments and capital instruments by applicable approach (Million Euros)

	RWAs			Total	
	Internal Models	Simple Method	PD/LGD		
12-31-2022	Investments in associates	—	8,389	1,012	9,401
	Financial assets at fair value through other comprehensive income	239	463	1,238	1,940
	Non - trading financial assets mandatorily at fair value through profit or loss	242	1,515	—	1,757
12-31-2021	Investments in associates	—	8,121	1,150	9,271
	Financial assets at fair value through other comprehensive income	54	415	1,409	1,878
	Non - trading financial assets mandatorily at fair value through profit or loss	379	1,707	—	2,086

The table below shows the main variations in RWA of equity credit risk during year 2022:

Table 68. Variation in RWAs for Equity Risk (Million Euros)

RWA as of December 31, 2021	13,234
Asset size ⁽¹⁾	27
Acquisitions and disposals	400
Foreign exchange movements	45
Other ⁽²⁾	(609)
RWA as of December 31, 2022	13,097

⁽¹⁾ Asset size includes changes due to the revaluation of investments and the organic profit generation of Group's insurance companies.

⁽²⁾ Other includes the effect of the deduction significant holdings value in financial sector entities exceeding the joint limit with DTAs of 17.65% of CET1 (see section 3.2 letter n).

The portfolio mainly includes the Group's insurance companies, which for regulatory purposes are considered as investments in associates. It also includes stakes in real estate investment companies and equity holdings in other sectors, with a significant stake in Telefónica and Metrovacesa.

During 2022, the most significant movement corresponds to the agreement reached by BBVA to invest \$300 million (about €263 million) in the acquisition of a stake in Neon Payments Limited, a digital bank that facilitates access to financial services among individuals, the self-employed, and small Brazilian companies. Within the "Other" caption, the reduction of 609 million is mainly explained by the reduction in the book value of the Group's insurance companies due to the payment of dividends.

4.5. Liquidity Risk

Liquidity and funding risk is defined as the incapacity of a bank in meeting its payment commitments due to lack of funds or that, to face those commitments, should have to make use of funding under burdensome terms.

4.5.1. Liquidity and Funding strategy and planning

Liquidity and Funding Risk Management main target is to maintain a solid balance sheet structure which allows a sustainable business model.

Liquidity and Funding Risk Management aims, in the short term, to prevent an entity from having difficulties in meeting its payment commitments in due time and form or that, to meet them, it has to resort to obtaining funds in burdensome conditions that deteriorate the image or reputation of the entity.

In the medium term, its objective is to ensure the suitability of the Group's financial structure and its evolution, within the framework of the economic situation, the markets and regulatory changes.

The Group's liquidity and funding strategy is based on the following pillars:

- The principle of the funding self-sufficiency of its subsidiaries, meaning that each of the Liquidity Management Units (LMU) must cover its funding needs independently on the markets where it operates. This avoids possible contagion due to a crisis affecting one or more of the Group's LMU.
- Stable customer deposits as the main source of funding in all the LMU, in accordance with the Group's business model.
- Diversification of the sources of wholesale funding, in terms of maturity, market, instruments, counterparties and currencies, with recurring access to the markets.
- Compliance with regulatory requirements, ensuring the availability of ample liquidity buffers, of high quality, as well as sufficient instruments as required by regulations with the capacity to absorb losses.
- Compliance with the internal Liquidity Risk and Funding metrics, while adhering to the Risk Appetite level established for each LMU at any time.

This management of structural and liquidity funding is based on the principle of financial self-sufficiency of the entities that comprise it. This approach helps prevent and limit liquidity risk by reducing the Group's

vulnerability during periods of high risk. This decentralized management prevents possible contagion from a crisis affecting only one or a few Group entities, which must act independently to meet their liquidity requirements in the markets where they operate.

In addition, the policy for managing liquidity and funding risk is also based on the model's robustness and on the planning and integration of risk management into the budgeting process of each LMU, according to the liquidity and funding risk appetite that it decides to assume in its business.

Liquidity and funding planning is part of the strategic processes for the Group's budgetary and business planning. This objective is to allow a recurrent growth of the banking business with suitable maturities and costs within the established risk tolerance levels by using a wide range of instruments which allow the diversification of the funding sources and the maintenance of a high volume of available liquid assets.

A statement of the level of appropriateness of the liquidity risk management mechanisms is included as part of the Internal Liquidity Adequacy Assessment Process (ILAAP) approved by the Board of Directors in April 2022:

"From the internal assessment carried out, the Board of Directors concluded that the liquidity and funding management model is robust, with a medium-low liquidity and funding risk profile backed by the existing Risk Appetite Framework and the liquidity and funding planning. In the budget horizon, the impact of climate change risk on liquidity and funding is low.

Also, this liquidity and funding management model considers the liquid resources necessary and the ability to generate the additional measures to continue maintaining this profile over the planning horizon and to affront unexpected situations of tension.

The assessment reveals that BBVA Group entities maintain a robust funding structure and effective governance that enables the planning and management of liquidity and funding to be adapted to adverse situations.

In the context of the Ukraine conflict, no evidence has been found to date of relevant impacts on the liquidity position of the BBVA Group's LMUs. The solid starting position with the availability of ample liquidity buffers and the management capacity of the LMUs would allow to affront an eventual worsening and/or extension of this scenario.

All the processes described are subject to the BBVA Group internal control model, based on an organizational structure involving the 3 lines of defense that uses solid corporate methodologies and tools. The risks identified in these processes are sufficiently mitigated by controls

that have been tested during the year and that have worked correctly.”

4.5.2. Governance and monitoring

The responsibility for liquidity and funding management in the development of normal business activity lies with the Finance area as a first line of defense in managing the risks inherent to this activity, in accordance with the principles established by the EBA and in line with the most demanding standards, policies, procedures and controls in the framework established by the governing bodies. Finance, through the Balance-Sheet Management area, plans and executes the funding of the structural long-term gap of each LMU and proposes to the Assets and Liabilities Committee (ALCO) the actions to be taken on this matter, in accordance with the policies established by the Risk Committee in line with the metrics of the Risk Appetite Framework approved by the Board of Directors.

Finance is also responsible for preparing the regulatory reporting of liquidity, coordinating with the responsible areas in each LGU the necessary processes to cover the requirements at corporate and regulatory level, ensuring the integrity of the information provided.

GRM is responsible for ensuring that the liquidity and financing risk in the Group is managed in accordance with the framework established by governing bodies. It also deals with the identification, measurement, monitoring and control of such risks and their communication to the relevant corporate bodies. In order to carry out this task properly, the Risk function in the Group has been configured as a single, global function, independent of the management areas.

Additionally, the Group has, in its second line of defense, an Internal Risk Control unit, which performs an independent review of the control of Liquidity and Funding Risk, and a Financial Internal Control Unit that reviews the design and effectiveness of the controls operations on liquidity management and reporting.

As the third line of defense of the Group's internal control model, Internal Audit is in charge of reviewing specific controls and processes in accordance with a work plan that is drawn up annually.

The Group's fundamental objectives regarding the liquidity and funding risk are determined through the Liquidity Coverage Ratio (LCR) and through the Loan-to-Stable Customer Deposits (LtSCD) ratio.

The LCR ratio is a regulatory metric that aims to guarantee the resilience of entities in a scenario of liquidity tension within a time horizon of 30 days. Within its risk appetite framework and system of limits and alerts, BBVA has established a required LCR compliance level for the entire Group and for each individual LMU.

The internal levels required are aimed at efficiently meeting the regulatory requirement, at a loose level above 100%.

The LtSCD ratio measures the relationship between net lending and stable customer funds. The aim is to preserve a stable funding structure in the medium term for each of the LMU which make up the BBVA Group, taking into account that maintaining an adequate volume of stable customer funds is key to achieving a sound liquidity profile. In geographical areas with dual-currency balances, the indicator is also controlled by currency to manage the mismatches that might occur.

Stable customer funds are considered to be the financing obtained and managed from the LMU among their target customers. Those funds are characterized by their low sensitivity to market changes and by their less volatile behavior at aggregated level per operation due to the loyalty of the customer to the entity. The stable resources are calculated by applying to each identified customer segment a haircut determined by the analysis of the stability of the balances by which different aspects are evaluated (concentration, stability, level of loyalty). The main source of stable resources arises from wholesale funding and retail customer funds.

In order to establish the target (maximum) levels of LtSCD in each LMU and provide an optimal funding structure reference in terms of risk appetite, the corporate Structural Risks unit of GRM identifies and assesses the economic and financial variables that condition the funding structures in the different geographical areas.

Additionally, liquidity and funding risk management aims to achieve a proper diversification of the funding structure, avoiding excessive dependence on short-term funding by establishing a maximum level for the short-term funds raised, including both wholesale financing and the least stable proportion of customer funds. In relation to long-term financing, the maturity profile does not present significant concentrations, which makes it possible to adapt the schedule of the planned issuance plan to the best financial conditions in the markets. Lastly, concentration risk is monitored at LMU level, with the aim of ensuring a correct diversification of both the counterparty and type of instrument.

