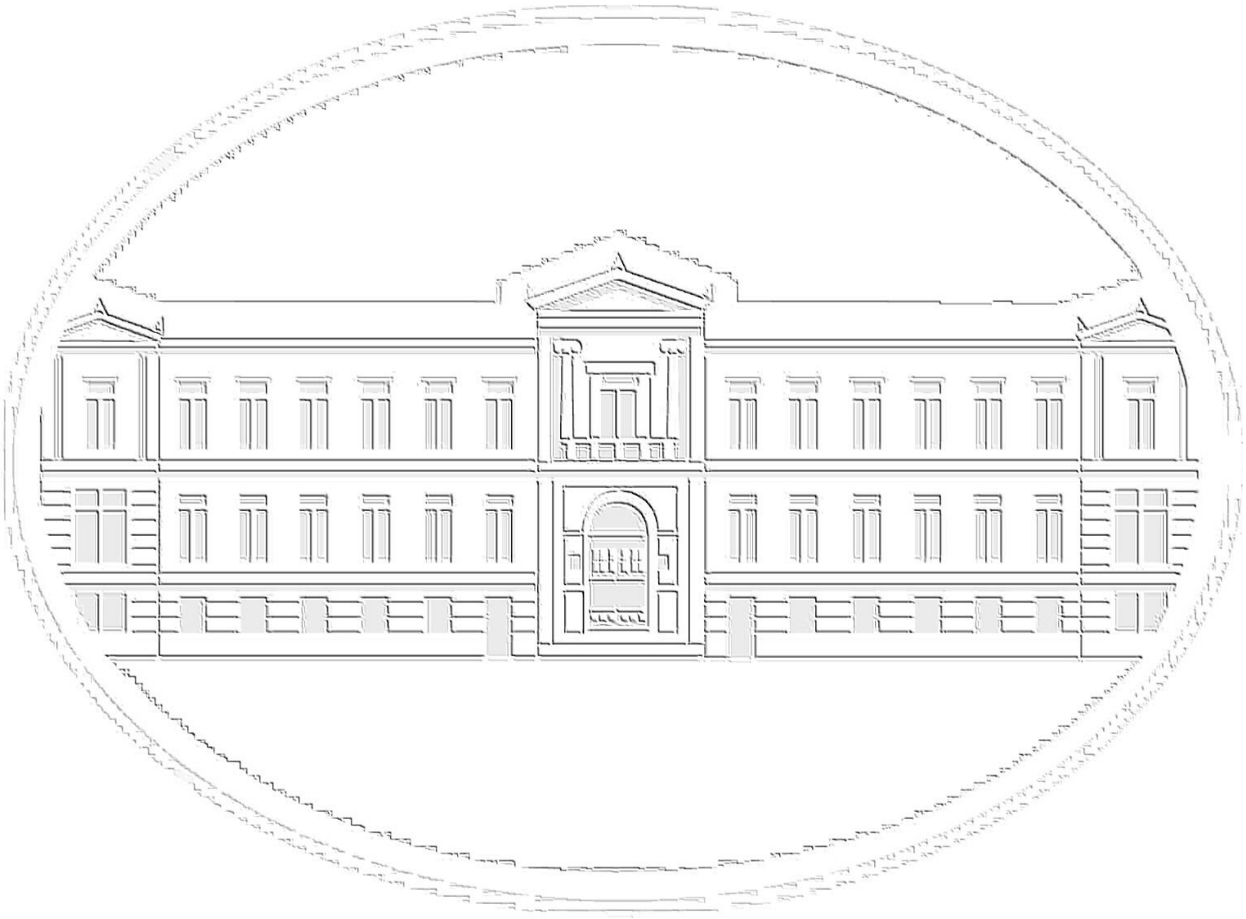
NATIONAL BANK OF GREECE S.A.



Pillar III Disclosures
on a Consolidated Basis

31 December 2018

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List of abbreviations

Abbreviation	Definition	Abbreviation	Definition
ABS	Asset-Backed Securities	**IFRS**	International Financial Reporting Standards
A-IRB	Advanced Internal Ratings Based (Approach)	**IMA**	Internal Model Approach
ALCO	Asset Liability Committee	**IRB**	Internal Ratings Based (approach)
AMC	Asset Management Companies	**IRRBB**	Interest Rate Risk in the Banking Book
ATHEX	Athens Exchange	**ISDA**	International Swaps and Derivatives Association
BC	Bankruptcy Code	**IT**	Information Technology
BCBS	Basel Committee on Banking Supervision	**ITS**	Implementing Technical Standards
BoG	Bank of Greece	**IVS**	International Valuation Standards
Bps	Basis Point	**JST**	Joint Supervisory Team
BRC	Board Risk Committee	**KPI**	Key Performance Indicator
BRRD	Bank Recovery and Resolution Directive	**LCR**	Liquidity Coverage Ratio
BU	Business Unit	**LGD**	Loss Given Default
CCF	Credit Conversion Factor	**LR**	Leverage Ratio
CCP	Code of Civil Procedure	**M&A**	Mergers and Acquisitions
CCR	Counterparty Credit Risk	**MDA**	Maximum Distributable Amount
CCyB	Countercyclical Capital Buffer	**MoB**	Months on Book
CEBS	Committee of European Banking Supervisors	**MRA**	Moody's Risk Advisor
CEF	Credit Equivalent Factor	**MRO**	Main Refinancing Operations
CEO	Chief Executive Officer	**MVU**	Model Validation Unit
CET1	Common Equity Tier 1	**NBG**	National Bank Of Greece, S.A
CFO	Chief Financial Officer	**NCA**	National Competent Authority
CMS	Collateral Management System	**NII**	Net Interest Income
COO	Chief Operations Officer	**NPE**	Non Performing Exposure
CRD	Capital Requirements Directive	**NPL**	Non Performing Loan
CRM	Corporate Rating Model	**NPV**	Net Present Value
CRO	Chief Risk Officer	**NRA**	National Resolution Authorities
CRR	Capital Requirements Regulation	**NSFR**	Net Stable Funding Ratio
CSA	Credit Support Annex	**O/N**	Overnight
CVA	Credit Valuation Adjustment	**OCP**	Open Currency Position
DGSD	Deposit Guarantee Schemes Directive	**OCR**	Overall Capital Requirement
Dpd	days past due	**OCW**	Out-of-Court Workout
DTA	Deferred Tax Asset	**OR**	Operational Risk
DTC	Deferred Tax Credit	**ORMF**	Operational Risk Management Framework
EAD	Exposure at Default	**ORR**	Obligors' Risk Rating
EBA	European Banking Authority	**O-SII**	Other Systemically Important Institution
EBITDA	Earnings Before Interest, Tax, Depreciation and Amortization	**OTC**	Over-the-counter
EC	European Commission	**P&L**	Profit and Loss
ECAI	External Credit Assessment Institutions	**P2G**	Pillar 2 Guidance
ECB	European Central Bank	**P2R**	Pillar 2 Requirement
ECL	Expected Credit Losses	**PD**	Probability of Default
EDIS	European Deposit Insurance Scheme	**PE**	Performing Exposures
EFSF	European Financial Stability Facility	**PMO**	Project Management Office
EL	Expected Loss	**ppts**	Percentage points
ELA	Emergency Liquidity Assistance	**PSE**	Public Sector Entity
ESM	European Stability Mechanism	**PSI**	Private Sector Involvement

Abbreviation	Definition	Abbreviation	Definition
ETEAN	Hellenic Fund for Entrepreneurship and Development	**RAF**	Risk Appetite Framework
EU	European Union	**RCSA**	Risk and Control Self-Assessment
EVE	Economic Value of Equity	**RTS**	Regulatory Technical Standards
EVS	European Valuation Standards	**RWA**	Risk Weighted Assets
EW	Early Warning	**SA**	Standardized Approach
FBE	Forborne Exposures	**SAU**	Special Assets Unit
FI	Financial Institution	**SB(L)**	Small Business (Lending)
F-IRB	Foundation internal ratings-based (approach)	**SEC**	Securities and Exchange Commission
FRTB	Fundamental Review of the Trading Book	**SL**	Specialised Lending
FVTOCI	Fair Value Through Other Comprehensive Income	**SME**	Small & Medium Enterprises
FVTPL	Fair Value Through Profit or Loss	**SPPI**	Solely Payments of Principal and Interest
FX	Foreign Exchange	**SPV**	Special Purpose Vehicle
GAAP	Generally Accepted Accounting Principles	**SRB**	Single Resolution Board
GGB	Greek Government Bond	**SREP**	Supervisory Review and Evaluation Process
GHOS	Governors and Heads of Supervision	**SRM**	Single Resolution Mechanism
GL	Guidelines	**SSM**	Single Supervisory Mechanism
GFLRM(D)	Group Financial & Liquidity Risk Management (Division)	**ST**	Stress Test
GMRA	Global Master Repurchase Agreement	**sVaR**	Stressed Value at Risk
GORM(D)	Group Operational Risk Management (Division)	**TLAC**	Total Loss Absorbing Capacity
GRCA(D)	Group Risk Control & Architecture (Division)	**TLTRO**	Targeted Long-Term Refinancing Operations
G-SII	Global Systemically Important Institution	**TRIM**	Targeted Review of Internal Models
HFSF	Hellenic Financial Stability Fund	**TSCR**	Total SREP Capital Requirement
HRRC	Human Resources and Remuneration Committee	**UBB**	United Bulgarian Bank
IAS	International Accounting Standards	**VaR**	Value at Risk
ICAAP / ILAAP	Internal Capital / Liquidity Adequacy Assessment Process	**VCV**	Variance-Covariance
ICT	Information and Communication Technology		

1. INTRODUCTION – GENERAL INFORMATION

National Bank of Greece (the "Bank" or "NBG") is a financial institution subject to Greek and EU banking legislation. It was founded in 1841 and operated both as a commercial bank and as the official state currency issuer until 1928, when Bank of Greece was established. NBG has been listed on the Athens Stock Exchange since 1880.

The Bank focuses on complying fully with the regulatory requirements and ensures that these requirements are strictly and consistently met in all countries where NBG Group (the "Group") operates.

NBG Group offers a wide range of financial services, including retail and corporate banking, asset management, real estate management, financial, investment and insurance services. The Group operates in Greece, the United Kingdom, South-eastern Europe (including Cyprus and Malta) and Egypt.

The Bank, as an international organisation operating in a rapidly growing and changing environment, acknowledges its Group's exposure to banking risks and the need for these risks to be managed effectively. Risk management forms an integral part of the Group's commitment to pursue sound returns for its shareholders, maintaining the right balance between risks and reward in the Group's day-to-day operations, in its balance sheet and in the Group's capital structure management.

1.1. Recent Regulatory Developments

1.1.1. Banking Union

The Main Pillars

Several steps have been made towards the European Banking Union (mandatory for all euro area States). The following are the Banking Union's constituent elements:

A. The ***Single Supervisory Mechanism*** that places the ECB as the central prudential supervisor of financial institutions in the euro area. Since November 2014 NBG Group's supervision is assigned directly to the ECB, as NBG is classified as one of the significant banking groups of the Eurozone;

B. The ***Single Resolution Mechanism ("SRM")*** that implements the EU-wide Bank Recovery and Resolution Directive (BRRD – *see next paragraph*) in the euro area. The centralised decision-making is built around the Single Resolution Board ("SRB") and the relevant National Resolution Authorities;

C. The ***Single Rulebook***, a single set of harmonised prudential rules for institutions throughout the EU. Its three basic legal documents are:

- **CRD IV:** Directive 2013/36/EU of the European Parliament and Council *"on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms"*, transposed into Greek legislation by virtue of Law 4261/2014,
- **CRR** (Capital Requirements Regulation): Regulation (EU) No. 575/2013 of the European Parliament and Council *"on prudential requirements for credit institutions and investment firms"*, which is legally binding and directly applicable in all Member States, and
- **BRRD**: Directive 2014/59/EU of the European Parliament and Council *"establishing a framework for the recovery and resolution of credit institutions and investment firms"*, transposed into Greek legislation by virtue of article 2 of Law 4335/2015.

These documents are complemented by numerous Implementing Technical Standards (ITS), Regulatory Technical Standards ("RTS"), Guidelines ("GL") and Recommendations issued by the European Banking Authority, which specify particular aspects of the CRD IV, the CRR and the BRRD and aim at ensuring harmonisation in specific areas. EBA's Technical Standards have to be endorsed by the European Commission ("EC") and become EU Regulations in order to be legally binding and directly applicable in all Member States.

The CRD IV and the CRR constitute the "Basel III" regulatory framework in the EU.

D. ***Deposit Guarantee Schemes***: Directive 2014/49/EU of the European Parliament and Council "on deposit guarantee schemes" ("DGSD"), transposed into Greek legislation by virtue of Law 4370/2016. A common European Deposit Insurance Scheme ("EDIS") is intended to be a pillar of the Banking Union. The EC put forward a relevant proposal in November 2015. However, a common system for deposit protection has not yet been established. Work has started on a roadmap for beginning political negotiations. In December 2018, the European Council stated that it will establish a High-level working group with a mandate to work on next steps. The High-level group should report back by June 2019.

EU package of Risk Reduction Measures: CRR2 / CRD5 / BRRD2

Introduction: On November 23rd, 2016, the EC presented a comprehensive package of reforms aimed at amending CRR, CRD IV, as well as the BRRD and the SRM. The package, known as "CRR2/CRD5", was submitted to the European Parliament and the Council for their consideration and adoption. The Banking Package includes prudential standards adopted by the Basel Committee on Banking Supervision and by the Financial Stability Board (FSB), while its main objective is to reduce risk in the EU banking system.

The Banking Package comprises two regulations and two directives, relating to:

- bank capital requirements (amendments to regulation 575/2013 and directive 2013/36/EU),
- the recovery and resolution of banks in difficulty (amendments to directive 2014/59/EU and regulation 806/2014).

The Banking Package strengthens bank capital requirements and reduces incentives for excessive risk taking, by including a binding leverage ratio, a binding net stable funding ratio and setting risk sensitive rules for trading in securities and derivatives. In addition, it contains measures to improve banks' lending capacity and facilitate a greater role for banks in the capital markets, such as:

- reducing the administrative burden for smaller and less complex banks, linked in particular to reporting and disclosure requirements,
- enhancing the capacity of banks to lend to SMEs and to fund infrastructure projects.

The banking package also contains a framework for the cooperation and information sharing among various authorities involved in the supervision and resolution of cross-border banking groups.

Timeline: On 25 May 2018, the ECOFIN Council agreed its mandate to start negotiations with the European Parliament. A first agreement was achieved on the main elements of the banking package and confirmed by the ECOFIN Council on 4 December 2018. EU ambassadors have now endorsed the deal on all risk reduction measures. In late-February of 2019, both the European Council and European Parliament endorsed the deal on the legislation reached by negotiators and full draft texts have now been published. While the legislation is not yet final and a ratification vote is not expected to take place until April, the draft law, as it is currently published, gives the clearest and most detailed picture of the rules that banks will have to comply with once applied.

Key aspects: The legislative package implements components of the Basel III framework, including giving effect to Total Loss Absorbing Capacity (TLAC), the Net Stable Funding Ratio (NSFR), the Standardised Approach for Counterparty Credit Risk (SA-CCR), the Leverage Ratio, and the Fundamental Review of the Trading Book (FRTB) in part. However, it excludes the package of Basel reforms that was agreed on 7 December 2017 by the Basel Committee on Banking Supervision ("BCBS") often referred to as 'Basel IV' (see relevant section below).

Key aspects of the deal include:

- **Implementation of the FRTB:** the FRTB will initially proceed in the EU as a reporting requirement only. New EU legislation (i.e. "CRR3") will be required at a later date to give effect to binding capital requirements,
- **Setting Minimum Requirements for Own-Funds and Eligible Liabilities (MREL):** high minimum requirements for subordinated MREL instruments are set for Global Systemically-Important Banks (G-SIBs) and other large banks, with a c. 8% of total liabilities requirement with limited discretion for resolution authorities to set lower minimums in some cases. Thus, greater loss-absorbing and recapitalization capacity is adopted ensuring an effective "bail-in" process,
- **The NSFR:** more lenient Required Stable Funding (RSF) treatment of Securities Financing Transactions (SFTs) was agreed for a four-year phase-in period that can be extended by future legislation,
- **The SA-CCR:** the new BCBS SA-CCR is implemented in EU law, but the EU has also developed a Simplified SA-CCR and retained the Original Exposure Method (OEM) for smaller banks,
- **Leverage Ratio:** the EU has implemented the BCBS framework with a 3% baseline leverage ratio requirement, and an additional requirement for G-SIIs, calibrated at 50% of the G-SII (capital requirements) buffer.