One of the fundamental metrics within the general management framework of the liquidity and funding risk is the maintenance of a liquidity buffer consisting of high quality assets free of charges which can be sold or offered as collateral to obtain funding, either under normal market conditions or in stress situations.

The Finance area is responsible for the collateral management and determining the liquidity buffer within the BBVA Group. According to the principle of auto-sufficiency of the Group's subsidiaries, each LMU is responsible for maintaining a buffer of liquid assets which complies with the regulatory requirements

applicable under each jurisdiction. In addition, the liquidity buffer of each LMU must be aligned with the liquidity and funding risk tolerance as well as the management limits set and approved for each case.

In this context, the short-term resistance of the liquidity risk profile is promoted, ensuring that each LMU has sufficient collateral to deal with the risk of the closing of wholesale markets. Basic capacity is the internal metric for the management and control of short-term liquidity risk, which is defined as the relationship between the explicit assets available and the maturities of wholesale liabilities and volatile resources, at different time periods up to one year, with special relevance at 30 and 90 days, with the objective of preserving the survival period above 3 months with the available buffer, without considering the balance inflows.

As a fundamental element of the liquidity and financing risk monitoring scheme, stress tests are carried out. They enable to anticipate deviations from the liquidity targets and the limits set in the appetite, and to establish tolerance ranges in the different management areas. They also play a major role in the design of the Liquidity Contingency Plan and the definition of specific measures to be adopted to rectify the risk profile if necessary.

For each scenario, it is checked whether BBVA has a sufficient stock of liquid assets to guarantee its capacity to meet the liquidity commitments/outflows in the different periods analyzed. The analysis considers four scenarios: one central and three crisis-related (systemic crisis; unexpected internal crisis with a considerable rating downgrade and/or affecting the ability to issue in wholesale markets and the perception of business risk by the banking intermediaries and the entity's clients; and a mixed scenario, as a combination of the two aforementioned scenarios). Each scenario considers the following factors: existing market liquidity, customer behavior and sources of funding, the impact of rating downgrades, market values of liquid assets and collateral, and the interaction between liquidity requirements and the development of BBVA's credit quality.

The stress tests conducted on a regular basis by GRM reveal that BBVA maintains a sufficient buffer of liquid assets to deal with the estimated liquidity outflows in a scenario resulting from the combination of a systemic crisis and an unexpected internal crisis, during a period of longer than 3 months in general for the different LMU (including Turkey closing the year above 6 months), including in the scenario of a significant downgrade of the Bank's rating by up to three notches.

Together with the results of the stress tests and the risk metrics, the early warning indicators play an important role within the corporate model and the Liquidity Contingency Plan. They are mainly indicators of the funding structure, in relation to asset encumbrance, counterparty concentration, flights of customer deposits, unexpected use of credit facilities, and of the market,

which help anticipate possible risks and capture market expectations.

Finance is the area responsible for the elaboration, monitoring, execution and update of the liquidity and funding plan and of the market access strategy to guarantee and improve the stability and diversification of the wholesale funding sources.

In order to implement and establish management in an anticipated manner, limits are set on an annual basis for the main management metrics that form part of the budgeting process for the liquidity and funding plan. This framework of limits contributes to the planning of the joint future performance of:

- The loan book, considering the types of assets and their degree of liquidity, as well as their validity as collateral in collateralized funding.
- Stable customer funds, based on the application of a methodology for establishing which segments and customer balances are considered to be stable or volatile funds based on the principle of sustainability and recurrence of these funds.
- Projection of the credit gap, in order to require a degree of self-funding that is defined in terms of the difference between the loan-book and stable customer funds.
- Incorporating the planning of securities portfolios into the banking book, which include both fixed-interest and equity securities, and are classified as financial assets at fair value through other comprehensive income and at amortized cost, and additionally on trading portfolios.
- The structural gap projection, as a result of assessing the funding needs generated both from the credit gap and by the securities portfolio in the banking book, together with the rest of on-balance-sheet wholesale funding needs, excluding trading portfolios. This gap therefore needs to be funded with customer funds that are not considered stable or on wholesale markets.

As a result of these funding needs, the BBVA Group plans the target wholesale funding structure according to the tolerance set in each LMU target.

Thus, once the structural gap has been identified and after resorting to wholesale markets, the amount and composition of wholesale structural funding is established in subsequent years, in order to maintain a diversified funding mix and guarantee that there is not a high reliance on short-term funding (short-term wholesale funding plus volatile customer funds).

In practice, the execution of the principles of planning and self-funding at the different LMU results in the Group's main source of funding being customer deposits, which consist mainly of demand deposits, savings deposits and time deposits.

As sources of funding, customer deposits are complemented by access to the interbank market and the domestic and international capital markets in order to address additional liquidity requirements, implementing domestic and international programs for the issuance of commercial paper and medium and long-term debt.

The process of analysis and assessment of the liquidity and funding situation and of the inherent risks is a process carried out on an ongoing basis in the BBVA Group, with the participation of all the Group areas involved in liquidity and funding risk management. This process is carried out at both local and corporate level. It is incorporated into the decision-making process for liquidity and funding management, with integration between the risk appetite strategy and establishment and the planning process, the funding plan and the limits scheme.

4.5.3. Liquidity and funding performance

The BBVA Group maintains a robust and dynamic funding structure with a predominantly retail nature, where customer resources represent the main source of funding.

During 2022, in an environment of higher uncertainty, liquidity conditions have remained comfortable in all the countries where the BBVA Group operates. It should be noted that the war in Ukraine has not had a significant impact on the liquidity and funding situation of the BBVA Group units.

The performance of the indicators show that the robustness of the funding structure remained steady during 2022 and 2021, in the sense that all LMU held self-funding levels with stable customer resources above the requirements.

Table 69. LtSCD by LMU

	2022	2021
Group (average)	96 %	95 %
BBVA S.A.	98 %	98 %
BBVA Mexico	98 %	93 %
Garanti BBVA	83 %	81 %
Other LMU	96 %	93 %

With respect to LCR, the Group has maintained a liquidity buffer at both a consolidated and individual level in 2022. As a result, the ratio has remained comfortably above 100%, with the consolidated ratio as of December 31, 2022 standing at 159%.

Although this requirement is only established at a Group level, for banks in the Eurozone, the minimum level required is comfortably exceeded in all subsidiaries. It should be noted that the calculation of the Consolidated LCR does not allow the transfer of liquidity between subsidiaries, so no excess liquidity may be transferred from these entities for the purpose of calculating the consolidated ratio. If the impact of these highly liquid assets was considered, the LCR would be 201%, or 42 basis points above the required level.

Table 70. LCR main LMU

	2022	2021
Group	159%	165%
BBVA S.A.	186 %	190 %
BBVA Mexico	199 %	245 %
Garanti BBVA	185 %	211 %

One of the key elements in BBVA's Group liquidity and funding management is the targeted maintenance of large high quality liquidity buffers in all business areas where the group operates.

Each entity maintains a sound liquidity buffer at the individual level for BBVA, S.A. and for each of its subsidiaries, such as BBVA Mexico, Garanti BBVA and the Latin American subsidiaries.

The Net Stable Funding Ratio (NSFR), defined as the result between the amount of stable funding available and the amount of stable funding required, requiring banks to maintain a stable financing profile in relation to the composition of their assets and off-balance sheet activities. This ratio should be at least 100% at all times. The NSFR ratio of the BBVA Group, stood at 135% as of December 31, 2022.

The NSFR of BBVA Group and its main LMU at December 31, 2022 and 2021, was the following:

Table 71. NSFR main LMU

	2022	2021
Group	135 %	135%
BBVA S.A.	125 %	126 %
BBVA Mexico	143 %	149 %
Garanti BBVA	166 %	162 %

Below is a matrix of residual maturities by contractual periods based on supervisory prudential reporting as of December 31, 2022 and 2021:

Table 72. Inflows - Contractual maturities (Million Euros. 12-31-2022)

	Demand	Up to 1 month	1 to 3 months	3 to 6 months	6 to 9 months	9 to 12 months	1 to 2 years	2 to 3 years	3 to 5 years	Over 5 years	Total
ASSETS											
Cash, cash balances at central banks and other demand deposits	9,227	66,497	—	—	—	—	—	—	—	—	75,724
Deposits in credit entities	—	3,870	319	433	434	468	242	183	6	83	6,040
Deposits in other financial institutions	3	2,199	1,012	746	516	344	971	816	551	830	7,988
Reverse repo, securities borrowing and margin lending	—	31,049	5,743	3,368	1,432	1,127	4,582	1,354	2,400	289	51,343
Loans and advances	99	24,622	32,009	25,622	14,827	16,766	41,049	32,510	43,828	96,201	327,534
Securities' portfolio settlement	1	4,031	4,107	8,200	4,305	4,746	18,417	8,744	23,307	31,480	107,338

Inflows - Contractual maturities (Million Euros. 12-31-2021)

	Demand	Up to 1 month	1 to 3 months	3 to 6 months	6 to 9 months	9 to 12 months	1 to 2 years	2 to 3 years	3 to 5 years	Over 5 years	Total
ASSETS											
Cash, cash balances at central banks and other demand deposits	39,761	24,598	—	—	—	—	—	—	—	—	64,359
Deposits in credit entities	—	3,781	400	790	373	299	211	166	8	26	6,056
Deposits in other financial institutions	2	901	801	584	727	432	694	470	261	469	5,343
Reverse repo, securities borrowing and margin lending	—	33,856	11,611	2,945	1,063	1,692	2,188	2,239	1,118	739	57,451
Loans and advances	174	18,531	23,185	22,141	11,769	13,782	39,656	30,049	44,508	94,780	298,574
Securities' portfolio settlement	10	1,779	3,606	3,395	2,333	3,958	18,854	13,135	17,214	47,331	111,614

Table 73. Outflows - Contractual maturities (Million Euros. 12-31-2022)

	Demand	Up to 1 month	1 to 3 months	3 to 6 months	6 to 9 months	9 to 12 months	1 to 2 years	2 to 3 years	3 to 5 years	Over 5 years	Total
LIABILITIES											
Wholesale funding	—	1,841	4,434	1,050	3,148	2,017	6,318	9,423	13,282	18,145	59,658
Deposits in financial institutions	2,176	7,885	628	806	56	694	648	211	396	399	13,899
Deposits in other financial institutions and international agencies	7,392	5,760	1,465	464	379	758	700	293	594	727	18,532
Customer deposits	302,667	38,951	18,542	6,776	2,575	2,870	1,476	1,276	798	273	376,203
Security pledge funding	—	51,638	14,543	17,736	866	1,503	8,136	1,524	3,493	575	100,013
Derivatives, net	—	(253)	24	(1,010)	(23)	175	40	(153)	(466)	(3,717)	(5,383)

Outflows - Contractual maturities (Million Euros. 12-31-2021)

	Demand	Up to 1 month	1 to 3 months	3 to 6 months	6 to 9 months	9 to 12 months	1 to 2 years	2 to 3 years	3 to 5 years	Over 5 years	Total
LIABILITIES											
Wholesale funding	—	3,065	1,077	3,498	2,914	1,885	9,477	4,931	12,332	19,991	59,169
Deposits from financial institutions	1,936	4,257	415	825	183	924	496	146	146	579	9,907
Deposits from other financial institutions and international agencies	8,894	2,728	1,700	382	289	227	578	231	337	722	16,087
Customer deposits	281,812	28,806	11,814	4,867	1,717	1,520	1,740	578	863	416	334,132
Security pledge funding	—	52,437	6,858	2,485	1,513	8,252	29,954	5,527	4,755	1,490	113,269
Derivatives, net	(33)	(395)	(176)	(326)	(66)	(641)	100	(122)	(155)	(66)	(1,880)

With regard to the financing structure, the loan portfolio is mostly financed by retail deposits. The “demand” maturity bucket mainly contains the retail customer sight accounts whose behavior historically showed a high level of stability and little concentration. According to a behavior analysis which is done every year in every entity, this type of account is considered to be stable and for liquidity risk purposes receive a better treatment.

The most relevant aspects related to the main geographical areas are the following:

- BBVA, S.A. has maintained a sound liquidity position. Commercial activity has generated liquidity due to greater growth in customer deposits above loan growth, especially in the last quarter of the year. In December, the Bank began the repayment of the TLTRO III program for an amount of €12 billion, corresponding to approximately one third of the total drawdown amount. On the other hand, in order to maintain sufficient collateral available, mortgage coverage and territorial bonds have been issued for an amount of €2 billion, held in treasury shares. Likewise, mortgage securitizations held in treasury shares have been issued, generating collateral for an amount of €4.4 billion.
- In BBVA Mexico, commercial activity has drained liquidity during 2022, due to the growth in lending activity that exceeded the growth of customer funds. Despite this, BBVA Mexico continues to hold a comfortable liquidity position that is deemed to be adequate and has carried out a cost-efficient funding management in an environment of rising rates.
- In Turkey, in the year 2022, the lending gap in local currency has been reduced, due to a greater growth in Turkish lira-denominated deposits than in loans. The lending gap in foreign currency has increased due to reductions in foreign currency deposits as a result of the measures established to encourage Turkish lira deposits, partially offset by lower loans in foreign currency. Garanti BBVA continues to maintain a stable liquidity position which is considered to be adequate. For its part, the Central Bank of Turkey has continued to implement measures in order to reduce the dollarization of the economy.

- In South America, the liquidity situation remains adequate throughout the region. In Argentina, liquidity continues to increase in the system and in BBVA due to a higher growth in deposits than in loans in local currency. In BBVA Colombia, lending activity grew more than funds, though this did not compromise the liquidity position of the bank due to the increase in longer-term deposits. BBVA Peru maintained solid liquidity levels, thanks to the solid growth of deposits in an environment of reduced local currency lending due to the expiration of loans covered by COVID-19 programs. The recent political instability has not had a material impact on liquidity.

The main wholesale financing transactions carried out by the companies of the BBVA Group are listed below:

- In relation to BBVA, S.A. during the year 2022 it has made an issuance of senior non-preferred debt in an amount of €1,000 million, two series of senior non-preferred debt securities in an aggregate amount of USD 1,750 million, six series of senior preferred debt securities in an aggregate amount of €4,065 million, a senior preferred bond (green bond) issuance for €1,250 million and two senior preferred bond (green bond) issuances in an aggregate amount of 425 million Swiss francs. Additionally, in May 2022, the convertible preferred shares (CoCos) issued by BBVA in May 2017 were redeemed early and in June 2022 a loan securitization transaction was completed in connection with vehicle financing loans for an amount of €1,200 million.
- For its part, BBVA México issued a sustainable bond for 10,000 million Mexican pesos (approximately €480 million), consequently becoming the first private bank to carry out an issue of this type in Mexico, taking as reference the TIIE rate (Interbank Equilibrium Interest Rate used in Mexico).
- Garanti BBVA renewed 100% of a syndicated loan indexed to environmental, social and corporate governance criteria consisting of two separate tranches of USD 283.5 million and €290.5 million, respectively, both maturing in one year. It also renewed the second part of a syndicated loan (USD 155 million or €239 million) with a ratio of 65% in line with its strategy and in line with the banks of the peer

group. Garanti BBVA also carried out a sustainable financing round of USD 75 million in 2022.

- BBVA Colombia closed a financing with International Finance Corporation (IFC) for USD 60 million over 3 years. A financing transaction of USD 200 million over 5 years and another of USD 40 million over 3 years was also carried out.

4.5.4. Liquidity and funding prospects

The Group faces 2023 with a comfortable liquidity situation in all the territories it operates in. The funding structure based on stable customer deposits and oriented towards the long term, as well as the proven capacity to access capital markets, allows to comfortably face the moderate volume of maturities expected for the coming quarters.

The following table is a breakdown of wholesale funding maturities of the most significant units of the Group according to their nature:

Table 74. Maturity of wholesale issuances of Balance Euro by nature (Million Euros)

Type of issuance	2023	2024	2025	After 2025	Total
Senior debt	2,808	965	3,718	5,071	12,562
Non preferred senior debt	1,650	2,000	1,938	4,255	9,843
Mortgage-covered bonds	2,350	1,000	2,371	2,055	7,776
Public-covered bonds	200	—	—	—	200
Preferred shares ⁽¹⁾	1,000	1,000	938	1,938	4,876
Subordinated debt ⁽¹⁾	150	750	1,183	2,321	4,404
Structured financing ⁽²⁾	4,711	282	211	1,358	6,562
Total	12,869	5,997	10,359	16,998	46,223

⁽¹⁾ Regulatory capital instruments are classified in this table by terms according to their contractual maturity or nearest amortisation option.

⁽²⁾ Global Markets MTN programme amounts not eligible as MREL, classified according to their earliest repayment option.

Table 75. Maturity of wholesale issuances of BBVA Mexico by nature (Million Euros)

Type of issuance	2023	2024	2025	After 2025	Total
Senior debt	603	703	756	1,541	3,603
Subordinated debt ⁽¹⁾	—	188	—	1,641	1,829
Total	603	891	756	3,181	5,431

⁽¹⁾ Regulatory capital instruments are classified in this table by terms according to their contractual maturity or nearest amortisation option.

Table 76. Maturity of wholesale issuances of BBVA Garanti by nature (Million Euros)

Type of issuance	2023	2024	2025	After 2025	Total
Senior debt	543	117	—	20	680
Mortgage-covered bonds	8	—	—	—	8
Subordinated debt ⁽¹⁾	—	—	—	703	703
Securitisations	119	124	39	32	313
Syndicated loans	941	—	—	—	941
Other long term financial instruments	254	126	116	1,591	2,087
Total	1,864	367	155	2,346	4,731

⁽¹⁾ Regulatory capital instruments are classified in this table by terms according to their contractual maturity or nearest amortisation option.