Recovery and Resolution Developments

Announcement of the second part of SRB's annual policy on MREL: On 16th January, 2019, the Single Resolution Board ("SRB") published the second part of its policy for 2018 for MREL concerning the second wave of resolution plans, i.e. the plans for more complex banks. As for 2018, SRB required a two-step transitional approach to the MREL definition process, with the first part of its policy referring to reorganization plans for Banks that had no binding targets being released in November 2018. The second part introduces a series of new elements to enhance the capacity for bank resolution within the Banking Union, among which: an improved approach for eligible instruments for MREL consolidated targets, increased mandatory subordinate requirements and, finally, the introduction of binding MREL targets at individual level. SRB is expected to review its policy for setting the MREL in 2019 on the basis of the finalization of the RRM package and its publication in the Official Journal of the European Union.

1.1.2. NPE Management Regulatory Framework

ECB Final Guidance on NPLs

On March 15th, 2018, the ECB published the addendum to the ECB Guidance to banks on NPLs. The addendum supplements the qualitative NPL guidance, published on 20 March 2017, and specifies ECB's supervisory expectations for prudent levels of provisions for new NPLs. The addendum does not bind banks, serving as a basis for the supervisory dialogue between the SIs and ECB Banking Supervision. It refers to loans classified as NPLs after 1 April 2018, in line with the EBA's definition.

The background to the addendum is that, in line with the CRD IV, supervisors have to assess and address institution-specific risks which are not already covered, or which are insufficiently covered, by the mandatory prudential requirements in the CRR ("the Pillar 1 rules"). Specifically, the existing prudential framework requires supervisors to assess and decide whether banks' provisions are sufficient and timely from a prudential perspective, while the addendum lays out what ECB Banking Supervision expects in this regard. As with other supervisory expectations, the addendum is complementary to any binding legislation; this includes the proposal for a Regulation amending the CRR as regards minimum loss coverage for non-performing exposures.

The supervisory expectations outlined in the addendum consider the extent to which NPLs are secured. For fully unsecured exposures and unsecured parts of partially secured exposures, it is expected that 100% coverage is achieved within 2 (two) years of the NPE classification. For fully secured exposures and secured parts of partially secured exposures, it is expected that 100% coverage is achieved within 7 (seven) years of the NPE classification, following a gradual path. The expectations for secured exposures adhere to the prudential principle that credit risk protection must be enforceable in a timely manner. The ECB will assess prudential provisioning levels of new NPEs during the supervisory dialogue, considering the quantitative expectations summarised in the following table.

(%)	Unsecured part	Secured part
After 2 years of NPE vintage	100%	-
After 3 years of NPE vintage	-	40%
After 4 years of NPE vintage	-	55%
After 5 years of NPE vintage	-	70%
After 6 years of NPE vintage	-	85%
After 7 years of NPE vintage	-	100%

Table 1: Overview of the quantitative expectations

The practical implementation of the addendum is to form part of the supervisory dialogue, in which the Joint Supervisory Teams (“JSTs”) discuss with each bank deviations from the provisioning expectations. Thereon, ECB Banking Supervision will decide, on a case-by-case basis, whether supervisory measures are appropriate and if so, which. Banks are required to inform the ECB of any differences between their practices and the prudential provisioning expectations, and the results of this dialogue will be incorporated in the 2021 Supervisory Review and Examination Process (“SREP”). Banks should review their underwriting policies and criteria to reduce the emergence of new NPEs.

NBG, being a bank with elevated levels of NPLs, received a letter from the ECB, as part of normal supervisory activities, containing qualitative elements, focused on ensuring it is managing and addressing NPLs in line with supervisory expectations.

On July 11th, 2018, the ECB announced additional steps in its supervisory approach to the stock of NPLs. The approach creates a consistent framework for addressing the issue, as part of the supervisory dialogue, through bank-specific supervisory expectations aimed at achieving adequate provisioning of legacy NPLs. This assessment was guided by: i) individual banks’ current NPL ratios, ii) their main financial features, iii) their NPL reduction strategy (if available) and iv) a benchmarking of comparable peers in order to ensure consistent treatment. Most recent data and their capacity to absorb additional provisions was also considered. All SIs have been assessed with the aim of setting bank-specific expectations so as to ensure continued progress in reducing legacy risks and the same coverage of the stock and flow of NPLs over the medium term.

European Commission proposals for NPLs

On March 14th, 2018, the Commission proposed an ambitious and comprehensive package of measures to tackle NPLs in Europe, capitalising on the significant progress already made in reducing risks in the banking sector. This package sets out a comprehensive approach with a mix of complementary policy actions that target the following four key areas:

- Ensuring that banks set aside funds to cover the risks associated with loans issued in the future that may become non-performing.
- Encouraging the development of secondary markets where banks can sell their NPLs to credit servicers and investors.
- Facilitating debt recovery, as a complement to the insolvency and business-restructuring proposal put forward in November 2016.
- Assisting Member States in the restructuring of banks, by providing non-binding guidance for establishing Asset Management Companies (“AMCs”) or other measures dealing with NPLs.

With this package, the Commission is delivering on the European Council's Action Plan to address the high stock of NPLs and prevent their possible future accumulation.

On December 14th, 2018, the Council and the European Parliament agreed a new framework for dealing with banks' bad loans. They reached a provisional political agreement on capital requirements applying to banks with NPLs on their balance sheets. The proposal aims at creating a prudential framework for banks to deal with new NPLs and thus to reduce the risk of their accumulation in the future. Specifically, it provides for requirements to set aside sufficient own resources when new loans become non-performing and creates appropriate incentives to address NPLs at an early stage.

On the basis of a common definition of NPLs, the proposed new rules introduce a "prudential backstop", i.e. common minimum loss coverage for the amount of money banks need to set aside to cover losses caused by future loans that turn non-performing. In case a bank does not meet the applicable minimum level, deductions from banks' own funds would apply. Further, the agreed framework introduces a uniform calendar, as shown in the table below, which applies irrespective of the trigger of the non-performance. For unsecured NPLs, a calendar of three years should apply. For secured NPLs, a progressive calendar of seven or nine years would apply, depending on the collateral type. In all cases, full coverage should ultimately be built up.

Period	Final Agreement		
	Unsecured	Secured Immovable	Secured Other CRR eligible
After 1 year	0%	0%	0%
After 2 years	35%	0%	0%
After 3 years	100%	25%	25%
After 4 years		35%	35%
After 5 years		55%	55%
After 6 years		70%	80%
After 7 years		80%	100%
After 8 years		85%	
After 9 years		100%	

Table 2: Rules for Coverage of Expected Losses

On January 14th, 2019, the ECOFIN and the European Parliament reached an agreement on the Commission's proposal for a Regulation concerning minimum loss coverage for (new) NPEs. This Regulation sets out more lenient arrangements compared to the ECB's Addendum with respect to the:

- **Perimeter:** the Regulation applies to exposures originated after its entry into force (expected in the following months), while the ECB's Addendum applies to NPEs classified as such after 1 April 2018, and
- **Timeline for full coverage:** the Regulation requires full coverage for the secured part of NPEs within 9 years (part secured by immovable property) or 7 years (part of NPEs secured by other collateral), while ECB Addendum requires full coverage within a 7 year period for the secured part of NPEs. (The provision calendar under the Regulation is as per Table 2 outlined above.)

It should be noted that the Regulation allows supervisory authorities to apply (on a case-by-case basis) stricter requirements compared to those included in the Regulation. Hence, the ECB would probably continue applying the Addendum. In addition, pursuant to the Regulation:

- Common criteria for the classification of NPEs and forborne exposures (for the purposes of the prudential backstop) are established,
- The prudential backstop should be applied on an exposure-by-exposure level,
- If forbearance measures are applied to non-performing exposures, the coverage requirement should remain stable during one additional year.

On March 14th, 2019, the European Parliament published a provisional version of the text regarding its adoption of the Regulation amending the CRR as regards minimum loss coverage for NPEs. As the Council also approved the European's Parliament position, the legislation act will be adopted amending as appropriate the respective Articles of the CRR.

Greece's NPL Legislative Update

Electronic Auctions – Law 4512/2018

Since 21.2.2018, all auctions of real estate properties take place electronically, through the special platform of the Notaries Association, www.eauction.gr. By virtue of the Law 4512/2018, the physical auctions were completely abolished. The electronic platform has significantly enhanced the management and the efficiency of the liquidation effort.

- **Amendments on Law 4307/2014**

By means of Law 4599/2019, minor amendments were made to Special Administration Process prescribed in L. 4307/2014. In particular:

The duration of the whole process was prolonged to 18 months, instead of 12, along with a provision for an optional six month extension, upon court approval.

The special administrator is entitled to trade company assets with third party assets of the same value, as estimated by certified assessors listed to the Ministry of Finance Registry.

The company under special liquidation is exempt from the obligation to provide Tax and Social Security clearance certificates, as to transfers of assets, loans, credits, and financing of any kind, as well as any other transaction with the Public Sector, during the special administration period.

- **Law 4512/2018 Exceptional ranking provisions on Code of Civil Procedure and Bankruptcy Code**

Pursuant to art. 176 of the said Law, two "mirror" provisions, art. 977A and 156A are established in Code of Civil Procedure and Bankruptcy Code, respectively.

According to the provisions, a different and separate ranking of creditors takes place upon fulfilment of the following cumulative conditions:

  - Secured claims arising (granted) from 18.01.2018 onwards
  - Security established on asset to be liquidated from 18.01.2018 onwards, securing the aforementioned claims
  - Security established on asset free of burden on 18.01.2018

In this case, a quantitively limited (up to 9.670,32 euros per employee) superseniority labor claim is acknowledged, which supersedes any other claim. Upon satisfaction of the said claim, secured creditors are satisfied in full, followed by preferential and unsecured creditors, consecutively. The former class excludes the latter until exhaustion of auction/liquidation proceeds.

- **Amendment of provisions of Law 4354/2015 on assignment and transfer of Non-Performing Loan/claims (NPLs)**

Pursuant to art. 69 par. 2 Law 4549/2018 (by virtue of which art. 3 par 2 of Law 4354/2012 was amended), the Bank's obligation to send to the debtors a settlement proposal according to the Code of Conduct prior to the loan transferring was restricted only in cases that the debtor is considered as Consumer (as per art. 1a of Law 2251/1994).

- **Law 4549/2018: settlement of State guaranteed loans.**

Pursuant to art. 103 of the said Law, the Banks are authorized to proceed with the settling of State guaranteed loans with the debtors without being obliged anymore to request the State's prior consent to the settlement scheme. The exact terms and conditions of such debt settling (so that the State's guarantee remains valid in favor of the Bank) are provided for by the Ministerial Decision 2/9/2018.

1.1.3. Basel 4 (finalisation of Basel 3)

Revision of Market Risk minimum capital requirements (Fundamental Review of the Trading Book)

As of January 2016, the first iteration of FRTB appeared, with its core features including: a clearly defined boundary of the trading and the banking book; an internal models approach with separate capital requirements for risk factors that cannot be modelled; and a standardized approach that is risk-sensitive and designed and calibrated as a credible fallback to the internal models approach.

On January 14th, 2019, the Basel Committee's oversight body ("GHOS"), endorsed a set of revisions to the market risk framework. The changes were initially proposed in a March 2018 consultative document, informed by a quantitative impact based on end 2017 data. (On February 25th, 2019, a corrected version was published to address typos.) The revisions to the FRTB framework include the following key changes:

- a simplified standardized approach for banks with small or non-complex trading portfolios,
- clarifications on the scope of exposures that are subject to market risk capital requirements,
- refined standardised approach treatments of foreign exchange risk and index instruments,
- revised standardised approach risk weights applicable to general interest rate risk, foreign exchange and certain exposures subject to credit spread risk,
- revisions to the assessment process to determine whether a bank's internal risk management models appropriately reflect the risks of individual trading desks, and
- revisions to the requirements for identification of risk factors eligible for internal modelling.

The revised market risk framework will take effect as of 1 January 2022, estimated to result in a weighted average increase of about 22% in total market risk capital requirements relative to the Basel 2.5 framework.

Impact of Basel 4 in EU banks

On March 20th, 2019, EBA published a Basel III capital monitoring report which includes a preliminary assessment of the impact of fully implementing the final Basel III reforms on EU Banks. It quantifies the impact on credit risk, operational risk, leverage ratio, introduction of aggregate output floor, market risk (FRTB) and CVA, as per table below:

Bank Group	Credit Risk				Market Risk	CVA	Op Risk	Output floor	**Total Risk-based**	Revised LR	**Total**
	SA	IRB	Sec.	CCPs							
All Banks	2.2	2.0	0.7	0.0	2.3	4.7	5.5	8.0	**25.4**	-6.2	**19.1**
Group 1	1.8	1.7	0.8	0.0	2.5	4.9	6.1	8.5	**26.3**	-6.0	**20.3**
of which: G-SIIs	2.2	2.1	1.1	0.0	3.3	5.4	7.4	7.3	**28.8**	-0.3	**28.4**
Group 2	4.3	3.7	0.1	0.0	0.9	3.6	1.7	5.1	**19.4**	-7.7	**11.8**

Table 3: Change in Total T1 MRC (as % of overall current) due to Basel III implementation (Source: EBA QIS data – June 2018)

Overall, the EBA, based on a Basel III monitoring exercise performed with data as of 30 June 2018 estimates that the Basel III reforms would lead to an average increase by 19.1% of EU banks' T1 minimum required capital at full implementation (2027). To comply with Basel 4, banks would need EUR 39 billion of additional total capital, of which EUR 24.2 billion of T1 capital. Nevertheless, the implementation of Basel III finalized reforms in the EU is at the discretion of the EU legislative authorities and will require amendments to current banking regulations, predominantly the CRR (Regulation (EU) No 575/2013).

1.1.4. Pillar 2 (SREP, ICAAP, ILAAP)

ECB Guides on ICAAP/ILAAP

Banks submit ICAAP and ILAAP information packages to the SSM on a yearly basis. The SSM takes those packages into account in its annual assessment as part of the SREP.

On February 20th, 2017, the ECB initiated a multi-year project to develop comprehensive Guides on ICAAP and ILAAP for SIs. On March 2nd, 2018 the ECB launched a public consultation on draft Guides on ICAAP and ILAAP, while on November 9th, 2018, the ECB published the final guides. The guides, which are not legally binding, are applicable from 1 January 2019 when assessing bank internal capital and liquidity adequacy assessment process. Banks are expected to assess the risks they face, and ensure, in a forward-looking manner, that all material risks are identified, effectively managed and covered by adequate capital and liquidity levels at all times. The ICAAP and ILAAP are, above all, internal processes and remain the responsibility of individual institutions to implement in a proportionate manner (i.e. the ICAAP and ILAAP have to be aligned to the institution's business model, size, complexity, riskiness, market expectations, etc.).

As mentioned in a newsletter article published by ECB on February 13th, 2019, the ICAAP and ILAAP are expected to play an even greater role in the SREP in the future, which should encourage and incentivise banks to continuously improve these processes. Among others, both the qualitative and quantitative aspects of the ICAAP – the latter focusing on identifying and quantifying risks – could play an enhanced role in the calculation of additional capital requirements on a risk-by-risk basis.

Below are the seven ECB principles, finalized with the guides of ICAAP and ILAAP published in November 2018:

- **Principle 1:** The management body is responsible for the sound governance of the ICAAP/ILAAP.
- **Principle 2:** The ICAAP/ILAAP is an integral part of the overall management framework.
- **Principle 3:** The ICAAP/ILAAP contribute fundamentally to the continuity of the institution by ensuring its capital/liquidity adequacy from different perspectives.
- **Principle 4:** All material risks are identified and taken into account in the ICAAP/ILAAP.
- **Principle 5:** For ICAAP the internal capital is of high quality and clearly defined. For ILAAP the internal liquidity buffers are of high quality and clearly defined: the internal stable sources of funding are clearly defined.
- **Principle 6:** ICAAP/ILAAP risk quantification methodologies are adequate, consistent and independently validated.
- **Principle 7:** Regular stress testing aims at ensuring capital/liquidity adequacy in adverse circumstances.

Institutions are encouraged to address any gaps or weaknesses in their ICAAPs and ILAAPs in close dialogue with their JST and the ECB.

EBA Pillar 2 Guidelines: SREP / IRRBB / Stress Testing

The SREP is the key mechanism by which supervisors review the risks not covered, or not fully covered, under Pillar 1 and decide whether capital and liquidity resources are adequate. Its main constituents are: (i) the business model assessment, (ii) the governance and risk management assessment, (iii) the assessment of risks to capital (including ICAAP) and (iv) the assessment of risks to liquidity and funding (including ILAAP). Supervisors can use the SREP to decide that additional Pillar 2 capital is required, as a new minimum, where Pillar 1 does not capture the risks adequately.

On July 19th, 2018, EBA published its final guidance in order to strengthen the EU's Pillar 2 framework. These final revised Guidelines are aimed at further enhancing institutions' risk management and supervisory convergence in the SREP. The three Guidelines are the following:

1. **Final Report on the Guidelines on the revised common procedures and methodologies for SREP and supervisory stress testing:** The changes to the SREP Guidelines do not alter the overall SREP framework and mainly aim to enhance the requirements for supervisory stress testing and explain how stress testing results will be used in setting the Pillar 2 Guidance (P2G). The changes and additions outlined in the Final Report, include: i) a section on P2G, ii) supervisory stress testing requirements, iii) a clarification on the scoring framework and iv) consistency checks with relevant EBA standards and guidelines, in particular in the areas of internal governance and institution-wide controls assessment.
2. **Revised final Guidelines on the management of interest rate risk arising from non-trading activities (IRRBB Guidelines):** The revised IRRBB Guidelines reflect developments in the BCBS and clarify internal governance and supervisory outlier tests requirements during the first phase of the European implementation of the Basel standards. The revisions are intended to link to future requirements, which will be incorporated in the CRD5/CRR2 framework.

   The revised Guidelines replace the existing Guidelines and will be applicable from 30 June 2019 with transitional arrangements for specific provisions until 31 December 2019.
3. **Revised final Guidelines on institutions' stress testing:** The revised IRRBB Guidelines reflect developments in the Basel Committee on Banking Supervision (BCBS) and clarify internal governance and supervisory outlier tests requirements during the first phase of the European implementation of the Basel standards. The revisions are, therefore, intended to act as a bridge to the future requirements, which will be incorporated in the CRD5/ CRR2 framework.

   The revised Guidelines replace the existing Guidelines, being applicable from January 1st, 2019.

1.1.5. Internal Models

TRIM

The targeted review of internal models, or TRIM, is an ECB project to assess whether the internal models currently used by banks comply with regulatory requirements, and whether their results are reliable and comparable. Banks can use internal models to determine their Pillar 1 own funds requirements. The ECB has decided to perform a TRIM for credit risk, market risk and counterparty credit risk. The objective is: (a) to reduce the unwarranted variability in RWAs by harmonising practices and (b) to check compliance with regulatory requirements related to Pillar 1. The review covers a number of qualitative and quantitative criteria applicable to all SIs.

Between the second half of 2016 and the 2nd quarter of 2018 the Bank has entered TRIM's execution phase including:

- The General Topics review
- The investigation of its internal model for Market Risk
- The investigation of its internal model for credit risk of the exposure class "Retail – Secured by real estate non-SME" (mortgage portfolio).

The NBG models to be investigated next are the PD models for Corporate and SME exposures.

ECB guide to internal models

On November 15th, 2018, the ECB published the first chapter of its guide to internal models, following a public consultation that ended on May 28th, 2018. This first chapter refers to general topics and contains principles that are not risk-type-specific, in particular for the IRB approach: overarching principles; roll-out and permanent partial use of the IRB approach; internal governance; internal validation; internal audit; model use; management of changes and third-party involvement. Each topic also includes regulatory references to other published documents (i.e. CRR, CRD IV, RTS etc.).

On September 7th, 2018, ECB launched public consultation in regards to the three risk-type-specific chapters of its guide to internal models, on credit risk, market risk and counterparty credit risk. The chapters provide transparency as to how ECB understands the applicable regulations for using internal models to calculate own fund requirements for credit risk, market risk and counterparty credit risk.

The guide draws on experience gained from on-site TRIM investigations during 2017 and 2018.

Definition of Default

The EBA Guidelines on definition of default will apply from 1 January 2021, but the EBA encourages institutions to implement changes prior to this date, as they will have to adapt their default identification processes and IT systems. This is the case for institutions that use the IRB approach, as they should start building reliable time series before their rating systems can be adjusted.

In the meantime, the ECB launched a process for the implementation of the new definition of default within the SSM for significant institutions using the IRB Approach. In specific, the ECB process aims to take into account the needs of institutions for a manageable and streamlined process that would allow them to finalise the effective implementation of the revised IRB approach framework by the end of 2020, as required by the EBA. The envisaged approach (called the "Two-Step Approach") proposes the following two sequential steps:

1. The implementation of the new definition of default: Institutions are encouraged to focus on the alignment of processes, procedures and IT systems used for the identification of defaults against the new definition of default, which will enable them to start collecting real default data in a manner that is compliant with the new definition of default as soon as possible. Further, this step encourages institutions to submit the ECB templates required, when requesting a material change to their rating system.
2. The adjustments to risk parameters to take into account the new definition of default and other necessary evolutions: Entails full adjustment of rating systems by institutions considering the necessary changes to the definition of default, other EBA IRB review, as well as follow-up from previous internal model investigations, such as TRIM missions.

It should be noted that the changes expected in reference to the definition of default arise from the implementation of EBA's two regulatory products, namely: The RTS on materiality threshold for credit obligations past due under Article 178 of the CRR and the EBA Guidelines on the application of the definition of default under Article 178 of Regulation (EU) No 575/20132 (EBA/GL/2016/07).

On November 21th, 2018, ECB published the Regulation on the materiality threshold for credit obligations past due for all SIs within SSM, both for retail and for non-retail exposures. The materiality threshold will comprise an absolute component, expressed as a specific maximum amount for the sum of all amounts past due owed by an obligor, and a relative component, expressed as a percentage of the amount of credit obligation past due in relation to the total amount of all on-balance sheet exposures to that obligor. By setting a single materiality threshold, the ECB Regulation improves the comparability of RWAs and defaulted exposures across SIs.

Loss Given Default (LGD)

On November 16th, 2018, EBA published its final draft RTS specifying the nature, severity and duration of an economic downturn via macroeconomic or credit-related factors that are explanatory variables or indicators for the business cycle of the considered type of exposure. Given the specificities of the types of exposures covered by a rating system, the economic downturn should be identified separately for each rating system. Its severity is specified by the most severe observations on the factors constituting the nature of an economic downturn, based on historical values of these factors over the last 20 years. Its duration is specified as the 12-month period where the most severe values are observed within the identified downturn periods.

Following the specification of a downturn period mentioned in the final draft RTS, on March 6th, 2019, EBA published its final Guidelines specifying how institutions should quantify the estimation of LGD appropriate for conditions of an economic downturn. The final Guidelines set out requirements for the appropriate quantification of the calibration target used for downturn LGD estimates and include:

- Type-1 approaches to be applied when banks have sufficient loss data for the identified downturn period,
- Type-2 approaches to be applied when banks do not have sufficient loss data for the downturn period, and choose between the so-called haircut or extrapolation approaches,
- Type-3 approaches to be applied in rare cases, where banks have to apply a minimum margin of conservatism (MoC) requirement of 15 percentage points on LGD estimates.

These Guidelines will apply as of 1 January 2021, at the latest. In the meantime, on June 1st, 2018, in a joint letter of ECB and EBA concerns were raised in regards to the LGD waivers under the IRB. (As the disposal of NPLs and corresponding capital release is assumed to be hampered by the design of the regulation for internal models, in specific by the requirements for LGD estimation, it has been proposed by some banks that the losses due to NPLs sale would be fully and permanently eliminated from the dataset used for LGD estimation).

Nevertheless, based on Article 500 (titled *"Adjustment for massive disposals"*), published in February 14th, 2019 by the Council, an LGD waiver is foreseen by the CRR2. Specifically, it is stated that: *"an institution may adjust its LGD estimates by partly or fully offsetting the effect of massive disposals of defaulted exposures on realised LGDs up to the difference between the average estimated LGDs for comparable exposures in default that have not been finally liquidated and the average realised LGDs including on the basis of the losses realised due to the massive disposals."*

1.1.6. Liquidity Stress Test 2019 (LiST 2019)

On February 6th, 2019, the ECB launched a sensitivity analysis of liquidity risk (referred as "LiST 2019") to assess the ability of the banks it directly supervises, to handle idiosyncratic liquidity shocks. The results of this Stress Test will feed into the ECB's ongoing supervisory assessments of banks' liquidity risk management frameworks, including the SREP. However, the outcome of the stress test will not affect supervisory capital and liquidity requirements in a mechanical way.

In the exercise, banks have to simulate the impact of idiosyncratic liquidity shocks on their expected cash flows over a six-month stress horizon. These shocks are identical for stronger and weaker banks and disregard any differences related to the economic environment in which they operate. Specifically, banks are asked to simulate the impact of (i) an **adverse shock** and (ii) an **extreme shock**, in which they face liquidity outflows of increasing intensity. The exercise will focus on banks' expected short-term cash flows to calculate the "survival period", which is the number of days that a bank can continue to operate using available cash and collateral with no access to funding markets. Banks are also requested to submit their benchmark expected cash flows under (iii) a "**baseline**" case, in which they honour all their contractual commitments with wholesale counterparties and face no liquidity inflows or outflows from traditional lending and deposit-taking activities.

The exercise also assesses other key aspects of liquidity risk management, namely intragroup liquidity flows, liquidity flows by currency and the ability of banks to mobilize collateral from existing assets.

The sensitivity analysis, which is expected to be completed in four months, will focus only on the potential impact of idiosyncratic liquidity shocks on individual banks. It will not assess the potential causes of these shocks or the impact of wider market turbulence. The exercise will be carried out without any reference to monetary policy decisions and the aim is for banks to discuss their individual results as part of the SREP Supervisory dialogue in the second half of 2019.

1.1.7. BCBS 239

In January 2013, the Bank for International Settlements BCBS published the "*Principles for effective risk data aggregation and risk reporting*". The overall objective of the guidelines is to strengthen banks' risk data aggregation capabilities and internal risk reporting practices. Implementation of the principles is expected to strengthen risk management at banks – in particular, "globally significant banks" ("G-SIBs") – thereby enhancing their ability to cope with stress and crisis situations. The guidelines were initially intended to turn into regulation for G-SIBs at the beginning of 2016 and to apply to other domestic systemically important banks three years later.

However, in May 2018, ECB published a report on the thematic review on effective risk data aggregation and risk reporting, which shows that the implementation status of the BCBS 239 principles within a sample of 25 SIs is unsatisfactory. Thus far, none of those SIs – some of which are classified as global systemically important banks – have fully implemented the BCBS 239 principles. Weaknesses stem mainly from a lack of clarity regarding responsibility and accountability for data quality. In specific, it seems difficult to comprehend what the roles and responsibilities of business, control and IT functions are. Hence, further efforts will be needed in the coming years so as to enhance the effectiveness of risk data aggregation and reporting.

Furthermore, in June 2018, the BCBS issued a progress report on banks' implementation of the Principles for effective risk data aggregation and reporting. The assessment covered 30 G-SIBs and notes that in 2017 most G-SIBs made, at best, marginal progress in implementing the Principles. In specific, G-SIBs have found it challenging to comply with the Principles, mainly due to the complexity and interdependence of IT improvement projects.

In view of these results, the BCBS made the following recommendations:

- Banks to continue the implementation of the Principles based on the roadmaps agreed with their supervisors and consider how this can benefit other data-related initiatives, and
- Supervisors to maintain emphasis on ensuring that banks fully implement the Principles including meeting with banks' BoDs and/or senior management and promoting home-host cooperation in relation to the implementation of the Principles by global banking groups.

NBG has initiated a "Data Governance Program" to tackle with 11 overarching principles for effective risk data aggregationn, governance and reporting. In this context, NBG has conducted a current state assessment to justify its level of compliance against regulatory requirements, and identify critical areas to be adjusted in line with the best practices.

The Bank, despite starting BCBS 239 implementation later than other European peers satisfies, to a large extent, the requirements on comprehensive, clear, useful, frequent and widely-distributed risk management reporting. This is primarily achieved through strategic decisions of the Bank in improving internal governance, IT infrastructure and initiatives in preparing for regulatory demands, such as TRIM, ICAAP/ILAAP, Stress Tests and AQR exercises.

Additionally, NBG has defined and will implement a set of mitigating actions pertaining to governance, automation and documentation to reach a state of material compliance. These actions will run in parallel (and in conjunction) with the Bank's on-going "Data Governance" initiative and include improvements in automation in data management and reporting processes, the creation of a formal process for measuring and documenting data quality across the reporting process, the setup of Service Level Agreements (SLAs), the establishment of BCBS 239 validation processes and the standardisation of documentation for risk reporting.

1.1.8. Other regulatory developments

New Securitisation framework

On December 12th, 2017, the European Parliament and the Council of the EU issued the Regulation (EU) 2017/2402 in reference to a general framework for securitisation, creating a specific framework for simple, transparent and standardised ("STS") securitisations, and amending Directives 2009/65/EC, 2009/138/EC and 2011/61/EU and Regulations (EC) No 1060/2009 and (EU) No 648/2012. Securitisation is an important element of well-functioning financial markets, while soundly structured securitisations are an important channel to diversify sources and allocate risk more widely within the Union. The newly established framework for STS securitisations is in effect from January 1st, 2019 and applies only to securitisations taking place after this date, irrespective of the institution's status as originator or investor. Further, on December 12th, 2017, the European Parliament and the Council of the EU issued the Regulation (EU) 2017/2401 amending Regulation the CRR on prudential requirements for credit institutions and investment firms.

EBA Guidelines on Outsourcing

On February 25th, 2019, EBA published its revised Guidelines on outsourcing arrangements setting out specific provisions for the governance frameworks of all financial institutions within the scope of its mandate with regard to their outsourcing arrangements. The aim is to establish a more harmonised framework for credit institutions and investment firms subject to the CRD, as well as payment and electronic money institutions.

The Guidelines ensure that institutions can apply a single framework on outsourcing for all their banking, investment and payment activities and services. The revised Guidelines are consistent with the requirements on outsourcing under the Payments Services Directive (PSD2), the Markets in Financial Instruments Directive (MiFID II) and the Commission's Delegated Regulation (EU) 2017/565.

EBA consultation on Guidelines on ICT and security risk management

On December 13th, 2018, EBA launched a consultation on its draft Guidelines on information and communication technology ("ICT") and security risk management. It includes requirements for credit institutions and investment firms, as well as payment service providers (PSPs) on the mitigation and management of all their ICT risks, including security related risks, and aim to ensure a consistent and robust approach across all financial institutions. The consultation process runs until 13 March 2019.

1.1.9. International Financial Reporting Standards 9 (IFRS 9)

On 1 January 2018, the Group adopted IFRS 9, *Financial Instruments*, which replaces IAS 39 *Financial Instruments: Recognition and Measurement* and changes the requirements for classification and measurement of financial assets and financial liabilities, impairment of financial assets and hedge accounting.

The key requirements of IFRS 9 are the following:

1. All recognised financial assets that are within the scope of IAS 39 are required to be subsequently measured at amortised cost or fair value.
2. Specifically, debt instruments that are held within a business model whose objective is to collect the contractual cash flows (rather than to sell the instrument prior to its contractual maturity to realise its fair value changes) and that have contractual cash flows that are solely payments of principal and interest on the principal outstanding (SPPI) are generally measured at amortised cost at the end of subsequent accounting periods.
3. Debt instruments that are held within a business model whose objective is achieved both by collecting contractual cash flows and selling financial assets, and that have contractual terms that give rise on specified dates to cash flows that are SPPI, are measured at FVTOCI, unless the asset is designated at "fair value through profit or loss" (FVTPL) under the fair value option.

4. All other debt instruments and equity investments are measured at their fair value at the end of subsequent accounting periods. In addition, under IFRS 9, entities may make an irrevocable election to present subsequent changes in the fair value of an equity investment (that is not held for trading) in other comprehensive income, with only dividend income generally recognised in profit or loss.

With regard to the measurement of financial liabilities designated as at FVTPL, IFRS 9 requires that the amount of change in the fair value of the financial liability, that is attributable to changes in the credit risk of that liability, is presented in other comprehensive income, unless the recognition of the effects of changes in the liability's credit risk in other comprehensive income would create or enlarge an accounting mismatch in profit or loss. Changes in fair value attributable to a financial liability's credit risk are not subsequently reclassified to profit or loss. Under IAS 39, the entire amount of the change in the fair value of the financial liability designated as FVTPL is presented in profit or loss.