Table 77. Maturity of wholesale issues of South America by nature (Million Euros)

Type of issuance	2023	2024	2025	After 2025	Total
Senior debt	311	298	153	37	799
Subordinated debt ⁽¹⁾	70	—	375	512	957
Total	381	298	528	549	1,756

⁽¹⁾Regulatory capital instruments are classified in this table by terms according to their contractual maturity or nearest amortisation option.

Going into 2023, one of the main objectives of the Group's funding strategy is maintaining the strength of the financing structure based on the growth of stable customer resources; diversifying the different sources of financing and ensuring the availability of sufficient levels of liquid assets; and optimizing the generation of collateral, for compliance with regulatory ratios, and other internal metrics to monitor liquidity and funding risk, including stress scenarios.

4.5.5. LCR disclosure

A breakdown of the LCR disclosure as of December 31, 2022 is shown below, according to Article 435 of Regulation (EU) No 575/2013. These figures are calculated as simple averages of end-of-month observations from the twelve months preceding each quarter. No transfer of liquidity is assumed between subsidiaries, and therefore no excess liquidity is transferred from the entities abroad to the consolidated figures displayed in the following table:

Table 78. EU LIQ1: Liquidity Coverage Ratio disclosure (Rounded Million Euros)

End of the quarter	Total unweighted value (average)					Total weighted value (average)				
	December	September	June	March	December	December	September	June	March	December
	12-31-2022	9-30-2022	6-30-2022	3-31-2022	12-31-2021	12-31-2022	9-30-2022	6-30-2022	3-31-2022	12-31-2021
Number of data points used in the calculation of averages	12	12	12	12	12	12	12	12	12	12
High-quality liquid assets										
Total high-quality liquid assets (HQLA)						108,648	105,293	104,585	106,449	110,132
Cash-outflows										
Retail deposits and deposits from small business customers, of which:	244,274	238,203	232,339	233,264	239,938	16,695	16,283	15,872	15,923	16,365
Stable deposits	163,188	160,342	157,401	158,420	162,692	8,159	8,017	7,870	7,921	8,135
Less stable deposits	74,160	71,703	69,414	69,318	71,068	8,535	8,266	8,002	8,002	8,231
Unsecured wholesale funding	125,126	119,827	114,458	114,411	119,110	50,786	48,161	46,063	45,853	47,971
Operational deposits (all counterparties) and deposits in networks of cooperative banks	59,408	57,838	55,522	55,470	56,173	13,738	13,409	12,888	12,837	12,930
Non-operational deposits (all counterparties)	64,649	60,817	57,984	57,972	61,809	35,979	33,580	32,223	32,047	33,913
Unsecured debt	1,069	1,172	952	969	1,128	1,069	1,172	952	969	1,128
Secured wholesale funding						3,174	2,818	2,936	3,026	3,297
Additional requirements	86,584	83,660	80,968	81,649	84,384	20,752	19,897	19,289	19,206	18,819
Outflows related to derivative exposures and other collateral requirements ⁽¹⁾	11,073	10,606	10,326	10,099	9,359	11,073	10,606	10,326	10,099	9,348
Outflows related to loss of funding on debt products	190	190	183	262	278	190	190	183	262	278
Credit and liquidity facilities	75,321	72,864	70,459	71,288	74,747	9,489	9,101	8,780	8,845	9,193
Other contractual funding obligations	16,193	15,340	13,784	12,753	12,153	2,702	2,278	2,163	2,009	1,617
Other contingent funding obligations	95,807	91,791	87,509	84,689	83,917	3,687	3,595	3,510	3,442	3,472
Total cash outflows						97,796	93,032	89,833	89,459	91,541
Cash - inflows										
Secured lending (e.g. reverse repos)	25,199	24,404	23,033	21,377	20,102	1,496	1,167	1,036	962	929
Inflows from fully performing exposures	34,390	32,212	29,987	28,141	27,362	23,280	21,709	19,903	18,532	17,770
Other cash inflows	6,576	6,335	6,060	6,675	6,010	6,576	6,335	6,060	6,675	6,010
transactions in third countries where there are transfer restrictions or which are (Excess inflows from a related specialised credit institutions)										
Total cash inflows	66,165	62,951	59,080	56,193	53,474	31,352	29,211	26,999	26,169	24,709
Fully exempt inflows										
Inflows subject to 90% cap										
Inflows subject to 75% cap	66,165	62,951	59,080	56,193	53,474	31,352	29,211	26,999	26,169	24,709
Total adjusted value										
Liquidity buffer						108,648	105,293	104,585	106,449	110,132
Total net cash outflows						66,443	63,822	62,833	63,289	66,833
Liquidity coverage ratio (%)						164 %	165 %	167 %	169 %	166 %
Liquidity buffer (including excess liquidity of subsidiaries)						140,252	136,315	133,743	134,596	138,218
Total net cash outflows						66,443	63,822	62,833	63,289	66,833
Liquidity coverage ratio (%)						211.1 %	213.6 %	212.9 %	212.7 %	206.8 %

⁽¹⁾ Includes the amount of the collateral that the entity would have to provide in case of a credit downgrade, according to CRR Article 439(d).

The BBVA Group's consolidated ratio is mainly determined by the ratio of the three largest units that make up the Group: BBVA SA, BBVA Mexico and Garanti BBVA. In addition, as no transferability of liquidity between the subsidiaries is assumed, no excess liquidity is transferred from the entities abroad to the consolidated metric, so the evolution of the consolidated ratio is closely linked to the evolution of BBVA SA's LCR. Throughout the series shown in the table, the LCR has been at high levels, reflecting the Group's comfortable and comfortable liquidity situation.

As regards the numerator of the ratio, one of the key elements in the BBVA Group's management of liquidity and funding is the maintenance of large high-quality liquidity buffers in all geographic areas. In the last 12 months, the Group maintained an average volume of high quality liquid assets (HQLA) of €108.6 billion (€140.3 billion if we consider the excess liquidity of all the banks abroad), of which 95% corresponded to top quality assets (level 1).

As regards the composition of the denominator of the LCR, the main source of funding for all the Group's banks is retail deposits, liabilities of a stable nature which therefore produce fewer potential outflows in the LCR ratio. The Group also has sources of wholesale funding that are adequately diversified in terms of maturity, instrument, market, currency and counterparty, oriented towards the long term, which are considered less stable for the purposes of the LCR, generating greater potential outflows.

Regarding the sustainability of wholesale funding as a source of funding, this depends on the degree of diversification. In particular, in order to ensure adequate diversification by counterparties, specific concentration thresholds are set and must be met at all times by each LMU. As of December 31, 2022, except for the positions against central clearing houses and the secured funding operations with several Central Banks, the Group has no counterparties that maintain balances greater than 1,5% of the Group's total liabilities and the weight of the first 10 counterparties per balance represents 5%.

The establishment of an independent control framework for the Euro, USA, Mexico and Turkey LMUs, allows compliance with the Liquidity and Finance corporate requirements on the four main currencies in which the BBVA Group operates: Euro, Dollar, Mexican Peso and Turkish Lira.

With the exception of the dollar, significant currencies at the Group level are fully managed by entities resident in the jurisdictions of each of them, with their funding needs covered in the local markets in which they operate.

For those LMUs operating in dollarised economies (Argentina, Peru, Mexico and Turkey) there are specific regulatory requirements that limit the level of risk of each subsidiary. In addition, the LCR in US dollars in all of them exceeds 100%.

Finally, the Group's exposure to derivatives is limited (see section on counterparty risk exposure). In addition, the LCR of the different LMU's includes liquidity outflows arising from the need to post additional collateral, the most relevant cases being the deterioration of the entity's credit quality, the excess collateral to be returned to the counterparty, and the impact of an adverse market scenario. For the quantification of additional collateral in case of adverse market scenarios, a Historical Look Back Approach is used in accordance with the EBA RTS (Article 423(3) of the CRR).

4.5.6. Net Stable Funding Ratio

Within its risk appetite framework, BBVA has included the NSFR indicator within the limits scheme for both the Group as a whole and for each individual LMU, aimed at keeping this metric at a comfortable level above 100%.