In relation to the impairment of financial assets, IFRS 9 requires an ECL model, as opposed to an incurred credit loss model under IAS 39. The ECL model requires an entity to account for ECL and changes in ECL at each reporting date to reflect changes in credit risk since initial recognition. In other words, it is no longer necessary for a credit event to have occurred before credit losses are recognised. With the exception of purchased or originated credit-impaired financial assets, ECL are required to be measured through a loss allowance at an amount equal to:

- the 12-month ECL (ECL that result from those default events on the financial instrument that are possible within 12 months after the reporting date), or
- full lifetime ECL (ECL that result from all possible default events over the life of the financial instrument).

A loss allowance for full lifetime ECL is required for a financial instrument if the credit risk of that financial instrument has increased significantly since initial recognition. Purchased or originated credit-impaired financial assets are treated differently because the asset is credit-impaired at initial recognition. For these assets, the reporting entity recognizes changes in lifetime ECL since initial recognition as a loss allowance with any changes recognised in profit or loss. Under the requirements, any favorable changes for such assets are an impairment gain even if the resulting expected cash flows of a financial asset exceed the estimated cash flows on initial recognition.

The new general hedge accounting requirements retain the three types of hedge accounting mechanisms currently available in IAS 39. Under IFRS 9, greater flexibility has been introduced to the types of transactions eligible for hedge accounting, specifically broadening the types of instruments that qualify for hedging instruments and the types of risk components of non-financial items that are eligible for hedge accounting. In addition, the effectiveness test has been overhauled and replaced with the principle of an “economic relationship”. Retrospective assessment of hedge effectiveness is also no longer required. Enhanced disclosure requirements about an entity’s risk management activities have also been introduced. IFRS 9 includes an accounting policy choice to continue IAS 39 hedge accounting, which the Group has exercised.

For more details and information on the accounting policies and critical judgments applied by the Group in order to comply with the requirements of IFRS 9, please refer to Notes 2.7 and 3, of the 2018 Annual Financial Report, respectively.

Regulatory transitional arrangements

On 12 December 2017 the European Parliament and the Council of the European Union adopted Regulation (EU) 2017/2395, which amended Regulation 575/2013 with Article 473a, allowing credit institutions to gradually apply the impact of the application of IFRS 9 to own funds. In particular, upon adoption of IFRS 9, credit institutions are allowed to include in the Common Equity Tier 1 capital (CET1), a portion of the increased ECL provisions over a 5-year transitional period starting in 2018. The portion of ECL provisions that can be included in CET1 should decrease over time down to zero to ensure the full implementation of IFRS 9, after the end of the transitional period. In addition, in accordance with paragraph (4) of the aforementioned Regulation, if the ECL provisions for Stages 1 and 2 incurred after the first adoption of IFRS 9 are increased, credit institutions are allowed to include the increase in the transitional arrangements. The Group decided to apply the transitional arrangements set out in Article 1 of the Regulation, including the provisions of paragraph (4), during the transitional period.

Implementation status

In order to comply with the requirements of the new Standard, the Group established an IFRS 9 implementation program (“the Program”) to ensure a timely and high quality implementation, in accordance with the standard and additional regulatory guidance. The Program involved Finance, Group Risk Control and Architecture Division (“GRCAD”), Management Information and IT Divisions across the Group and was overseen by a Project Steering Committee. The Committee comprised of the Deputy CEO (Chair), Group CFO, Group CRO, Group COO, Group Treasurer and the General Managers of Retail, Corporate Banking, Corporate Special Assets and International Activities Divisions of the Bank. A full-time Project Management Office (PMO) was setup and a Project Manager assigned. The Program was divided into workstreams, for each of which leading Divisions and workgroup teams had been assigned. Subject matter experts were also appointed to assist in model development of IFRS 9 compliant credit risk parameters. The Board Risk Committee, Audit Committee and Board of Directors were regularly updated by the Executive Management on the status of the Program.

Transition to IFRS 9 on 1 January 2018

IFRS 9 was applied retrospectively, but the Group elected not to restate prior periods, in accordance with the transitional provisions of IFRS 9. Further, the Group elected to defer the provisions of IFRS 9 for its insurance subsidiary, Ethniki Hellenic General Insurance SA, as allowed by Commission Regulation (EU) 2017/1988 from 1 January 2018 to 1 January 2021, the adoption date of IFRS 17 Insurance Contracts. On 14 November 2018, the IASB tentatively decided to propose an amendment to IFRS 4 to allow insurers qualifying for deferral of IFRS 9 one additional year of deferral. This would mean that qualifying insurers could apply both standards for the first time in reporting periods beginning on or after 1 January 2022. As of 1 January 2018, Ethniki Hellenic General Insurance SA was classified as a discontinued operation and shall continue applying the requirements of IAS 39 after 1 January 2018.

The adoption of IFRS 9 on 1 January 2018, decreased the Group's shareholders' equity by approximately €1.5 billion, of which €1.3 billion, due to changes in impairment requirements and €0.2 billion due to classification and measurement. By applying the regulatory transitional arrangements for 2018, the Group's and the Bank's CET1 ratio as at 31 December 2017, decreased by approximately 58bps at 16.4% and 12bps at 16.7% respectively. On a fully loaded basis, as at 31 December 2017 the Group's CET1 ratio decreased by approximately 373bps at 13.2%, while the Bank's CET1 ratio decreased by approximately 408bps at 12.8%.

2. NBG's TRANSFORMATION PROGRAMME

Following a clear mandate from its Board of Directors, NBG embarked in 2018 into a program to transform itself deeply and radically and achieve a viable and sustainable business model, which will enhance its capital adequacy. Building upon its long-lasting tradition of trust and service to society, NBG has set out to become more than just a modern banking institution: its aspiration is to outrun its local peers across all competitive dimensions, eventually reinstating itself as Greece's banking champion and as one of Europe's best Banks.

The Transformation Programme is delivered within Workstreams, each led by a General Manager/Assistant General Manager, member of the Bank's Executive Committee. Some Workstreams coincide with the executive's functional area, but cross-functional oversight is strongly encouraged.

Six Workstreams have been identified, as follows:

1. **Healthy Balance Sheet Workstream**: relating to the reduction of NPEs, the appropriate safeguarding of capital adequacy, as well as to the optimization of the funding structure.
2. **Efficiency & Agility Workstream**: relating to the timely and sustainable reduction of costs, as well as to the optimization of the Branch network (and, more broadly, real estate) footprint.
3. **Best Bank for our Clients Workstream**: relating to Retail and Corporate service and coverage model, product offerings, digital proposition, use of analytics and branding.
4. **Technology & Processes Workstream**: relating to the underlying technological platforms of the Bank as well as to the redesign of its processes towards an efficient and agile operating model.
5. **People, Organization & Governance Workstream**: relating to the redesign of the overall Human Resources framework, target organizational structure and the introduction of a unified, comprehensive and rigorous Performance Management System.
6. **Visibility, Controls & Compliance Workstream**: relating to the delivery of a Bank-wide Value Based Model framework, the management of non-financial risks, risk culture and a focused mechanism for the design and delivery of an enhanced system of internal controls.

The aforementioned Workstreams currently comprise 21 further initiatives and many more sub-initiatives.

The Transformation Programme consists of six-month execution intervals, named "Seasons". All Transformation Programme initiatives / sub-initiatives have "locked-down" tangible objectives to be delivered, supporting the Bank's Strategic Plan.

3. RISK MANAGEMENT FRAMEWORK

3.1. Basic Principles and governance structure of the Group risk management

Risk control and management plays a fundamental role in the overall strategy of the Group, aiming to both effectively manage the risks of the organisation and to align with the legal and regulatory requirements. The Group aims at adopting best practices regarding risk governance, taking into account all relevant guidelines and regulatory requirements, as set by the Basel Committee on Banking Supervision, the European Banking Authority, the European Central Bank \ Single Supervisory Mechanism (SSM), the Bank of Greece, the Stock Exchange Commission legislation, as well as any decisions of the competent authorities supervising the Group's entities.

Risk management at NBG has a structured and tiered approach, based on a number of governance bodies, internal policies and procedures, and controls framework.

The Board of Directors bears ultimate accountability for NBG's risk position. It signs off on the risk strategy and risk appetite, and monitors the effectiveness of risk governance and management advised by its two specialised committees: the Board Risk Committee (BRC) and the Board Audit Committee. The Bank's Executive Committee (ExCo) and other executive committees are in charge of daily management actions and steer of the business. The Group Chief Risk Officer (CRO) is a member of the ExCo. The CRO has direct access to the Board, has delegated decision-authority for executive matters over Risk and leads the Risk function. The Risk function has specialist teams per risk type. Risk function teams conduct day-to-day risk management activities according to policies and procedures as approved by the BRC, the ExCo and other executive committees. The perimeter is based on the industry standard three lines of defence model (please see below). Finally, the Risk function's activities are supported by underlying systems and infrastructure, as well as risk culture. This risk culture is viewed as a core component of effective risk management, with the tone and example set by Board and senior management.

Hence, there are four layers relevant to Risk Management, all rolling up into the Board of Directors:

1. **Oversight and approval**

   At the top of the house, the members of the Board are responsible for oversight and approval on governance structures of NBG, ensuring the right frameworks and policies are in place to ensure the bank can be effectively managed.

2. **Executive management actions & sign-off**

   The Executive management layer (ExCo and other executive committees) decides on management actions, signs off on materials produced and reported, and actively steers the bank.

3. **Methodology and framework**

   Procedures and methodologies are in place to guide risk management, e.g. credit approval procedures, model development and validation, product assessments.

4. **Execution and analysis**

   The execution layer is in charge of implementing the frameworks, models and policies set forth by the aforementioned layers, and provide the Board and the executive committees with relevant analyses and results to base their decisions upon.

The Board Risk Committee

The Group has clearly defined its risk appetite and has established a risk strategy and risk management policies. Ultimately responsible for the development and application of this general framework of risk management at a Group level is the Board of Directors (the Board) and more specifically the Board Risk Committee (the "BRC"), also supported by the Audit Committee.

The BRC forms and submits for approval to the Board of Directors the risk appetite and risk strategy of the Group on an annual basis, and monitors their appropriate communication throughout the Bank. It also sets the principles, approves the policies that govern risk management and monitors the appropriate management of risk. The BRC has the responsibility to review reports and evaluate the overall risk exposure of the Bank and the Group on a regular basis, taking into account the approved risk strategy and the business plan of the Group, to develop proposals and recommend corrective actions for consideration by the Board regarding any matter within its purview. The proposals to the BRC are submitted by the Group Chief Risk Officer (CRO).

The Committee has two roles, namely it operates a) as the Board Risk Management Committee and b) as the Board Committee Responsible for Non-Performing Loans/Exposures (NPLs/NPEs) as prescribed by Art. 10 par. 8 of Greek Law 3864/2010, as in force.

The BRC convenes regularly at least on a monthly basis, as well as extraordinarily, whenever deemed necessary by its Chairman.

During 2018, the Committee convened thirteen times. In the context of its responsibilities and during the course of the year, the Committee was briefed in detail and on a regular basis on risk issues such as the IFRS 9 Credit Risk Models, the Stress Tests results, the Risk Appetite Framework project and the 2018 internal capital adequacy assessment process ("ICAAP")/ internal liquidity adequacy assessment process ("ILAAP") results. In addition, the Committee was extensively updated on issues related to NPL/NPEs.

Furthermore the Committee submitted to the Board of Directors for approval the NBG Group Recovery Plan 2018 as well as Policies related to the proper internal operations of the Group such as the ILAAP & ICAAP Frameworks, the updated Market Risk and Liquidity Risk Policies, IFRS 9 related Policies, the NPE Divestment Policy, the NPE & Forbearance Classification Policy, the Retail Credit Policy and the Credit Policy for the Corporate Portfolio. In addition, the Committee approved on a quarterly basis the Report to the Bank of Greece on the Management of Loans in Arrears and Non-Performing Loans, as per Bank of Greece Act 42.

Since 19 December 2013 the Committee has been composed exclusively of non-executive Board members, at least three in number, the majority of which (including the Chairman) are independent members of the Board, in accordance with the definition of independence specified in the Bank's Corporate Governance Code and one member is the HFSF representative at the Board of Directors. The members and the Chairman of the Committee are elected by the Board of the Bank, following recommendation by the Board's Corporate Governance and Nominations Committee. All members should have adequate knowledge and prior experience in banking and financial services, while at least one member should have solid risk and capital management experience, as well as familiarity with local and international regulatory framework. Also, in accordance with the provisions of Art. 76 of EU Directive 2013/36 all members of the Committee have appropriate knowledge, skills and expertise to fully understand and monitor the risk strategy and the risk appetite.

In January 2017 the Committee Charter was amended, introducing the new dual role of the BRC, namely its operation a) as the Board Risk Management Committee and b) as the Board Committee Responsible for Non-Performing Loans/Exposures (NPLs/NPEs) prescribed by Art. 10 par. 8 of Law 3864/2010 as in force. The Committee Charter was further updated in February 2019 and is available on the Bank's website www.nbg.gr (section: The Group / Corporate Governance / Board of Directors / Committees).

"Three Lines of defense" model in the Group's risk management

The Group's risk management is spread on three different levels, in order to create three lines of defense, traced as follows:

- **First line:** The risk taking units (e.g. credit originating departments, Treasury) are responsible for assessing and minimizing risks for a given level of expected return by establishing and implementing internal rules and controls to the on-going business.
- **Second line:** The three Credit Units (under the CRO), which are independent of the credit granting departments, are involved in the approving procedure. They perform unbiased control of the undertaken risk and have the right of veto.

  The three Group Risk Management Units and the independent Model Validation Unit (MVU) identify, monitor and quantify risks (including model risk) at portfolio or entity level. Moreover they assist other units undertaking risks (credit departments and other) and they assert the adoption of appropriate pricing and risk management tools.

  Additionally at this level:

  - The Group Compliance function follows regulatory compliance across the Bank and the Group and ensures that all Units meet regulatory and other compliance requirements, through monitoring, advising and training.
  - The Financial reporting function ensures that all controls in the production and transmission of financial information are adequate and function properly across the Group.
  - The Legal Division, the Business Processes Division, the Group Cybersecurity & Data Governance Division and the Group Security Division cooperate with Group Risk Management providing guidance, appropriate tools, methodologies and oversight acting as control units for specific subcategories of operational risk (i.e. legal risk, ICT risk) as well as ensuring the Bank's business continuity and mitigation of physical threats.
- **Third line:** The Internal Audit function of the Bank and the Group, which reports directly to the Board of Directors through the Audit Committee, complements the risk management framework, acting as an independent reviewer, focusing on the effectiveness of the risk management framework and control environment.

The duties and responsibilities of all lines of defense are clearly identified and separated, and the relevant Units are sufficiently independent.

The Risk Management Function

The organisational chart and reporting lines of NBG's Group Risk Management Function are depicted in the figure below. The CRO reports to the CEO, has direct access to the BRC and is its main rapporteur.

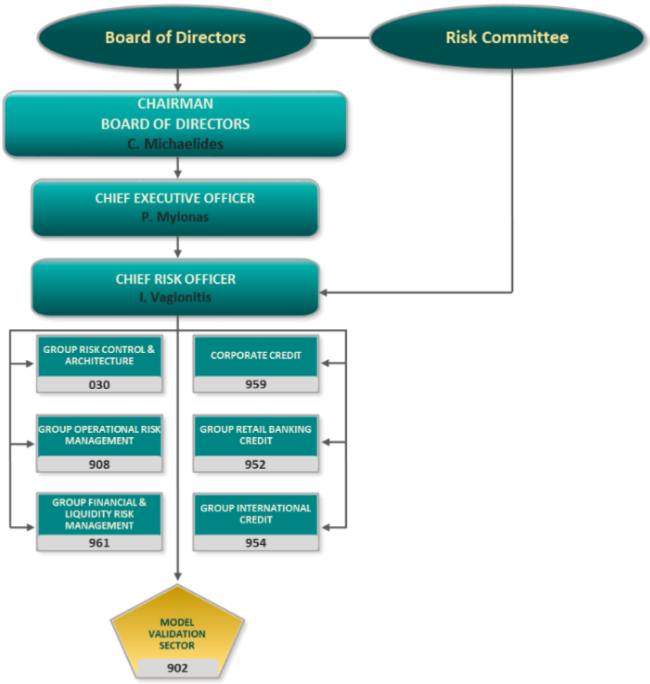


Figure 1: Organisational Chart of Risk Function

The risk management units of the subsidiaries Group are coordinated by the NBG Group Risk Control and Architecture Division ("GRCAD"), the NBG Group Financial and Liquidity Risk Management Division ("GFLRMD") and the NBG Group Operational Risk Management Division ("GORMD"), which are supervised by the CRO. In addition, an independent Model Validation Unit operates reporting directly to the CRO.

The three Credit Units (under the CRO), which are independent of the credit granting departments, are involved in the approving procedure. They perform unbiased control of the undertaken risk and have veto right (see also sections regarding Credit Policies below).

Group Risk Management Units

A central role in the risk management framework, that is to identify, evaluate, manage, monitor and report risks undertaken by the Group, has been assigned to the three Group Risk Management Divisions, i.e. NBG Group Risk Control and Architecture Division (GRCA), NBG Group Financial and Liquidity Risk Management Division (GFLRM) and Group Operational Risk Management Division (GORMD), as well as the independent Model Validation Unit (MVU). These Units identify the risks of different portfolios and activities (including model risk), and supervise accordingly all subsidiaries operating in the financial sector.

The Credit Units, also under the CRO, supervise the credit departments of the financial institutions across the Group and participate in the approval granting bodies. Credit Units' independence ensures an unbiased level control for credit risk undertaken. These Units are also responsible for developing and updating the relevant Credit Policies (see Section 3.4).

Analytically, the responsibility of the GRCA Division is to:

- Specify and implement credit risk policies emphasizing on rating systems, risk assessment models and risk parameters according to the guidelines set by the Board,
- Assess the adequacy of methods and systems that aim to identify, measure, monitor and report credit risk undertaken by the Bank and other financial institutions of the Group and periodically validate them,
- Calculate Regulatory Capital in respect to credit risk, coordinate calculation of the Internal Capital required in respect to all banking risks and prepare relevant regulatory and MIS reports,
- Establish guidelines for the development of assessment methodologies for Expected Loss (EL) and its components, i.e. Probability of Default (PD), Loss Given Default (LGD) and Exposure at Default (EAD) for each category of corporate and retail portfolio,
- Introduce best practices and standards for the development and calibration of all credit risk models at Group level.

Similarly, the responsibility of the GFLRM Division is to:

- Plan, specify, implement and introduce market, counterparty and liquidity risk policies, under the guidelines of the Board,
- Assess the adequacy of methods and systems that aim to analyse, measure, monitor, control and report the aforementioned risks undertaken by the Bank and other financial institutions of the Group and periodically validate them,
- Independently evaluate financial products, assets and liabilities of the Bank and the Group,
- Regularly handle issues relevant to market, counterparty and liquidity risks, under the guidelines and specific decisions of the Board Risk Committee and the Asset Liability Committee (ALCO).

In 2019, Group Operational Risk Management Unit was established as a separate Division. Its responsibility is to:

- Establish, oversee, support and continuously update and improve the Operational Risk Management Framework (ORMF)
- Ensure the development of policies, methods and systems for the identification, measurement and monitoring of operational risks and their periodic assessment and validation
- Continuously monitor and review the Group operational risk profile providing adequate information to all stakeholders in compliance with regulatory requirements.

Specific functions such as the Legal Division, the Group Compliance, the Business Processes Division, the Group Cybersecurity & Data Governance Division and the Group Security Division cooperate with Group Operational Risk Management Unit providing appropriate tools, methodologies and oversight for the operational risks that fall under their mandate, ensuring that the said operational risks are properly managed.

Finally, the responsibility of the independent Model Validation Unit, that reports directly to the Group CRO is to:

- Establish, manage, and enforce Credit Risk Validation Policy and Market Risk Valuation Policy; update them based on applicable regulatory guidance and requirements,
- Establish, manage, and oversee internal models' annual validation cycle,
- Develop Model Risk Management guidelines and methodologies for the qualitative and/or quantitative assessment and measurement of the Bank's Model Risk,
- Communicate and escalate model risk metrics to the Board, the Board Risk Committee, the Chief Risk Officer and the Senior Management,
- Provide results of regularly executed validation processes to Internal - External Auditors and SSM,
- Independently validate and approve new and existing models for credit and for market risk,
- Document material changes in model review reports,
- Annually recertify models and review results of ongoing monitoring.

Risk Appetite Framework

Following work during 2018 and early 2019, the Bank recently established a new, enhanced Risk Appetite Framework (RAF) adhering to the best international practices.

The objective of the Risk Appetite Framework is to set out the level of risk that the Group is willing to take in pursuit of its strategic objectives, also outlying the key principles and rules that govern the risk appetite setting. The RAF constitutes an integral part of the Group's Risk & Capital Strategy and the overall risk management framework. The RAF has been developed in order to be used as a key management tool to better align business strategy, financial targets and risk management, and enable a balance between risk and return. It is perceived as a reference point for all relevant stakeholders within the Bank, as well as the supervisory bodies, for the assessment of whether the undertaken business endeavors are consistent with the respective risk appetite.

An effective RAF is fundamental to a strong risk management and governance framework. The RAF is not just a Key Performance Indicator (KPI) monitoring system; it constitutes an essential mechanism to support the Board's oversight of the strategy execution within the risk boundaries that the Group is willing to operate. Through RAF, overall aspirations of the Board are translated to specific statements and risk metrics, enabling planning and execution, while promoting firm-wide thinking.

The new Risk Appetite Framework:

- has been formed by both top-down Board guidance and leadership and bottom-up involvement of senior management and other stakeholders across the Bank,
- incorporates quantitative risk metrics and qualitative statements that are easy to communicate and assimilate,
- supports Group's business strategy by ensuring that business objectives are pursued in a risk-controlled manner that allows to preserve earnings stability and protect against unforeseen losses,
- supports and guides decision-making process on a day-to-day basis, by providing the necessary risk related perspective,
- incorporates a forward looking view about the Group's risk profile expectations,
- reflects the types and level of risk that the Bank is willing to operate within, based on its overall risk appetite and risk profile, as well as the maximum level of risk that the Group can withstand, through the risk capacity,
- contributes in promoting a risk culture across the Group,
- establishes the governance arrangements for RAF update and monitoring,
- outlines the roles and responsibilities of involved bodies and stakeholders overseeing the development, implementation and monitoring of the RAF,
- defines the escalation and assessment process in case of an indicator breach, in order for ordinary and extraordinary management actions to be timely initiated and implemented to reduce the level of risk as required,
- is aligned with other associated key processes of the Bank, including Business plan / Budget, ICAAP / ILAAP, Recovery plan, NPE Strategy, limit setting and remuneration.

Within this context, the RAF allows:

- ✓ to strengthen the ability to manage and mitigate risks,
- ✓ to facilitate the monitoring and communication of the Bank's risk profile quickly and effectively.

The assessment of the Bank's risk profile against the RAF is an ongoing and iterative process. With regards to the timing that the RAF update takes place (as part of the regular annual update process), the interaction with other key processes of the Bank (Business Plan/Budget, NPE target setting, ICAAP, ILAAP, Recovery Plan, SREP) is taken into consideration. Specific focus is placed to RAF's interplay with the Business Plan, as the two processes feed into each other: in certain cases the risk appetite is expected to act as backstop / constraint to the Business Plan, while for other cases, the Business Plan provides input for setting risk tolerance levels.

Risk Profile Assessment / Risk Taxonomy

The ongoing assessment of the Group's risk profile is a key component of the risk management process and comprises a series of specific steps. Every type of risk is analysed and assessed on the basis of its specific characteristics and the qualitative features (policies, procedures, control mechanisms) applied in its management. A common component is the "internal capital" approach, which enables different types of risks to be captured under the same (and, therefore, comparable) terms, and also enables the risk profile of the Group to be expressed in a single measure ("total internal capital").

The Internal Capital Adequacy Assessment Process ("ICAAP") framework provides a list of the main risk categories and sub-categories covered by the ICAAP, as well as information regarding their definitions, risk management framework and the methodologies and models used for their assessment. Under ICAAP, the Group plans and monitors its capital adequacy by utilizing two quantification/ estimation approaches for capital requirements:

- Regulatory capital, whereby regulatory rules are used to calculate the capital requirement.
- Internal capital, whereby internal methodologies are used to calculate the capital requirement.

Apart from the ICAAP Framework, NBG has also developed an ICAAP methodological manual to describe in detail the methodologies used by NBG Group for each material risk, aiming to measure internal capital requirements where quantification in the near-to-medium term is deemed possible.

Table 4: Material Risk Types and their treatment in ICAAP

Risk Types	Capital requirements approaches		
	Regulatory Capital	Internal Capital	Qualitative Analysis
Credit Risk	√	√	√
Concentration Risk	-	√	√
Settlement Risk	-	√	√
Residual Risk	-	√	√
Securitization Risk	√	√	√
Market Risk	√	√	√
General Interest Rate Risk	√	√	√
Issuer Risk	√	√	√
Country Risk	-	-	√
Equity Risk	√	√	√
Underwriting Risk	-	-	√
Foreign Exchange Risk	√	√	√
Commodity Risk	√	√	√
Counterparty Risk	√	√	√
Gamma Risk & Vega Risk	√	√	√
IRRBB	-	√	√
Operational Risk	√	√	√
Conduct Risk	-	√	√
ICT Risk	-	-	√
Model Risk	-	√	√
Legal Risk	-	√	√
Reputational Risk	-	-	√
Strategic Risk	-	-	√
Business Risk	-	√	√
Capital Access Risk	-	-	√
Liquidity Risk	-	-	√
Real Estate Risk	-	√	√
Pension Risk	-	-	√

Internal Capital Adequacy Assessment Process (ICAAP)

NBG Group has devoted substantial resources to the assessment of its capital adequacy, relating to both risk and capital management. The process is continously developed and formalized so as to enhance business benefits and support the strategic aspirations of NBG Group.

ICAAP objectives are:

- the proper identification, measurement, control and overall assessment of all material risks,
- the development of appropriate systems to measure and manage those risks,
- the evaluation of capital required to cover those risks (the "internal capital").

The term "internal capital" refers to the amount of own funds adequate to cover losses at a specified confidence level within a certain time horizon (both set in accordance with the risk-appetite framework).

The NBG Group has created an analytical framework for the annual implementation of the ICAAP. The framework is formally documented and describes the components of ICAAP at both Group and Bank level in detail. The framework comprises the following:

- Group risk profile assessment,
- Risk measurement and internal capital adequacy assessment,
- Stress testing development, analysis and evaluation,
- ICAAP reporting,
- ICAAP documentation.

Both the Board and the Bank's Executive Committees are actively involved and support the ICAAP. Detailed roles and responsibilities are described in detail in the ICAAP Framework document. The Board's Risk Committee approves the confidence interval for "internal capital", reviews the proper use of risk parameters and/or scenarios where appropriate, and ensures that all forms of risk are effectively covered, by means of integrated controls, specialized treatment, and proper coordination at Group level. The BRC bears ultimate responsibility for the adequacy and proper execution of the ICAAP.

ICAAP's design and implementation Framework concerns the entire Group's material risks. The parameters taken into account are the size of the relevant Business Unit/Group's Subsidiary, the exposure per risk type and the risk methodology and measurement approach for each type of risk.

The identification, evaluation and mapping of risks to each relevant Business Unit/Group subsidiary is a core ICAAP procedure. Risks' materiality assessment is performed on the basis of certain quantitative (e.g. exposure as percentage of the Group RWAs) and qualitative criteria (e.g. established framework of risk management policies, procedures and systems, governance framework and specific roles and responsibilities of relevant units, limits setting and evaluation).

NBG Group has recognised the following risk types as the most significant within the ICAAP framework:

- Credit
- Market
- Operational
- Interest Rate Risk in the Banking Book (IRRBB)
- Concentration (Credit)
- Conduct (Operational)
- ICT (Operational)
- Model (Operational)
- Liquidity
- Business
- Strategic
- Reputational (Operational)
- Real estate
- Legal (Operational)
- Capital Access
- Pension.

The calculation of NBG Group "Total Internal Capital" consists of two steps: In the first step, internal capital per risk type is calculated on a Group basis. NBG Group has developed methodologies allowing the calculation of the required internal capital for quantifiable risks. These are reassessed on a regular basis and upgraded in accordance with the global best practices. In the second step, internal capital per risk type is summed up to yield the Group's "Total Internal Capital".

Capital allocation aims at distributing the "Internal Capital" to the Business Units and Subsidiaries so that ICAAP connects business decisions and performance measurement.

For 2018 the Bank implemented the ICAAP by estimating the relevant internal capital for all major risk types at Group level. Calculations were based on methodologies already developed in the ICAAP Framework. Moreover, NBG Group conducted a bank-wide macro Stress Test exercise, relating to the evolution of its CET I Funds under adverse scenarios (so as to ensure relevance and adequacy of the outcome with a realistic and non-catastrophic forward-looking view of downside tail risks).

In addition, a reverse stress test process has been conducted, where a threshold capital adequacy ratio has been set and then factors that could lead to a breach of this threshold have been identified. Reverse stress tests followed the methodology used to estimate internal capital required to cover against credit risk. Scenarios that could push the ratio down to this threshold were analysed.

It should be stressed that the Bank implements, monitors and uses the ICAAP aiming at achieving full compliance with the European Banking Authority and ECB guidelines and standards concerning ICAAP/ILAAP, the Supervisory Review and Evaluation Process (SREP) and Stress Testing.

Internal Liquidity Adequacy Assessment Process (ILAAP)

The scope of ILAAP is to assess that the Group has adequate liquidity sources to ensure that its business operations are not disrupted, both in a going concern status, as well as under stressed conditions. Within ILAAP the Group evaluates its liquidity and funding risk in the context of a management framework of established policies, systems and procedures for their identification, management, measurement and monitoring.

The ILAAP is an integrated process, therefore it is aligned with the Group's risk management framework and takes into account its current operating environment. Moreover, besides describing the Group's current liquidity state, it further serves as a forward-looking assessment, by depicting the prospective liquidity position, upon the execution of the Bank's Funding Plan. Finally, the ILAAP examines the potential impact of the realization of extreme stress scenarios, on the Bank's liquidity position, ensuring that the Group can withstand such severe shocks and continue operating.

Code of Ethics / Whistleblowing Policy

Extensive information about the Bank's Code of Ethics, Whistleblowing Policy and other items regarding sound Corporate Governance can be found in the Corporate Governance Statement section of the Bank's Annual Financial Report for 31.12.2018 (www.nbg.gr / Investor Relations / Financial Infromation).

The Code of Ethics is available on the Bank's website www.nbg.gr (section: Group / Corporate Governance / Regulations and Principles).

The Bank's website (section: Group / Corporate Governance / Contact / Contact Audit Committee) also provides the contact information for the submission of confidential reports.

3.2. Credit Risk

3.2.1. Credit granting processes and controls

Credit risk is the risk of financial loss relating to the failure of a borrower to honor his/her contractual obligations. It arises in lending activities as well as in various other activities where the Group is exposed to the risk of counterparty default, such as trading, capital markets and settlement activities. Credit risk is the largest risk the Group faces. Credit risk control processes are conducted separately by the Bank and each of its subsidiaries.

The Group's credit granting processes include:

- Credit-granting criteria based on the particular target market, the borrower or counterparty, as well as the purpose and structure of the credit and its source of repayment,
- Credit limits that aggregate in comparable and meaningful manner different types of exposures at various levels,
- Clearly established procedures for approving new credits as well as the amendment, renewal and re-financing of existing credits.

The Group maintains on-going credit administration, measurement and monitoring processes, including in particular:

- Documented credit risk policies,
- Internal risk rating systems,
- Information systems and analytical techniques that enable measurement of credit risk inherent in all relevant activities.

The Group's internal controls that are implemented for the credit risk related processes include:

- Proper management of the credit-granting functions,
- Periodical and timely remedial actions on deteriorating credits,
- Independent, on-going assessment of the credit risk management processes by Internal Audit, covering in particular the credit risk systems/models employed by the Group.

Active credit risk management is achieved through:

- The application of appropriate limits for exposures to a particular obligor, a group of associated obligors, obligors that belong in the same economic sector, etc,
- The use of credit risk mitigation techniques (such as collaterals and guarantees),
- The estimation of risk adjusted pricing for most products and services,
- A formalized validation process, encompassing all risk rating models, conducted by the Bank's independent Model Validation Unit.

3.2.2. Credit Policy for Corporate Portfolios

The Credit Policies for the Corporate portfolios of the Bank and its Subsidiaries ("the Subsidiaries") present the fundamental policies for the identification, measurement, approval and monitoring of credit risk related to the Corporate Portfolios.

The Credit Policy of the Bank is approved by the Board of Directors (BoD) upon recommendation of the Board Risk Committee (BRC) following proposal by the Group CRO to the BRC and the Executive Committee. The Credit Policy is reviewed on an annual basis and amended whenever is needed and at least every two years.