A table including the main components of NSFR is shown below:

Table 79. EU LIQ2 - Net Stable Funding Ratio (NSFR) (Rounded Million euros. 12-31-2022)

	Unweighted value by residual maturity				Weighted value
	No Maturity	< 6 months	6 months to <1 year	>= 1 year	
Available stable funding (ASF) Items					
Capital items and instruments	51,732	—	—	7,711	59,443
Own funds	51,732	—	—	6,023	57,755
Other capital instruments		—	—	1,688	1,688
Retail deposits		247,403	3,616	1,979	236,427
Stable deposits		169,569	1,047	754	162,839
Less stable deposits		77,834	2,569	1,225	73,588
Wholesale funding:		235,805	10,888	52,247	118,679
Operational deposits		61,793	—	—	30,897
Other wholesale funding		174,012	10,888	52,247	87,783
Interdependent liabilities		—	—	—	—
Other liabilities:	2,023	19,467	2	10,690	10,691
NSFR derivative liabilities	2,023				
All other liabilities and capital instruments not included in the above categories		19,467	2	10,690	10,691
Total available stable funding (ASF)					425,240
Required stable funding (RSF) Items					
Total high-quality liquid assets (HQLA)					6,153
Assets encumbered for a residual maturity of one year or more in a cover pool		220	217	5,260	4,843
Deposits held at other financial institutions for operational purposes		137	—	—	68
Performing loans and securities:		131,773	36,356	244,616	254,250
Performing securities financing transactions with financial customers collateralised by Level 1 HQLA subject to 0% haircut		33,146	2,021	3,252	5,516
Performing securities financing transactions with financial customer collateralised by other assets and loans and advances to financial institutions		14,951	1,368	9,231	11,171
Performing loans to non- financial corporate clients, loans to retail and small business customers, and loans to sovereigns, and PSEs, of which:		67,379	27,350	143,951	167,772
With a risk weight of less than or equal to 35% under the Basel II Standardised Approach for credit risk		5,680	3,431	21,677	20,379
Performing residential mortgages, of which:		2,902	2,909	80,714	60,085
With a risk weight of less than or equal to 35% under the Basel II Standardised Approach for credit risk		2,226	2,268	58,560	40,559
Other loans and securities that are not in default and do not qualify as HQLA, including exchange-traded equities and trade finance on-balance sheet products		13,395	2,707	7,468	9,707
Interdependent assets		—	—	—	—
Other assets:	—	24,139	1,801	36,512	42,778
Physical traded commodities				190	161
Assets posted as initial margin for derivative contracts and contributions to default funds of CCPs		—	—	853	725
NSFR derivative assets		3,630	—	—	3,630
NSFR derivative liabilities before deduction of variation margin posted		11,337	—	—	567
All other assets not included in the above categories		9,172	1,801	35,469	37,695
Off-balance sheet items		6,551	2,085	118,888	7,003
Total RSF					315,094
Net Stable Funding Ratio (%)					135 %

EU LIQ2 - Net Stable Funding Ratio (NSFR) (Rounded Million euros. 12-31-2021)

	Unweighted value by residual maturity				Weighted value
	No Maturity	< 6 months	6 months to <1 year	>= 1 year	
Available stable funding (ASF) Items					
Capital items and instruments	51,522	—	—	9,477	60,999
Own funds	51,522	—	—	7,283	58,805
Other capital instruments		—	—	2,194	2,194
Retail deposits		226,717	2,287	1,902	215,961
Stable deposits		158,159	954	552	151,709
Less stable deposits		68,558	1,334	1,350	64,252
Wholesale funding:		184,057	16,699	78,957	139,857
Operational deposits		57,873	—	—	28,937
Other wholesale funding		126,183	16,699	78,957	110,921
Interdependent liabilities		—	—	—	—
Other liabilities:	4,111	16,623	9	13,938	13,942
NSFR derivative liabilities	4,111				
All other liabilities and capital instruments not included in the above categories		16,623	9	13,938	13,942
Total available stable funding (ASF)					430,759
Required stable funding (RSF) Items					
Total high-quality liquid assets (HQLA)					10,862
Assets encumbered for a residual maturity of one year or more in a cover pool		1,882	1,328	21,228	20,773
Deposits held at other financial institutions for operational purposes		143	—	—	71
Performing loans and securities:		111,432	28,309	224,063	233,874
Performing securities financing transactions with financial customers collateralised by Level 1 HQLA subject to 0% haircut		35,693	1,369	3,224	5,129
Performing securities financing transactions with financial customer collateralised by other assets and loans and advances to financial institutions		13,410	2,221	7,861	10,073
Performing loans to non- financial corporate clients, loans to retail and small business customers, and loans to sovereigns, and PSEs, of which:		50,012	19,186	127,762	203,902
With a risk weight of less than or equal to 35% under the Basel II Standardised Approach for credit risk		2,900	1,993	19,576	49,224
Performing residential mortgages, of which:		2,756	2,633	71,260	—
With a risk weight of less than or equal to 35% under the Basel II Standardised Approach for credit risk		1,469	1,431	40,117	—
Other loans and securities that are not in default and do not qualify as HQLA, including exchange-traded equities and trade finance on-balance sheet products		9,561	2,900	13,956	14,770
Interdependent assets		—	—	—	—
Other assets:	—	33,379	939	39,959	47,428
Physical traded commodities				295	251
Assets posted as initial margin for derivative contracts and contributions to default funds of CCPs		—	—	729	620
NSFR derivative assets		5,359	—	—	5,359
NSFR derivative liabilities before deduction of variation margin posted		13,480	—	—	674
All other assets not included in the above categories		14,540	939	38,935	40,524
Off-balance sheet items		4,736	1,547	103,934	6,009
Total RSF					319,017
Net Stable Funding Ratio (%)					135 %

The table shows a balanced funding structure that maintains a significant volume of retail deposits as the main source of funding for investment activity. This type of funds is characterised by a more favourable treatment for NSFR purposes, given its low sensitivity to market fluctuations and its low volatility in aggregate balances per transaction, as a result of customer linkage. This results in a level of NSFR that comfortably exceeds the regulatory requirement of 100%, with a stable evolution over time.

4.5.7. Encumbered assets in funding operations

In relation to the management of encumbered liquid assets³, all LMUs maintain adequate positions not only to cover the minimum survival periods in a stress situation, but also uncollateralised wholesale liabilities, which are ultimately the most affected by the ratio of encumbered assets.

All of the Group's LMUs have implemented procedures and controls to ensure that the risk associated with the management of guarantees and asset assessment are properly identified, controlled and managed in compliance with the Corporate Liquidity and Financing Risk Policy, highlighting: i) monitoring and control scheme for encumbered assets risk indicators, ii) periodic evaluation of stress scenarios as a result of the risk levels achieved, and iii) a contingency plan with action measures based on the degree of criticality and immediacy of the situation.

The impact on the business model of the level of the asset pledging, as well as the importance in the Group's funding model is low because the funding is based on stable customer deposits, the dependence on short term funding is reduced, and a robust funding structure is maintained, with a moderate level of encumbered assets.

The ratio of encumbered assets to total assets for the main LMUs as of December 31, 2022 is:

Table 80. Encumbered assets over total assets ratio (12-31-2022)

BBVA Group	18 %
LMU Euro	22 %
LMU Mexico	11 %
LMU Garanti	8 %

The Group mainly has the following sources of encumbrance:

- **Assets sold under repurchase agreement**

Collateralized financing transactions through repurchase agreements are among the the short-term sources of funding. These transactions play an important role in the Group's encumbered assets, with debt securities being the main asset used.

- **Assets pledged with Central Banks**

The role of central banks as ultimate liquidity providers is one of the key contingent funding resources in the event of stress in the financial markets. In this regard, and in accordance with the principles established for collateral

management, the Group's strategy is to maintain extensive credit facilities with the respective central banks by pledging assets as collateral in those geographical areas where these instruments exist as part of monetary policy.

Additionally, a relevant element is, in the case of the ECB, the non-standard monetary policy measures related to the "Targeted Longer-Term Refinancing Operations" (TLTRO) to provide long-term financing with the aim of easing credit conditions for the private sector and stimulating financing for the real economy. In this regard, BBVA S.A. maintained at the end of December 2022 an amount drawn down under the TLTRO III program of 26,411 million euros.

- **Management of collateral agreements**

The use of collateral is one of the most effective techniques to mitigate credit risk exposure arising from derivatives, repo transactions or securities lending. The assets currently used as collateral are: cash and debt securities.

- **Securitisation**

The issuance of securitisation represents one of the main potential sources of risk of assets pledged on the balance sheet. Depending on the type of assets backing the securitisation, the following classes are issued: residential mortgage-backed securities (RMBS), consumer loans and loans to SMEs. The impact of this pledging source is very low for the Group.

- **Covered bonds**

The issuance of covered bonds is one of the main sources of secured funding with a high degree of protection for bondholders. The issuances are backed by on-balance sheet assets that can be pooled and have a joint guarantee by the entity that will back the issuance in the event that the underlying assets are unable to meet payments. The products through which this type of funding is implemented are mortgage covered bonds, public covered bonds and internationalisation covered bonds.

Mortgage covered bonds are issued with first-rank mortgage loan collateral constituted in favour of the bank. These represent the majority of the Group's covered bond issuances. Public covered bonds are backed by loans and credits granted by the issuer to the State, to central and regional governments, local authorities and autonomous bodies dependent on them, as well as other analogous entities of the European Economic Area. Finally, internationalization bonds are issued to guarantee credits and loans linked to the funding of contracts for the export of goods and services

³ An asset is considered encumbered if it is subject to any form of agreement with the objective of ensuring, collateralizing or improving the credit quality of a transaction, and it cannot be freely removed.