The Policy provides that any exception is approved by the BoD upon recommendation of the BRC following proposal by the Group CRO to the BRC and the Executive Committee. All exceptions and their justification are duly recorded and have either an expiry date or a review date.

The Credit Policy of each Subsidiary is approved by the competent local Boards / Committees, following a recommendation by the responsible Officers or Subsidiaries' Bodies, according to the decisions of the Bank and the provisions of the Credit Policies. Each proposal must bear the prior consent of the Group CRO, or the Head of NBG's Group International Credit Division in cooperation with the Head of NBG's Group Risk Control and Architecture Division for issues falling under their responsibility. The subsidiaries' Credit Policies are subject to periodical revision.

Any exception to the Credit Policies of the Subsidiaries is ultimately approved by the Group CRO, or the Head of NBG's Group International Credit Division in cooperation with the Head of NBG's Group Risk Control and Architecture Division, for issues falling under their responsibility. All exceptions and their justification are duly recorded and have either an expiry date or a review date.

3.2.3. Credit Policy for Retail Banking

The Credit Policy for the Retail Banking Portfolio sets the minimum credit criteria, policies, procedures and guidelines for managing and controlling credit risk undertaken in Retail Portfolios, both at Bank and Group level. Its main scope is to enhance, guide and regulate the effective and adequate management of credit risk, thus achieving a viable balance between risk and return.

The Credit Policy is communicated through the use of respective Credit Policy Manuals. The subject manuals are made to serve three basic objectives:

- to set the framework for basic credit criteria, policies and procedures,
- to consolidate Retail Credit policies of the Group, and,
- to establish a common approach for managing Retail Banking risks.

The Credit Policy is approved and can be amended or revised by the Board of Directors of the Bank following an opinion of the Board Risk Committee and after a proposal by the Group CRO and it is subject to periodical revision.

The Credit Policy of each Subsidiary is approved and can be amended or revised by the competent local Boards/Committees, following a recommendation by the responsible Officers or Subsidiaries' Bodies, according to the decisions of the Bank and the provisions of the Credit Policies. Each proposal must bear the prior consent of the Group CRO, or the Head of NBG's Group Retail Credit Division in cooperation with the Head of NBG's Group Risk Control and Architecture Division for issues falling under their responsibility. The subsidiaries' Credit Policies are subject to periodical revision.

NBG Group Retail Credit Division reports directly to the Group CRO. Its main task is to evaluate, design and regulary update the credit policy that governs the retail banking products, both locally and abroad. Furthermore, the Division closely monitores the consistent implementation of both credit policy provisions and credit granting procedures.

Through the application of Retail Banking Credit Policy, the evaluation and estimation of credit risk, for new as well as for existing products, are effectively facilitated. NBG's top management is regularly informed on all aspects regarding the Credit Policy. Remedial action plans are set to resolve the issues, whenever necessary, within the risk appetite and strategic orientation of the Bank. Retail Banking Credit Policy is subject to regular reviews during which all approved policy changes are incorporated in the Policy Manual.

3.2.4. Concentration Risk

The Bank manages the extension of credit, controls its exposure to credit risk and ensures its regulatory compliance based on an internal limits system. The GRCAD is responsible for limits setting, limits monitoring and regulatory compliance.

The fundamental instruments for controlling Corporate Portfolio concentration are Obligor Limits (which reflect the maximum permitted level of exposure for a specific Obligor, given his/her Risk Rating) and Sector Limits. Any risk exposure in excess of the authorized internal Obligor Limits must be approved by a Credit Approving Body of a higher level, based on the Credit Approval Authorities as presented in the Corporate Credit Policy. Both Obligor limits and Sector limits are subject to BRC approval on an annual basis.

Credit risk concentration arising from a large exposure to a counterparty or group of connected clients whose probability of default depends on common risk factors is also monitored, according to the Large Exposures and Large Debtors reporting framework.

Finally, within the Internal Capital Adequacy Assessment Process (ICAAP), the Bank has adopted a methodology to measure the risk arising from concentration to economic sectors (sectoral concentration) and to individual companies (name concentration).

3.3. Counterparty Credit Risk

Counterparty Credit Risk (CCR) stems from OTC derivatives and other interbank secured and unsecured funding transactions and is due to the potential failure of a counterparty to meet its contractual obligations.

More specifically, the framework for managing CCR that pertains to Financial Institutions (FIs) is established and implemented by the GFLRM Division. It consists of:

- Measuring the exposure per counterparty, on a daily basis,
- Establishing the respective limits per counterparty,
- Monitoring the exposure against the defined limits, on a daily basis.

The methodology for measuring exposure to a FI depends on the characteristics of the transaction. Specifically, unsecured interbank placements produce an exposure that is equal to the face amount of the transaction, whereas secured interbank transactions and OTC Derivatives have Pre-Settlement Risk, which is measured through each product's Credit Equivalent Factors (CEFs), as described in the Counterparty Credit Risk Framework.

For the efficient management of CCR, the Bank has established a framework of counterparty limits. These limits are based on the credit rating of the financial institutions as well as the product type. Credit ratings are provided by internationally recognized rating agencies, in particular Moody's and Standard & Poor's. According to the Bank's policy, if the agencies' evaluations diverge, the lower (worse) credit rating will be considered. The limit-framework is revised periodically, according to business needs and the prevailing conditions in the international and domestic financial markets.

Counterparty limits apply to all financial Instruments in which the Treasury Division is active in the interbank market. Subsequently, all limits are monitored by GFLRM on a daily basis.

The Bank seeks to further mitigate CCR by standardizing the terms of the agreements with counterparties through ISDA and GMRA contracts, that encompass all necessary netting and margining clauses. Credit Support Annexes ("CSAs") have also been signed with almost all active FIs, so that net current exposures are managed through margin accounts, on a daily basis, by exchanging mainly cash or debt securities as collateral.

Moreover, the policy of the Bank is to avoid taking positions on derivative contracts where the values of the underlying assets are highly correlated with the credit quality of the counterparty, i.e. avoid wrong-way risk. The latter is defined as the risk deriving from the presence of a positive correlation between the probability of default of a counterparty and the relative exposure.

There are 2 categories of wrong way risk:

- **General Wrong Way Risk** – arises when the likelihood of default by counterparties is positively correlated with general market risk factor.
- **Specific Wrong Way risk** – arises when the exposure to a particular counterparty is positively correlated with the PD of the counterparty due to the nature of the transactions with the counterparty.

Finally, the current Bank's rating has already activated the contract clauses against downgrading. Therefore a further expansion of the existing margins triggered by the Bank's rating downgrade is not expected.

3.4. Market Risk

Market risk is the current or prospective risk to earnings and capital arising from adverse movements in interest rates, equity prices, commodity prices and exchange rates or their levels of volatility. The Group engages in moderate trading activities in order to enhance profitability and service its clientele. These trading activities create market risk, which the Group seeks to identify, estimate, monitor and manage effectively through a framework of principles, measurement processes and a valid set of limits that apply to all of the Group's transactions. The most significant types of market risk for the Group are interest rate, equity and foreign exchange risk.

- **Interest Rate Risk** is the risk arising from fluctuations of interest rates and/or their implied volatility and stems from the interest rate, over-the-counter (OTC) and exchange traded, derivative transactions, as well as from the trading and the held-to-collect-and-sell (HTCS) bond portfolios.

  The most significant entity of the Group contributing to market risk is the Bank. More specifically, the Bank is active in the interest rate and cross currency swap market and engages in vanilla and more sophisticated transactions for hedging and proprietary trading purposes and it maintains positions in bond and interest rate futures, mainly as a means of hedging and to a lesser extent for speculative purposes. Additionally, the Bank retains a portfolio of Greek T-Bills and government bonds and other EU sovereign debt, EFSF bonds, as well as moderate positions in Greek and international corporate bonds.

- **Equity Risk** is the risk arising from fluctuations of equity prices or equity indices and/or their implied volatility. The Bank has a moderate exposure to equity risk, which arises from the positions it retains in stocks and equity derivatives. More specifically, the Bank retains positions in stocks and equity derivatives which are traded on the ATHEX and other European exchanges and are classified in the Trading and the HTCS portfolios. The positions held in the Trading portfolio are mainly used for the hedging of the equity risk that arises from the Bank's equity-linked products offered to its clientele and to a lesser extent for proprietary trading. The equity risk undertaken by the rest of the Group's subsidiaries is insignificant.

- **Foreign Exchange Risk** is the risk arising from fluctuations of foreign exchange rates and/or their implied volatility and stems from the Group's Open Currency Position (OCP). The OCP primarily arises from foreign exchange spot and forward transactions. The OCP is distinguished between Trading and Structural. The Structural OCP contains all of the Bank's assets and liabilities in foreign currency (for example loans, deposits, etc.), along with the foreign exchange transactions performed by the Treasury Division. The Bank trades in all major currencies, holding mainly short-term positions for trading purposes and for servicing its institutional/corporate, domestic and international clientele. The subsidiaries of the Group bear minimal foreign exchange risk.

All key principles that govern the Bank's activities in the financial markets, along with the framework for the estimation, monitoring and management of market risk are incorporated in the Bank's Market Risk Policy. The Policy has been approved by the Board Risk Committee and is reviewed and updated on a regular basis, or when deemed necessary.

The Bank has also established a framework of VaR limits in order to control and manage the risks to which it is exposed in a more efficient way. These limits are based on the Bank's Risk Appetite, as outlined in the Risk Appetite Framework (RAF), the anticipated profitability of the Treasury, as well as on the level of the Bank's own funds (capital budgeting), in the context of the Group strategy. The VaR limits refer not only to specific types of market risk, such as interest rate, foreign exchange and equity, but also to the overall market risk of the Bank's trading and HTCS portfolios taking into account the respective diversification between portfolios. Moreover, the same set of limits are used to monitor and manage risk levels on the Trading book, on an overall basis and per risk type, since this is the aggregation level relevant for the calculation of the own funds requirements for Market Risk under the Internal Model Approach (IMA)

NBG employs a three-line of defense framework, as per the NBG Risk Strategy, to monitor market risk and comply with market risk limits. The first line of defense is at the risk-taking level, where NBG's various market risk taking Business Lines are responsible to monitor and maintain compliance with the set market risk limits, on a continuous basis. The GFLM Division constitutes the second line of defense, and is responsible to monitor and report NBG's market risk exposures and market risk limits utilization. Finally, NBG's Internal Audit is responsible to validate that the Group, as a whole, as well as the various departments individually, are compliant with the set market risk policies and procedures.

Regarding NBG Group's subsidiaries, they have independent market risk management units and report their positions and other market risk metrics to NBG's Market Risk Management Subdivision on a daily basis. However, given the low materiality and limited market risk exposure of NBG's subsidiaries, as well as the current NBG Group divestment plan, these entities do not use internal models for market risk capital calculations. To this extent, NBG uses internal models for monitoring market risk and calculates capital requirements only at a Bank level and subsequently consolidates the subsidiaries, at a Group level.

The operation of the market risk management unit as a whole, including the VaR calculation framework, have been thoroughly reviewed and approved by the Bank of Greece, as well as by external auditors. Also, the Internal Audit assesses the effectiveness of the relevant internal controls on a regular basis. Furthermore, the adequacy of the market risk management framework, as well as the appropriateness of the VaR model used for the calculation of the Bank's capital requirements, were successfully reassessed by the Single Supervisory Mechanism ("SSM") during the on-site investigation in the context of the "Targeted Review of Internal Models" ("TRIM"), that took place in the last quarter of 2017. There were no major findings identified, while most of the findings reported were of the lowest severity. Based on the TRIM assessment report, ECB concluded in its final Decision that NBG may continue calculating the own funds requirements for general market risk using its internal model approach, which verifies the robustness of NBG's Market Risk management model.

3.5. Operational Risk

3.5.1. Introduction

The Bank acknowledges its exposure to operational risk stemming from its day-to-day business activities. It also aknowledges the need for managing this type of risk, as well as the necessity for holding adequate capital in order to deal with any potential exceptional operational risk loss.

The Bank has established and maintains a group-wide, effective framework for the management of operational risk (Operational Risk Management Framework - ORMF). This Framework complies with regulatory requirements and is under a continous development and improvement in order to match the best practices of the banking industry.

3.5.2. Definition and objectives

The Bank defines operational risk (OR) as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition excludes strategic and business risk but takes into consideration the reputational impact of operational risk.

The main subcategories of operational risk are:

- Legal risk, which is defined as the risk of being sued or being the subject of a claim or proceedings due to non-compliance with legal or statutory responsibilities and/or to inaccurately drafted contracts. It also includes the exposure to newly enacted laws as well as to changes in interpretations of existing laws,
- Compliance risk, which is the the current or prospective risk to earnings and capital arising from violations or non- compliance with laws, rules, regulations, agreements, prescribed practices, or internal policies and code of conduct,
- Conduct risk, which is defined as is the current or prospective risk of losses arising from an inappropriate supply of financial services, including cases of willful or negligent misconduct.

- Information & Communication Technology risk, which is the the risk of loss due to breach of confidentiality, failure of integrity of systems and data, inappropriateness or unavailability of systems and data or inability to change IT within a reasonable time and costs when the environment or business requirements change. This includes security risks resulting from inadequate or failed internal processes or internal/external cyber-attacks or inadequate physical security.
- Model risk, which is is the potential loss that may occur, as a consequence of decisions that could be based on the output of internal models, due to errors in the development, implementation or use of such models. A model refers to a quantitative method, system or approach that applies statistical, economic, financial or mathematical theories, techniques and assumptions to convert input data into quantitative estimates.

Operational risk is inherent to all products, activities, processes and systems and is generated in all business and support areas. For this reason, all employees are responsible for managing and controlling OR generated in their sphere of action.

The Bank's objective is to effectively identify, measure, evaluate, monitor, control and mitigate its operational risk. In 2018 and early 2019 the Bank continued to drive the improvement of its OR management through a range of initiatives. Some of the most significant include the upgrade of the Operational Risk Management function to a Division (instead of a Subdivision previously), the update of the Operational Risk Management Policy, the setting and monitoring of a number of new Key Risk Indicators, the automation of the process for preparing supervisory reporting templates and the persistence on OR training.

3.5.3. Operational risk management framework

The ORMF has been approved by the Board Risk Committee, in order to effectively address operational risks and meet the regulatory requirements (CRR / CRD IV / Basel III).

In 2018 the ORMF was implemented in the Bank and its subsidiaries for the twelfth consecutive year. The basic elements of the Bank's ORMF are the following:

- The Risks and Controls Self-Assessment (RCSA) process, alongside with the assessment of the relevant control environment; Its purpose is establishing a formal procedure for the identification, assessment, monitoring and mitigation of potential operational risks within a business entiy,
- The Loss Collection process, as well as the maintenance of a sound and consistent loss database; OR losses are collected at a Group level. All organizational entities of the Bank, as well as all Greek and foreign subsidiaries are responsible for recording operational incidents or/and losses following certain guidelines, under a standardized methodology,
- The determination, update and monitoring of Action Plans; These are all the necessary steps and measures intended to mitigate/reduce operational risks,
- The definition and monitoring of Key Risk Indicators; Their purpose is to assist in the identification and monitoring of potential risk exposures, by acting as early detection/warning indicators by identifying issues that cause risk events to arise,
- The Structured Scenario Analysis, a systematic process of obtaining expert opinions, based on reasoned assessments of the likelihood and impact of plausible severe operational risk losses.

ORMF has been extended to the major Group subsidiaries, whose gross income in addition to the Bank's income represents approximately 98% of the total gross income of the Group. All other remaining entities of the Group that are consolidated for regulatory reporting purposes, and comprise just 2% of the gross income of the Group, also manage their operational risks, following a framework that has been approved by the Bank's Operational Risk Committee.

The Bank uses a Group wide information system (IBM OpenPages) that supports the operational risk management tools and facilitates information and reporting functions and needs. This system includes modules for registering loss incidents, assessing risks, monitoring indicators and action plans, preparing reports, and applies to all Group major entities.

The Bank fosters awareness and knowledge of operational risk at all levels of the organisation. In 2018 a range of training initiatives were carried out throughout the Group's entities. These included e-learning seminars in a number of foreign subsidiaries, as well as courses for the operational risk correspondents appointed in all the Bank's Units.

3.5.4. Governance

The ORMF is supported by an appropriate organisational structure with well defined roles and responsibilities which is based on the three lines of defence model. The ORM Governance aims to ensure that all Bank's stakeholders, including the Board of Directors, Executive and Senior Management and Staff, manage operational risk within a formalized Framework that is aligned to business objectives and compliant with the regulatory requirements.