In any case, the consideration of a committed asset is not based on an explicit legal definition, such as the transfer of a title, but on an economic criterion, so any asset that is subject to any restriction to be used or to replace another asset, is considered pledged.

or for the internationalization of companies. As of December 2022, there are no internationalization covered bond issuances in the Group.

Regarding the specific overcollateralization applied to these issuances:

Royal Decree-Law 24/2021 transposing Directive (EU) 2019/2162 on covered bonds with effect from July 8, 2022 establishes that mortgage, public and internationalization covered bonds must have the minimum level of legal over-collateralization foreseen in the first paragraph of Article 129.3a of Regulation (EU) No. 575/2013 of June 26, 2013 (CRR), which is established at 5% over the nominal value.

This regulation establishes that the cover pool must include at all times an additional liquidity buffer consisting of high quality liquid assets available to cover the maximum accumulated net liquidity outflow in the 180 days following the covered bond program. As of December 2022, this liquidity buffer is formed by level 1 debt securities.

Within the Group there are units responsible for the execution, monitoring and control of this type of issuances, as well as the calculation of the additional

capacity issuances, with the aim of ensuring that the entity is not over-issued and that it complies with the established limits of the Asset Encumbrance Ratio.

The following table shows assets pledge as collateral (loans) underlying the issuance of covered bonds, as well as the total issued and excess capacity to issue as of December 31, 2022:

Table 81. Covered bonds (Million Euros. 12-31-2022)

Retained	
Retained used	21,540
Retained not used	—
Placed on market	7,976
Total covered bonds issued	29,516
Eligible collateral to consider	57,616
Maximum to issue	54,872
Capacity to issue	25,356

The carrying amount, both encumbered and unencumbered, of the pool of assets underlying the retained securitization and covered bonds, as well as the carrying amount of the related issued liabilities as of December 31, 2022, is shown in the following table:

Table 82. Covered bonds and securitisations issued and retained (Million Euros. 12-31-2022)

	Carrying amount of underlying assets		Carrying amount of liabilities issued retained	
	Unencumbered	Encumbered	Unencumbered	Encumbered
Covered bonds and securitisation issued and retained	19,217	29,383	18,083	29,076
Covered bonds issued and retained	16,169	6,448	15,399	6,141
Securitisation issued and retained	3,048	22,935	2,684	22,935

The assets on the balance sheet and the collaterals received that, as of December 31, 2022, are encumbered (provided as collateral or guarantee with respect to certain liabilities), as well as the collateral that is unencumbered, are shown below. It should be noted that the value used for the purpose of this disclosure is the carrying amount and fair value, for both the assets on the balance sheet and the encumbered and unencumbered guarantees received. The balances are calculated as annual medians using as a sample the four quarters of the last year.

Table 83. EU AE1 - Encumbered and unencumbered Assets (Million Euros. 12-31-2022)

	Carrying value of encumbered assets		Fair value of encumbered assets		Carrying value of unencumbered assets		Fair value of unencumbered assets	
		of which notionally eligible EHQLA and HQLA		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA		of which EHQLA and HQLA
Institution's assets	117,158	35,293			570,694	107,525		
Equity instruments	496	195	496	385	7,108	3,669	7,108	3,669
Debt securities	37,179	34,888	36,503	34,956	70,133	37,473	70,810	36,941
Of which: covered bonds	23	19	23	23	101	96	101	95
Of which: ABSs	6	—	6	—	131	—	129	—
Of which: issued by general governments	32,252	32,053	31,234	30,936	59,724	36,511	60,754	36,151
Of which: issued by financial corporations	1,723	759	1,859	1,543	4,062	240	3,923	240
Of which: issued by non- financial corporations	3,329	2,118	3,322	3,066	2,130	556	2,138	550
Of which: Other assets	77,766	—			496,440	68,548		

EU AE1 - Encumbered and unencumbered Assets (Million Euros. 12-31-2021)

	Carrying value of encumbered assets		Fair value of encumbered assets		Carrying value of unencumbered assets		Fair value of unencumbered assets	
		of which notionally eligible EHQLA and HQLA		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA		of which EHQLA and HQLA
Institution's assets	117,018	34,599			521,374	108,160		
Equity instruments	1,740	1,313	1,740	1,740	14,297	6,799	14,297	6,799
Debt securities	34,773	33,286	32,558	32,049	75,278	48,441	77,008	49,542
Of which: covered bonds	39	30	38	38	258	254	258	254
Of which: ABSs	15	—	15	—	172	—	171	—
Of which: issued by general governments	30,201	30,099	27,829	27,610	65,454	45,906	67,322	46,990
Of which: issued by financial corporations	1,304	749	1,430	1,149	4,274	551	4,143	551
Of which: issued by non- financial corporations	2,961	2,096	2,967	2,767	2,601	779	2,594	793
Of which: Other assets	81,379	—			434,127	55,565		

The encumbered assets included in the "Other Assets" row of the EU AE1 table correspond to demand loans and loan advances mainly backing central bank financing, collateral deliveries for derivative transactions and the issuance of mortgage bonds and securitization bonds.

The fair value of collateral received, as well as the own securities issued as of December 31, 2022 and December 31, 2021 is below:

Table 84. EU AE2 - Collateral received (Million Euros. 12-31-2022)

	Fair value of encumbered collateral received or own debt securities issued		Fair value of collateral received or own debt securities issued available for encumbrance	
		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA
Collateral received	36,524	32,741	11,466	4,916
Loans on demand	—	—	—	—
Equity instruments	99	61	160	72
Debt securities	36,424	32,685	11,360	4,861
Of which: covered bonds	1,022	238	136	16
Of which: ABSs	69	—	234	—
Of which: issued by general governments	32,993	32,130	7,860	4,719
Of which: issued by financial corporations	2,869	607	2,115	44
Of which: issued by non- financial corporations	1,403	157	1,385	70
Loans and advances other than loans on demand	—	—	—	—
Other collateral received	—	—	—	—
Own debt securities issued other than own mortgage-covered bonds or ABSs	—	—	90	—
Own mortgage-covered bonds and ABSs issued and not yet pledged	—	—	12,981	—
Total assets, collateral received and own debt securities issued	152,580	69,484		

EU AE2 - Collateral received (Million Euros. 12-31-2021)

	Fair value of encumbered collateral received or own debt securities issued		Fair value of collateral received or own debt securities issued available for encumbrance	
		of which notionally eligible EHQLA and HQLA		of which EHQLA and HQLA
Collateral received	33,832	31,025	12,833	5,644
Loans on demand	—	—	—	—
Equity instruments	247	90	257	169
Debt securities	33,585	30,903	12,565	5,407
Of which: covered bonds	472	122	262	3
Of which: ABSs	—	—	159	—
Of which: issued by general governments	30,491	30,155	8,516	5,326
Of which: issued by financial corporations	2,233	526	2,792	48
Of which: issued by non- financial corporations	901	178	1,257	46
Loans and advances other than loans on demand	—	—	—	—
Other collateral received	—	—	—	—
Own debt securities issued other than own mortgage-covered bonds or ABSs	9	—	66	—
Own mortgage-covered bonds and ABSs issued and not yet pledged	—	—	15,288	—
Total assets, collateral received and own debt securities issued	154,453	66,375		

The off-balance sheet collateral received mostly reflects reverse repurchase agreements of debt securities, mostly sovereign.

The sources of encumbrance with the associated collateral as of December 31, 2022 and December 31, 2021 are below:

Table 85. EU AE3 - Sources of encumbrance (Million Euros)

	Matching liabilities, contingent liabilities or securities lent	Assets, collateral received and own securities issued other than mortgage-covered bonds, public-covered bonds and ABSs encumbered
Carrying amount of selected financial liabilities 2022	134,817	147,486
Carrying amount of selected financial liabilities 2021	134,418	150,689

There are assets without associated liabilities that correspond mainly to security lending operations, and in a lesser extent to guarantees granted as collateral to be able to operate in certain markets.

4.6. Operational Risk

BBVA defines operational risk ("OR") as any risk that could result in losses caused by human error; inadequate or flawed internal processes; undue conduct with respect to customers, markets or the institution; antimoney laundering and financing of terrorist activities; failures, interruptions or flaws in systems or communications; theft, loss or wrong use of information, as well as deterioration of its quality, internal or external fraud, including in any case those derived from cyberattacks; theft or harm to assets or persons; legal risks; risks derived from staff management and labor health; and defective service provided by suppliers; as well as damages from extreme climate events, pandemics and other natural disasters.

Operational risk management is oriented towards the identification of the root causes to avoid their occurrence and mitigate possible consequences. This is carried out through the establishment of control framework and monitoring and the development of mitigation plans aimed at minimizing resulting economic and reputational losses and their impact on the recurrent generation of results, and contributing to increase the quality, safety and availability of the provided service. Operational risk management is integrated into the global risk management structure of the BBVA Group.