Governance responsibility for operational risk management resides in the Board Risk Committee (BRC). The BRC reviews and approves the Bank's operational risk appetite and tolerance, is informed on material risks and exposures and sets the tone and the expectations of the Board.

Operational Risk Committee (an executive committee) bears the responsibility for establishing and monitoring the ORM Framework and policies as well as the aggregate operational risk exposures across the Bank, reporting to the BRC.

The Chief Risk Officer (CRO) promotes the development and implementation of a consistent Group ORMF and provides overall vision and leadership for the function across the Group.

The GORM Division is in charge of managing and coordinating the ORMF implementation, setting appropriate standards, methodologies and procedures for operational risk assessment, monitoring and control, as well as for loss data collection. Furthermore, it regularly reviews the Group Framework in order to ensure that all relevant regulatory requirements are met.

The GORM Division also reviews and monitors NBG's operational risk profile on an ongoing basis, focusing on the development, implementation and follow-up of the appropriate Action Plans, in order to ensure that all necessary risk mitigation steps and measures are in place. NBG's Action Plans can be either mitigation measures, including insurance policies, designed to reduce the impact and losses generated by the occurrence of risk events, or proactive measures designed to prevent or reduce the probability of occurrence of risk events, by improving the control environment or other aspects of the business environment.

The Heads of each and every business/function (1st line of defece risk owners) are primarily responsible for the daily management of operational risk arising in their areas of responsibility.

Operational Risk Correspondents are assigned in each business unit acting as liaisons to the GORM Division. They are responsible for disseminating the ORM Policy to their Units, coordinating the internal ORMF implementation, assisting in the development of the culture of operational risk and communicating relevant information throughout to the GORM Division.

3.5.5. Other aspects of control and monitoring of operational risk

Due to the specific nature and complexity of operational risk, the Bank considers necessary to continuously improve operational control procedures and keep them in line with new regulations and best practices. Thus, during 2018, it continued to improve the monitoring of OR, attaching particular importance in the following areas:

- Review, amendment and approval of the new OR Policy & Methodologies document,
- Automation of the process for calculating capital requirements for operational risk,
- Development of a new KRIs Framework,
- Stress test projection of the P&L impact of losses arising from Conduct risk and other operational risks,
- Update of outstanding or overdue Action Plans, and escalation of open issues to the OR Committee.

3.5.6. Operational Risk Reporting

Operational risk managemet reporting assures the timely, complete and accurate delivery of information to the Board, Executive Management and supervisory authorities.

GORM has set up its reporting system in order to regularly inform all hierarchical levels about the relevant issues. This reporting system aims to support the Group's decision-making process and ensure that all relevant regulatory requirements, as well as the Bank's objectives are fulfilled. OR reporting system is supported by the new ORM platform (IBM OpenPages) in order to optimise data integration and produce accurate and timely results.

The key stakeholders of operational risk reporting are:

- Bank Units/Subsidiary Entities: They implement the ORMF elements and distribute the outcome to GORM Division,
- GORM: Collects all the reports, analyses and processes the data and presents the main findings to the Operational Risk Committee, the ExCo, as well as to the Board Risk Committee. The Board Risk Committee is presented with all of the Group's major operational losses, on a monthly basis.

Finally, the Board (via the BRC), Senior Management and the Operational Risk Committee, jointly with the GORM Division, determine priorities for corrective actions and decide on cases of increased exposure to risk.

3.6. **Analysis and Reporting**

NBG places great emphasis on achieving a high level of quality regarding its risk data and reporting. The Bank's continuous improvement in this regard is clearly reflected in the results of the quarterly assessments of its supervisory reporting quality by the ECB.

The three Group Risk Management Divisions (GRCAD, GFLRMD, GORMD) and the independent Model Valuation Unit have developed a comprehensive framework of analysis and reporting, in order to provide the Bank's Board Risk Committee, Senior Management, regulatory authorities, the market and investors with consistent quantitative and qualitative information. Specialised applications are used to produce this analysis, collecting relevant data from the Bank's and Group's core systems (such as loans and credit limits systems, trading position-keeping systems, collateral management system etc.). NBG's software is fully configured to calculate Expected Loss and Risk Weighted Assets for the entire Group according to the regulatory approach chosen for each portfolio, in accordance with the current "CRR / CRD IV" (Basel III) regulatory framework.

Among others, the following are analysed and reported:

- Capital requirements for Credit Risk, Market Risk, Operational Risk and Counterparty Risk on a solo and on a Group basis,
- Large exposures / large debtors,
- Leverage exposure measure,
- Quality and vintage analysis of the Bank's and its subsidiaries portfolios,
- Benchmarking of the Bank's Credit Risk and Market Risk internal models,

- Daily Liquidity Reports pertaining to the Bank's liabilities, liquidity structure, counterbalancing capacity, as well as subsidiary-funding,
- Quarterly report of the Bank's Value at Risk and P&L results for backtesting purposes,
- Sensitivity analysis of the Bond and Derivatives portfolios on a solo and a Group basis,
- Data regarding Operational Risk losses,
- Exposures to Financial Institutions,
- Cross border exposures.

3.7. Pillar III Disclosures policy

Pillar III complements the minimum regulatory capital requirements (Pillar I) and the Internal Capital and Liquidity Adequacy Assessment Processes (ICAAP/ILAAP, i.e. Pillar II). NBG is committed to publicly disclose information in compliance with EU Regulation 575/2013 of the European Parliament and of the Council, as well as all applicable additional EU Regulations and EBA Guidelines, and to have adequate internal processes and systems in place to meet these disclosure requirements.

The Bank has established a Pillar III Disclosures Policy that describes the scope, the principles and the content of public disclosures under Pillar III. Moreover, the Policy defines the relevant disclosures' governance, including the assessment of the appropriateness of the disclosures, their verification and frequency. Disclosures on a consolidated basis provide (inter alia) information on capital structure, capital adequacy, risk profile, and the processes in place for assessing and managing risks.

The Bank is firmly committed to best practices regarding public disclosures and recognises that Pillar III provides an additional layer of market information and transparency, hence contributing to financial stability. Additional information for investors and other stakeholders (regarding e.g. the members of the management body, the Corporate Governance Code etc) is to be found in the Bank's website www.nbg.gr.

The objectives of the Pillar III Disclosures are:

- To provide investors and other stakeholders with the appropriate, complete, accurate and timely information that they reasonably need to make investment decisions and informed judgements of NBG Group,
- To foster and facilitate compliance with all applicable legal and regulatory requirements.

The Pillar III Disclosures Policy:

- Formulates the disclosure framework, including frequency, location, monitoring and verification process for disclosures,
- Defines the authorities and responsibilities for the management of the Pillar III process,
- Articulates the principles for identifying information that is material, confidential and proprietary,
- Raises awareness of the Bank's approach to disclosure among the Board of Directors, Senior Management and Employees.

4. REGULATORY OWN FUNDS AND PRUDENTIAL REQUIREMENTS

In June 2013, the European Parliament and the Council of Europe issued Directive 2013/36/EU and Regulation (EU) No 575/2013, (known as CRD IV and CRR respectively), which incorporate the key amendments that had been proposed by the Basel Committee for Banking Supervision (known as Basel III). Directive 2013/36/EU has been transported into Greek Law by virtue of Greek Law 4261/2014, while Regulation (EU) No 575/2013 has been directly applicable to all EU Member States since 1 January 2014. Some changes under CRR/CRD IV are being implemented gradually, mainly between 2014 and 2019.

4.1. Balance sheet reconciliation between financial and regulatory reporting

The table below presents the differences between accounting and regulatory scopes of consolidation and the mapping of financial statement categories with regulatory risk categories. References in this table link to the corresponding references in table "Own Funds Structure", identifying balances relating to own funds calculation.

Table 5: EU LI1 - Differences between accounting and regulatory scopes of consolidation and the mapping of financial statement categories with regulatory risk categories

		a	b	c	d	e	f	g
€ mio	*Ref*	Accounting Balance Sheet	Regulatory Balance Sheet	Subject to the credit risk framework	Subject to the CCR framework	Subject to the securitisation framework	Subject to the market risk framework	Not subject to capital requirements or subject to deduction from capital
ASSETS								
Cash and balances with central banks		5,138	5,138	5,138				
Due from banks		2,587	2,587	1,709	487		(27)	
Financial assets at fair value through profit or loss		4,519	4,519	40	3,723		1,194	
Derivative financial instruments		3,791	3,791		3,761		833	
Loans and advances to customers	*f*	30,134	30,184	29,732				452
Investment securities		4,440	4,440	4,433		5		2
Investment property		1,016	1,016	1,016				
Investments in subsidiaries								
Equity method investments	*d*	8	8	6				2
Goodwill, software and other intangible assets	*c*	150	150					150
Property and equipment		1,046	1,046	1,046				
Deferred tax assets (DTAs)		4,909	4,909	4,774				*135*
of which: DTAs that rely on future profitability and arise from temporary differences	*e*	*305*	*305*	*170*				*135*
of which: DTAs that do not rely on future profitability		*4,604*	*4,604*	*4,604*				
Current income tax advance		359	359	359				
Other assets		1,777	1,785	1,785				
Non-current assets held for sale*		5,221	2,906	2,501				*355*
of which: Deferred Tax Assets		*125*	*6*	*6*				
of which: Equity Method Investments	*d*		*861*	*506*				*355*
Total assets		**65,095**	**62,837**	**52,539**	**7,521**	**5**	**2,000**	**1,094**

€ mio	*Ref*	a Accounting Balance Sheet	b Regulatory Balance Sheet	c Subject to the credit risk framework	d Subject to the CCR framework	e Subject to the securitisation framework	f Subject to the market risk framework	g Not subject to capital requirements or subject to deduction from capital
LIABILITIES								
Due to banks		7,667	7,667		4,099			7,667
Derivative financial instruments		2,131	2,131		2,119		969	
Due to customers		43,027	43,104		11			43,104
Debt securities in issue		1,146	1,146					1,146
Other borrowed funds		268	268					268
Deferred tax liabilities		14	14					14
Retirement benefit obligations		239	239					239
Current income tax liabilities		9	9					9
Other liabilities		864	866					866
Liabilities associated with non-current assets held for sale		4,092	1,756					1,756
Total liabilities		**59,457**	**57,200**		**6,229**		**969**	**55,069**
SHAREHOLDERS' EQUITY								
Share capital		2,744	2,744					2,744
Share premium account		13,866	13,866					13,866
Reserves and retained earnings		(11,648)	(11,648)					(11,648)
Equity attributable to NBG shareholders	***a***	**4,962**	**4,962**					**4,962**
Non-controlling interests	***b***	676	676					676
Total equity		**5,638**	**5,638**					**5,638**
Total equity and liabilities		**65,095**	**62,837**					**60,706**

**Non-current assets held for sale at 31 December 2018 comprise, Ethniki Hellenic General Insurance S.A., Banca Romaneasca S.A., NBG Cairo branch, NBG Cyprus Ltd and Grand Hotel summer Palace*

Table 6: EU LI2 - Main sources of differences between regulatory exposure amounts and carrying values in financial statements

€ mio		a **Total**	b Subject to the credit risk framework	c Subject to the CCR framework	d Subject to the securitisation framework	e Subject to the market risk framework
1	**Assets carrying value amount under the scope of regulatory consolidation**	62,837	52,539	7,521	5	2,000
2	Liabilities carrying value amount under the regulatory scope of consolidation	57,200		6,229		969
3	Total net amount under the regulatory scope of consolidation	5,638	52,539	1,292		1,031
4	Off-balance-sheet amounts	9,283	2,338			
5	Differences in valuations					
6	*Differences due to different netting values, other than those already included in row 2*					
7	*Differences due to consideration of provisions*	*6,999*	*6,999*			
8	*Differences due to prudential filters*					
9	*Other adjustments related to credit risk mitigation techniques*	*2,718*	*(55)*	*2,773*		
10	**Exposure amounts considered for regulatory purposes**	**24,637**	**61,821**	**4,065**		**1,031**

4.2. Regulatory vs. accounting consolidation

All Group subsidiaries (companies which the Bank controls either directly or indirectly, regardless of their line of business) are consolidated in accordance with International Financial Reporting Standards (IFRS). For further information please refer to Note 2.4 of the 2018 Annual Financial Report.

In accordance with the regulatory requirements for consolidation as defined by the CRR and CRD IV, Group subsidiaries that are classified as banks, financial institutions or supplementary service providers are consolidated under the regulatory scope of consolidation. Subsidiaries that are not fully consolidated for regulatory purposes (insurance entities and hotels) are accounted by applying the equity method.

The table below provides information regarding the consolidation method applied for each entity within the accounting and the regulatory scopes of consolidation.

Table 7: **EU LI3** - Outline of the differences in the scope of consolidation

Name of entity	Method of accounting consolidation	Method of regulatory consolidation	Description of the entity
Banca Romaneasca S.A.[(2)]	Full Consolidation	Full Consolidation	Financial Institution
National Bank of Greece (Cyprus) Ltd[2)]	Full Consolidation	Full Consolidation	Financial Institution
NBG Bank Malta Ltd	Full Consolidation	Full Consolidation	Financial Institution
Stopanska Banka A.D.-Skopje	Full Consolidation	Full Consolidation	Financial Institution
National Securities S.A.	Full Consolidation	Full Consolidation	Capital Markets & Investment Services
National Securities Co (Cyprus) Ltd[(1)]	Full Consolidation	Full Consolidation	Capital Markets Services
EKTENEPOL Construction Company S.A.	Full Consolidation	Full Consolidation	Construction Company
Ethniki Factors S.A.	Full Consolidation	Full Consolidation	Factoring Company
Ethniki Leasing S.A.	Full Consolidation	Full Consolidation	Financial Leasing
NBG Leasing IFN S.A.	Full Consolidation	Full Consolidation	Financial Leasing
Probank Leasing S.A.	Full Consolidation	Full Consolidation	Financial Leasing
NBG Finance (Dollar) Plc	Full Consolidation	Full Consolidation	Financial Services
NBG Finance (Sterling) Plc[(1)]	Full Consolidation	Full Consolidation	Financial Services
NBG Finance Plc	Full Consolidation	Full Consolidation	Financial Services
NBG International Ltd	Full Consolidation	Full Consolidation	Financial Services
I-Bank Direct S.A. .[(3)]	Full Consolidation	Full Consolidation	Financial Services
NBG Greek Fund Ltd	Full Consolidation	Full Consolidation	Fund Management
NBG Asset Management Luxembourg S.A.	Full Consolidation	Full Consolidation	Holding Company
NBG International Holdings B.V.	Full Consolidation	Full Consolidation	Holding Company
NBG Malta Holdings Ltd	Full Consolidation	Full Consolidation	Holding Company
NBG Insurance Brokers S.A	Full Consolidation	Full Consolidation	Insurance Brokerage and Other Services
Egnatia Properties S.A.	Full Consolidation	Full Consolidation	Investment Company
Quadratix Ltd	Full Consolidation	Full Consolidation	Investment Company
Fondo Picasso	Full Consolidation	Full Consolidation	Investment Company
NBG Management Services Ltd	Full Consolidation	Full Consolidation	Management Services
Probank M.F.M.C[(1)]	Full Consolidation	Full Consolidation	Mutual Funds Management
NBG Asset Management Mutual Funds S.A.	Full Consolidation	Full Consolidation	Mutual Funds Management
NBGI Private Equity Ltd[(1)]	Full Consolidation	Full Consolidation	Private Equity
NBG Pangaea Reic	Full Consolidation	Full Consolidation	Real Estate Investment Company
DIONYSOS S.A.	Full Consolidation	Full Consolidation	Real Estate Services
Ethniki Ktimatikis Ekmetalefsis S.A.	Full Consolidation	Full Consolidation	Real Estate Services
Hellenic Touristic Constructions S.A.	Full Consolidation	Full Consolidation	Real Estate Services
KADMOS S.A.	Full Consolidation	Full Consolidation	Real Estate Services
Nash SRL	Full Consolidation	Full Consolidation	Real Estate Services
Mortgage Touristic PROTYPOS S.A.	Full Consolidation	Full Consolidation	Real Estate Services
NBG Property Services S.A.	Full Consolidation	Full Consolidation	Real Estate Services
Karolou Touristiki S.A.	Full Consolidation	Full Consolidation	Real Estate Services
PNG Properties EAD	Full Consolidation	Full Consolidation	Real Estate Services
ARC Management One SRL	Full Consolidation	Full Consolidation	Real Estate Services