4.6.1. Operational risk management principles

The BBVA Group is committed to preferably applying advanced operational risk management models, regardless of the capital calculation regulatory model applicable at the time. Operational risk management at the BBVA Group shall:

- Be aligned with the Risk Appetite Framework ratified by the BBVA Board of Directors.
- Address BBVA's management needs in terms of compliance with legislation, regulations and industry standards, as well as the decisions or positioning of BBVA's corporate bodies.
- Anticipate the potential operational risk to which the Group may be exposed as a result of the creation or modification of products, activities, processes or systems, as well as decisions regarding the outsourcing or hiring of services, and establish mechanisms to assess and mitigate risk to a reasonable extent prior to implementation, as well as review the same on a regular basis.
- Establish methodologies and procedures to enable regular reassessment of the significant operational risk to which the Group is exposed, in order to adopt appropriate mitigation measures in each case, once the identified risk and the cost of mitigation (cost/benefit

analysis) have been considered, while safeguarding the Group's solvency at all times.

- Promote the implementation of mechanisms that support careful monitoring of all sources of operational risk and the effectiveness of mitigation and control environments, fostering proactive risk management.
- Examine the causes of any operational events suffered by the Group and establish means to prevent the same, provided that the cost/benefit analysis so recommends. To this end, there are procedures in place to evaluate operational events and mechanisms that allow recording the operational losses that may be caused by the same.
- Evaluate key public events that have generated operational risk losses at other institutions in the financial sector and support, where appropriate, the implementation of measures as required to prevent them from occurring at the Group.
- Identify, analyze and attempt to quantify events with a low probability of occurrence and a high impact, which by their exceptional nature may not be included in the loss database; or if they are, feature with impacts that are not very representative for the purpose of valuing possible mitigation measures.
- Have an effective system of governance in place, where the functions and responsibilities of the corporate areas and bodies involved in operational risk management are clearly defined.
- Operational risk management must be performed in coordination with management of other risk, taking into consideration credit or market events that may have an operational origin.

4.6.2. Operational risk management model

The operational risk management cycle at BBVA is similar to the one implemented for the rest of risks. Its elements are:

Chart 20. Operational Risk Management Processes



Operational risk management parameters

Operational risk forms part of the risk appetite framework of the Group and includes three types of metrics and limits:

- Economic capital calculated with the operational losses database of the Group, considering the corresponding diversification effects and the additional estimation of potential and emerging risks through stress scenarios designed for the main types of risks. The economic capital is regularly calculated for the main banks of the Group and simulation capabilities are available to anticipate the impact of changes on the risk profile or new potential events.
- ORI metrics (Operational Risk Indicator: operational risk losses vs. gross income) broken down by geography.
- Indicators by risk type: a more granular common scheme of metrics (indicators and limits) covering the main types of operational risk is being implemented throughout the Group. These metrics make it possible to intensify the anticipatory management of risk and objectify the appetite to different sources. These indicators are regularly reviewed and

adjusted to fix the main risks in force at any time.

Operational risk admission

The main purposes of the operational risk admission phase are the following:

- To anticipate potential operational risk to which the Group may be exposed due to the release of new, or modification of businesses, products, activities, processes or systems or in relations with third parties (e.g. outsourcing).
- To ensure that implementation and the roll out of initiatives is only performed once appropriate mitigation measures have been taken in each case, including external assurance of risks where deemed appropriate.

The Corporate Non-Financial Risk Management Policy sets out the specific operational risk admission framework through different Operational Risk Admission and Product Governance Committees, both at a corporate and Business Area level, that follow a delegation structure based on the risk level of proposed initiatives.



Operational risk monitoring

The purpose of this phase is to check that the target operational risk profile of the Group is within the authorized limits. Operational risk monitoring considers 2 scopes:

- Monitoring the operational risk admission process, oriented towards checking that accepted risks levels are within the limits and that defined controls are effective.
- Monitoring the operational risk "stock" mainly associated with processes. This is done by carrying out a periodic re-evaluation in order to generate and maintain an updated map of the relevant operational risks in each Area, and evaluate the adequacy of the monitoring and mitigation environment for said risks. This promotes the implementation of action plans to redirect the weaknesses detected.

Operational risk monitoring is mainly supported by the following processes:

Risk and Control Self Assessment (RCSA)

The RCSA is the process implemented in the Group to systematize the periodic updating of the risks to which the Group is exposed; for this purpose, different sources of information are taken into account, both internal and external (emerging risks in the industry, events occurring in other entities or in the BBVA Group itself, new regulations applicable to the entity, weaknesses identified by internal or external auditors and supervisors, etc.).

The risks identified are evaluated in order to focus monitoring and management efforts on those whose impacts may generate negative consequences for the Group beyond those that are reasonable in the course of its ordinary activities.

For the most relevant risks, an evaluation is made of the existing mitigating elements, in order to determine their

sufficiency for the adequate mitigation of the risks or their eventual consequences; if the mitigating elements are considered insufficient or their operation is not adequate, the definition and implementation of mitigation measures is promoted.

This process is supported by a corporate Governance, Risk & Compliance tool that monitors the operational risk at a local level and its aggregation at a corporate level.

Monitoring of management parameters

The monitoring of management parameters allows the Group to identify sources of risk that behave abnormally, exceeding the established appetite levels, as well as relevant sources of risk not previously identified or underestimated; in these situations, the Group activates mechanisms to identify the root causes of these situations and to reinforce the mitigation environment, thus contributing to the Group's RCSA process.

The RCSA, together with the operational risk admission process and the management derived from the monitoring of forward-looking parameters, make up the main structure of the Group's operational risk proactive management processes.

Operational loss collection

In addition, and in line with the best practices and recommendations provided by the Bank for International Settlements (hereinafter, BIS), BBVA has procedures to collect the operational losses occurred both in the different entities of the Group and in other financial groups, with the appropriate level of detail to carry out an effective analysis that provides useful information for management purposes and to contrast the consistency of the Group's operational risks map. To that end, a corporate tool of the Group is used.

The analysis of operational losses and their trends may reveal the materialization of risks that have not been adequately identified, evaluated or mitigated, thus

allowing feedback to the RCSA exercise while promoting mitigation measures to prevent their future occurrence.

The Group ensures continuous monitoring by each Area of the due functioning and effectiveness of the control environment, taking into consideration management indicators established for the Area, any events and losses that have occurred, as well as the results of actions taken by the second line of defense, the internal audit unit, supervisors or external auditors.

Operational risk mitigation

The Group promotes the proactive mitigation of the non-financial risks to which it is exposed and which are identified in the monitoring activities.

In order to rollout common monitoring and anticipated mitigation practices throughout the Group, several cross-sectional plans are being promoted related to focuses from events, lived by the Group or by the industry, self-assessments and recommendations from auditors and supervisors in different geographies, thereby analyzing the best practices at these levels and fostering comprehensive action plans to strengthen and standardize the control environment.

Assurance of operational risk

Assurance is one of the possible options for managing the operational risk to which the Group is exposed, and mainly has two potential purposes:

- Coverage of extreme situations linked to recurrent events that are difficult to mitigate or can only be partially mitigated by other means.
- Coverage of non-recurrent events that could have significant financial impact, if they occurred.

The Group has a general framework that regulates this area, and allows systematizing risk assurance decisions, aligning insurance coverage with the risks to which the Group is exposed and reinforcing governance in the decision-making process of arranging insurance policies.

4.6.3. Operational risk governance

BBVA Group's operational risk governance model is based on two components:

- Three-line defense control model, in line with industry best practices, and which guarantees compliance with the most advanced operational risk internal control standards.
- Scheme of Corporate Assurance Committees and Internal Control and Operational Risk Committees at the level of the different business and support areas.

Three lines of defense control model

1.- First line of defense: composed of the Business and Support Areas in charge of managing operational risks in their products, activities, processes and systems, including those present in activities that may have been outsourced.

The Areas must integrate operational risk management into their day-to-day activities, identifying and evaluating operational risks, carrying out controls, assessing the adequacy of their control environment and executing mitigation plans for those risks in which control weaknesses are identified.

2.- Second line of defense: composed of:

(i) the Non-Financial Risk Units, in charge of designing and maintaining the Group's Operational Risk management model, and assessing the degree of application within the scope of the different Areas; and.

(ii) the Specialized Control Units, in different risk areas, define the General Mitigation, Control and Monitoring Framework for the risks in their respective areas, and carry out an independent assessment of the adequacy of the control environment implemented by the first line of defense.

The Non-Financial Risk Units and the Specialist Units are located in the Regulation and Internal Control area in order to ensure a coordinated action of the second line of defense and to preserve their independence with respect to the first line of defense.

3.- Third line of defense: performed by BBVA Internal Audit, which:

- Performs an independent review of the control model, verifying compliance with and effectiveness of established general policies.
- Provides independent information on the control environment to the Corporate Assurance Committees.

Corporate Assurance Committee Scheme

Corporate Assurance establishes a structure of committees, both at local and corporate level, to provide senior management with a comprehensive and homogeneous vision of the main non-financial risks and significant situations of the control environment.



⁽¹⁾CA: Corporate Assurance

Each geographical area has a Corporate Assurance Committee chaired by the Country Manager and whose main functions are:

- Facilitate agile and anticipatory decision-making for the mitigation or assumption of the main risks.
- Monitoring the changes in the non-financial risks and their alignment with the defined strategies and policies and the risk appetite.
- Analyzing and assessing controls and measures established to mitigate the impact of the risks identified, should they materialize.
- Making decisions about the proposals for risk taking that are conveyed by the working groups or that arise in the Committee itself
- Promoting transparency by promoting the proactive participation of the three lines of defense in discharging their responsibilities and the rest of the organization in this area

At the holding level there is a Global Corporate Assurance Committee, chaired by the Group's Chief Executive Officer. Its main functions are similar to those already described but applicable to the most important issues that are escalated from the geographies and the holding company areas.

The business and support areas have an Internal Control and Operational Risk Committee, whose purpose is to ensure the due implementation of the operational risk management model within its scope of action and drive active management of such risk, taking mitigation

decisions when control weaknesses are identified and monitoring the same.

Additionally, the Non-Financial Risk unit periodically reports the status of the management of non-financial risks in the Group to the Board's Risk and Compliance Committee.

4.6.4. Methods used for calculating capital

All Group entities apply the standard method for calculating their capital requirements for operational risk, except for Bolivia and the international subsidiaries of Garanti Bank, where the basic method is applied.

BBVA maintains its maximum commitment to effective and anticipatory management of operational risks as a key tool to contribute, not only to minimizing the economic impact of operational events in the Group, but also as an instrument to increase the quality of the service provided and contribute to the achievement of the strategic objectives of the Entity.

Both the basic and standardised approaches use fixed parameters to calculate regulatory capital for operational risk:

- Basic method: according to Chapter 2 of Title III of the CRR, the capital requirement for operational risk using the basic method is calculated as the three-year average of relevant income multiplied by a single factor established by the Regulator, which amounts to 15%. The sum of the following elements of the profit and loss account is defined as relevant income:
 - Income from interest and other similar income
 - Interest expense and other similar charges
 - Return on equities and other fixed- or variable-income securities
 - Fees receivable
 - Fees payable
 - Net trading income
 - Other operating income
- Standardised and alternative standardised approaches: according to Chapter 3 of Title III of the CRR, capital requirement for operational risk using the standard method is calculated as the three-year average of relevant income multiplied by a factor established by the Regulator for each business line.

The following table shows the operational risk capital requirements broken down according to the calculation

models used and the relevant indicator as of last three years:

Table 86. EU OR1 - Regulatory capital for Operational Risk (Million Euros. 12-31-2022)

Banking activities	Relevant indicator			Own funds requirements	Risk weighted exposure amount
	Year-3	Year-2	Last year		
Banking activities subject to basic indicator approach (BIA)	296	576	641	76	946
Banking activities subject to standardised (TSA) / alternative standardised (ASA) approaches	12,735	14,205	19,784	2,088	26,103
Subject to TSA:	10,009	11,375	16,651		
Subject to ASA:	2,726	2,830	3,132		
Banking activities subject to advanced measurement approaches AMA	—	—	—	—	—
Total				2,164	27,049

EU OR1 - Regulatory capital for Operational Risk (Million Euros. 12-31-2021)

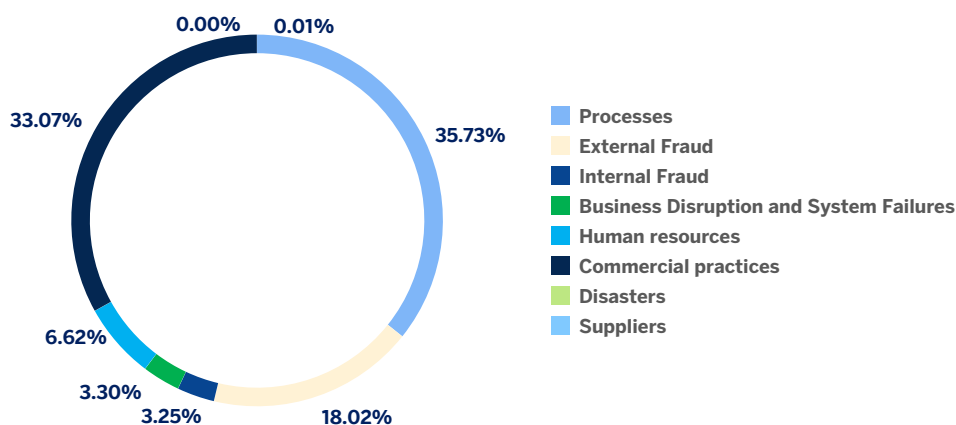
Banking activities	Relevant indicator			Own funds requirements	Risk weighted exposure amount
	Year-3	Year-2	Last year		
Banking activities subject to basic indicator approach (BIA)	327	636	233	60	748
Banking activities subject to standardised (TSA) / alternative standardised (ASA) approaches	18,352	20,386	17,633	2,467	30,841
Subject to TSA:	18,352	20,386	17,633		
Subject to ASA:	—	—	—		
Banking activities subject to advanced measurement approaches AMA	—	—	—	—	—
Total				2,527	31,589

In 2022 the BBVA Group received authorization from the ECB to apply the alternative standardized approach in BBVA Mexico and BBVA Peru for the purpose of measuring the capital requirements for operational risk on a consolidated basis, which explains the reduction of the requirement with respect to December 2021 at Group level.

4.6.5. Group’s operational risk profile

BBVA’s operational risk profile by risk type in 2022 is as follows:

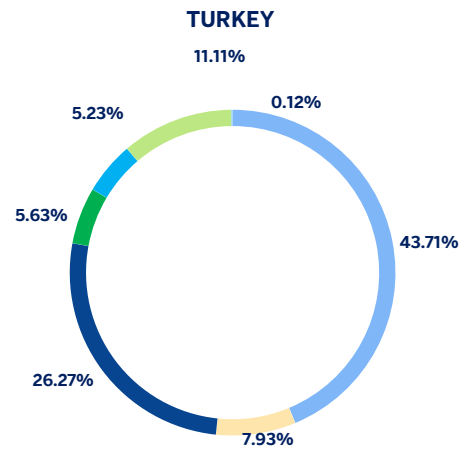
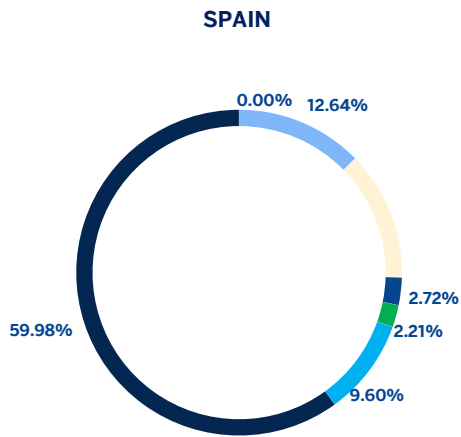
Chart 21. Operational Risk Profile of BBVA Group



During 2022, there was recoveries in Disasters. There is no percentage for these categories

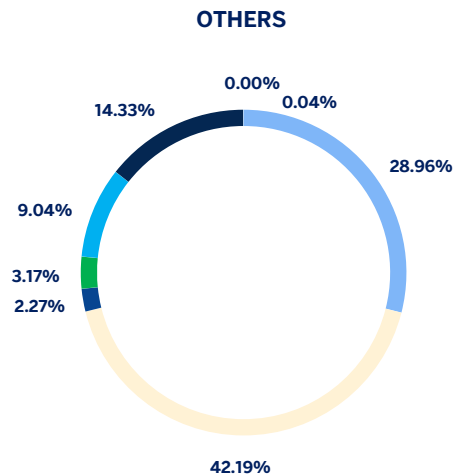
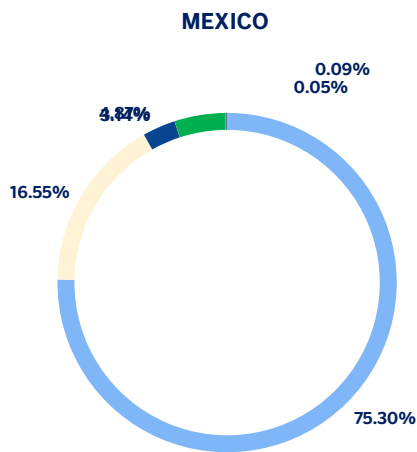
The following charts reflect the distribution of operational losses by risk class and country for 2022.

Chart 22. Operational Risk by risk and country



* During 2022, there was recoveries in Disasters. There is no percentage for these categories.

* In the year 2022, in Turkey there has been a release of provisions for Commercial practices in excess of total operational losses. Therefore, the category does not indicate any percentage value.



- Processes
- External Fraud
- Internal Fraud
- Business Disruption and System Failures
- Human resources
- Commercial practices
- Disasters
- Suppliers

*During 2022, there was recoveries in Disasters. There is no percentage for these categories