Name of entity	Method of accounting consolidation	Method of regulatory consolidation	Description of the entity
ARC Management Two EAD	Full Consolidation	Full Consolidation	Real Estate Services
Anaptixi Fragokklisia Real Estate S.A.	Full Consolidation	Full Consolidation	Real Estate Services
Irinna Ktimatiki S.S.	Full Consolidation	Full Consolidation	Real Estate Services
I & B Real Estate	Full Consolidation	Full Consolidation	Real Estate Services
Lasmane Properties	Full Consolidation	Full Consolidation	Real Estate Services
Titlos Plc (Special Purpose Entity) (1)	Full Consolidation	Full Consolidation	Special Purpose Entity (Securitisation of public sector receivables)
Sinepia Designated Activity Company (Special Purpose Entity)	Full Consolidation	Full Consolidation	Special Puprose Entity (Securitisation of commercial loans)
Pangaea UK Finco Plc (1)	Full Consolidation	Full Consolidation	Special Purpose Entity
Innovative Ventures S.A. (I-Ven)(1)	Full Consolidation	Full Consolidation	Sundry services
Bankteco EOOD	Full Consolidation	Full Consolidation	Information Technology Services
Pronomiouchos S.A. Genikon Apothikon Hellados	Full Consolidation	Full Consolidation	Warehouse activities
Cac Coral Limited	Full Consolidation	Full Consolidation	Debt Collection Company
Ethniki Hellenic General Insurance S.A.(2)	Full Consolidation	Equity Method Consolidation	Insurance Services
Ethniki General Insurance (Cyprus) Ltd(2)	Full Consolidation	Equity Method Consolidation	Insurance Services
Ethniki Insurance (Cyprus) Ltd(2)	Full Consolidation	Equity Method Consolidation	Insurance Services
S.C. Garanta Asigurari S.A.(2)	Full Consolidation	Equity Method Consolidation	Insurance – Reinsurance Services
National Insurance Agents & Consultants Ltd(2)	Full Consolidation	Equity Method Consolidation	Insurance Brokerage
Grand Hotel Summer Palace S.A. (2)	Full Consolidation	Equity Method Consolidation	Hotel Services
Social Securities Funds Management S.A.	Equity Method Consolidation	Equity Method Consolidation	Associate Company
Larco S.A.	Equity Method Consolidation	Equity Method Consolidation	Associate Company
Eviop Tempo S.A.	Equity Method Consolidation	Equity Method Consolidation	Associate Company
Teiresias S.A.	Equity Method Consolidation	Equity Method Consolidation	Associate Company
Planet S.A.	Equity Method Consolidation	Equity Method Consolidation	Associate Company
Pyrrichos Real Estate S.A.	Equity Method Consolidation	Equity Method Consolidation	Associate Company
Sato S.A.	Equity Method Consolidation	Equity Method Consolidation	Associate Company
Olganos S.A.	Equity Method Consolidation	Equity Method Consolidation	Associate Company

(1)Under Liquidation
(2) Companies have been reclassified to Non-current assets held for sale
(3) Profinance S.A. previously under liquidation, was revived and renamed to I-Bank Direct S.A.

In addition, participations exceeding 10% in the share capital or voting rights in financial sector entities (including insurance companies) are deducted from Common Equity Tier I capital (CET1) if exceeding threshold rules set in Regulation (EU) 575/2013.

The remaining companies that are not consolidated for regulatory purposes (hotels), are not deducted from equity. There is no NBG Group subsidiary or associate, which is proportionately consolidated for regulatory or accounting purposes.

Based on the current regulatory framework there is no substantial, practical or legal incapacity in capital transfers or payment of obligations between parent Bank and its subsidiaries. The time of full repayment of the subordinated loans, which have already been granted by the parent Bank to its subsidiaries, has been notified to the appropriate Supervisory Authorities and abides by the relative regulations of each country. Potential early prepayment of the above mentioned loans requires prior permission from appropriate Regulatory Authorities.

Sale of Banka NBG Albania Sh.A to American Bank of Investments SA ("ABI")

On 2 February 2018, NBG entered into a definitive agreement for the sale of its entire stake (100.00%) in its subsidiary, Banka NBG Albania Sh.A. ("NBG Albania") to American Bank of Investments SA. On 3 July 2018, following the receipt of the required regulatory approvals from i) the Bank of Albania and ii) the Competition Authority of Albania, the Bank announced the completion of the sale. The agreed consideration for the sale amounted to €25 million.

With the successful completion of the transaction, which has taken place in the context of NBG's Restructuring Plan, the Group's Common Equity Tier 1 ("CET1") ratio increased by circa 11 bps, following the capital impact already booked in the fourth quarter of 2017 upon signing of the agreement.

Sale of South African Bank of Athens Ltd ("S.A.B.A.") to AFGRI Holdings Proprietary Limited

On 22 December 2016, the Group entered into a definitive agreement with AFGRI Holdings Proprietary Limited ("AFGRI"), a company incorporated in the Republic of South Africa for the divestment to AFGRI of its 99.83% stake in S.A.B.A. On 4 October 2018, following the receipt of the required regulatory approvals from i) the South African Reserve Bank, (ii) the South African Ministry of Finance and (iii) the South African Competition Commission and Competition Tribunal, the Bank announced the completion of the sale with the control of S.A.B.A. passed to AFGRI. The agreed consideration for the sale of the subsidiary amounts to €18 million (ZAR 301 million).

With the successful completion of the transaction, which has taken place in the context of NBG's Restructuring Plan, the Group's CET1 ratio increased by circa 6 bps, in 2018.

4.3. Structure of own funds

Regulatory capital, according to CRR rules falls into two categories: Tier I and Tier II capital. Tier I capital is further divided into Common Equity Tier I (CET1) capital and Additional Tier I capital.

CET1 capital includes the Bank's ordinary shareholders' equity, share premium, retained earnings and minority interest allowed in consolidated CET1.

The following items are deducted from the above:

- fair value gains and losses arising from the institution's own credit risk related to derivative liabilities
- prudent valuation adjustment calculated according to article 105 of Regulation (EU) No 575/2013
- goodwill and intangibles
- deferred tax assets not arising from temporary differences
- deferred tax assets arising from temporary differences and significant investments that exceed 10% of CET1 filter

Tier II capital includes the excess of the accounting impairment losses on financial assets compared to the expected losses as calculated by the Internal Ratings Based approach for credit risk, up to 0.6% of the total IRB risk exposure amount.

NBG Group's regulatory capital structure as of 31.12.2018 is presented below.

Table 8: Own Funds Structure

Group's Own Funds Structure	*Ref**	*€ mio*
Shareholders' Equity per balance sheet	*a*	**4,962**
Non-controlling interests		**134**
Non-controlling interests per balance sheet	*b*	*676*
Non-controlling interests not recognised in CET1		*(542)*
Regulatory Adjustments		**1,174**
IFRS9 transitional arrangements		*1,210*
Own credit risk		*(21)*
Prudent valuation adjustment		*(14)*
Other		*(1)*
Deductions		**(651)**
Goodwill and intangibles	*c*	*(150)*
Significant Investments	*d*	*(359)*
Deferred tax assets that rely on future profitability (excl. those arising from temporary differences)	*e*	*(142)*
Common Equity Tier 1 Capital (CET1)		**5,619**
Additional Tier 1 Capital (AT1)		**-**
Total Tier 1 Capital		**5,619**
Credit risk adjustments		**90**
Deductions		**(50)**
Subordinated loans of financial sector entities where the institution has a sign. Inv. in those entities	*f*	*(50)*
Tier2 Capital		**40**
Total Regulatory Capital		**5,659**

**The references (a) to (f) refer to those in the reconciliation of balance sheets table.*

The main features of capital instruments issued by the Group categorised as CET1 arepresented in the table below.

Table 9: Capital Instruments main features

Capital instruments' main features template		
1	Issuer	National Bank of Greece, S. A. (Greece)
2	Unique identifier (eg CUSIP, ISIN or Bloomberg identifier for private placement	GRS003003019
3	Governing law(s) of the instrument	Greek
	Regulatory treatment	
4	Transitional CRR rules	Common Equity Tier 1
5	Post-transitional CRR rules	Common Equity Tier 1
6	Eligible at solo/(sub-)consolidated/solo & (sub-)consolidated	Solo & Consolidated
7	Instrument type (types to be specified by each jurisdiction)	Ordinary Shares
8	Amount recognised in regulatory capital (currency in million, as of most recent reporting date)	€ 2.744m
9	Nominal amount of instrument	€ 2,744m (914,715,153 shares @ €3.00 each)
9a	Issue price	-
9b	Redemption price	-
10	Accounting classification	Share Capital
11	Original date of issuance	Various
12	Perpeptual or dated	Perpetual
13	Original maturity date	-
14	Issuer call subject to prior supervisory approval	N/A
15	Optional call date, contingent call dates, and redemption amount	N/A
16	Subsequent call dates, if applicable	N/A
	Coupons / dividends	
17	Fixed or floating dividend/coupon	N/A
18	Coupon rate and any related index	N/A
19	Existence of a dividend stopper	N/A
20a	Fully discretionary, partially discretionary or mandatory (in terms of timing)	partially discretionary
20b	Fully discretionary, partially discretionary or mandatory (in terms of amount)	partially discretionary
21	Existence of step up or other incentive to redeem	No
22	Noncumulative or cumulative	Non cumulative
23	Convertible or non-convertible	Non convertible
24	If convertible, conversion trigger (s)	N/A
25	If convertible, fully or partially	N/A
26	If convertible, conversion rate	N/A
27	If convertible, mandatory or optional conversion	N/A
28	If convertible, specifiy instrument type convertible into	N/A
29	If convertible, specifiy issuer of instrument it converts into	N/A
30	Write-down features	No
31	If write-down, write-down trigger (s)	N/A
32	If write-down, full or partial	N/A
33	If write-down, permanent or temporary	N/A
34	If temporary write-down, description of write-up mechanism	N/A
35	Position in subordination hierachy in liquidation (specify instrument type immediately senior to instrument)	Additional Tier 1
36	Non-compliant transitioned features	No
37	If yes, specifiy non-compliant features	N/A

4.4. IFRS 9 impact on own funds

On 12 December 2017 the European Parliament and the Council of the European Union adopted Regulation (EU) 2017/2395 (the "Regulation"), which amended Regulation 575/2013 with Article 473a, allowing credit institutions to gradually apply the impact of the application of IFRS 9 to own funds.

In particular, upon adoption of IFRS 9, credit institutions are allowed to include in the Common Equity Tier 1 capital (CET1), a portion of the increased ECL provisions over a 5-year transitional period starting in 2018. The portion of ECL provisions that can be included in CET1 should decrease over time down to zero to ensure the full implementation of IFRS 9, after the end of the transitional period.

In addition, in accordance with paragraph (4) of the Regulation, if the ECL provisions for Stages 1 and 2 incurred after the first adoption of IFRS 9 are increased, credit institutions are allowed to include the increase in the transitional arrangements.

The percentages of recognition in CET1 of the increased ECL provisions during the 5-year transition period are as follows:

- 0.95 during the period from 01/01/2018-31/12/2018
- 0.85 during the period from 01/01/2019-31/12/2019
- 0.70 during the period from 01/01/2020-31/12/2020
- 0.50 during the period from 01/01/2021-31/12/2021
- 0.25 during the period from 01/01/2022-31/12/2022

The Group has decided to apply the transitional arrangements set out in Article 1 of the aforementioned Regulation, including the provisions of paragraph (4), during the transitional period.

The table below presents a comparison of own funds, capital ratios and leverage ratios with and without the application of transitional arrangements for IFRS 9 or analogous ECLs.

Table 10: IFRS 9 impact

Comparison of own funds, capital ratios and leverage ratios with and without the application of transitional arrangements for IFRS 9 or analogous ECLs	*€ mio*
Available capital (amounts)	
Common Equity Tier 1 (CET1) capital	5,619
Common Equity Tier 1 (CET1) capital as if IFRS 9 or analogous ECLs transitional arrangements had not been applied	4,409
Tier 1 capital	5,619
Tier 1 capital as if IFRS 9 or analogous ECLs transitional arrangements had not been applied	4,409
Total capital	5,659
Total capital as if IFRS 9 or analogous ECLs transitional arrangements had not been applied	4,449
Risk-weighted assets (amounts)	
Total risk-weighted assets	35,015
Total risk-weighted assets as if IFRS 9 or analogous ECLs transitional arrangements had not been applied	34,584
Capital ratios	
Common Equity Tier 1 (as percentage of risk exposure amount)	16.05%
Common Equity Tier 1 (as percentage of risk exposure amount) as if IFRS 9 or analogous ECLs transitional arrangements had not been applied	12.75%
Tier 1 (as percentage of risk exposure amount)	16.05%
Tier 1 (as percentage of risk exposure amount) as if IFRS 9 or analogous ECLs transitional arrangements had not been applied	12.75%
Total capital (as percentage of risk exposure amount)	16.16%
Total capital (as percentage of risk exposure amount) as if IFRS 9 or analogous ECLs transitional arrangements had not been applied	12.86%
Leverage ratio	
Leverage ratio total exposure measure	65,873
Leverage ratio	8.53%
Leverage ratio as if IFRS 9 or analogous ECLs transitional arrangements had not been applied	6.69%

4.5. DTC Law

Article 27A of Law 4172/2013 (“DTC Law”), as currently in force, allows credit institutions, under certain conditions, and from 2017 onwards to convert deferred tax assets (“DTAs”) arising from (a) private sector initiative (“PSI”) losses, (b) accumulated provisions for credit losses recognized as at 30 June 2015, (c) losses from final write off or the disposal of loans and (d) accounting write offs, which will ultimately lead to final write offs and losses from disposals, to a receivable (“Tax Credit”) from the Greek State. Items (c) and (d) above were added with Law 4465/2017 enacted on 29 March 2017. The same Law 4465/2017 provided that Tax Credit cannot exceed the tax corresponding to accumulated provisions recorded up to 30 June 2015 less (a) any definitive and cleared tax credit, which arose in the case of accounting loss for a year according to the provisions of par.2 of article 27A, which relate to the above accumulated provisions, (b) the amount of tax corresponding to any subsequent specific tax provisions, which relate to the above accumulated provisions and (c) the amount of the tax corresponding to the annual amortization of the debit difference that corresponds to the above provisions and other losses in general arising due to credit risk.

The main condition for the conversion of DTAs to a Tax Credit is the existence of an accounting loss on a solo basis of a respective year, starting from accounting year 2016 and onwards. The Tax Credits will be calculated as a ratio of IFRS accounting losses to net equity (excluding the year’s losses) on a solo basis and such ratio will be applied to the remaining Eligible DTAs in a given year to calculate the Tax Credit that will be converted in that year, in respect of the prior tax year. The Tax Credit may be offset against income taxes payable. The non-offset part of the Tax Credit is immediately recognized as a receivable from the Greek State. The Bank will issue conversion rights to the Greek State for an amount of 100% of the Tax Credit in favour of the Greek State and will create a specific reserve for an equal amount. Common shareholders have pre-emption rights on these conversion rights. The reserve will be capitalized with the issuance of common shares in favour of the Greek State. This legislation allows credit institutions to treat such DTAs as not “relying on future profitability” according to CRD IV, and as a result such DTAs are not deducted from CET1, hence improving a credit institution’s capital position.

Furthermore, Law 4465/2017 amended article 27 “Carry forward losses” by introducing an amortization period of 20 years for losses due to loan write offs as part of a settlement or restructuring and losses that crystallize as a result of a disposal of loans.

On 7 November 2014 the Bank convened an extraordinary General Shareholders Meeting which resolved to include the Bank in the DTC Law. In order for the Bank to exit the provisions of the DTC Law it requires regulatory approval and a General Shareholders meeting resolution.

As of 31 December 2018, the amount of DTAs that were eligible for conversion to a receivable from the Greek State subject to the DTC Law was €4.6 billion (2017: €4.7 billion). The conditions for conversion rights were not met in the year ended 31 December 2018 and no conversion rights are deliverable in 2019.

4.6. Transitional own funds disclosure template

The table below provides information regarding the amounts and nature of specific items on own funds during the IFRS9 transitional period, in accordance with Annex IV of the Commission Implementing Regulation (EU) No 1423/2013.

Table 11: Transitional Own Funds

Transitional own funds disclosure template as of 31.12.2018		*€ mio*
Common Equity Tier 1 capital: Instruments and Reserves		
1	Capital instruments and the related share premium accounts	16,609
	of which: ordinary shares	*16,610*
2	Retained earnings	(17,302)
3	Accumulated other comprehensive income and other reserves	5,639
3a	Funds for general banking risk	15
5	Minority Interests (amount allowed in consolidated CET1)	134
6	**Common Equity Tier 1 (CET1) capital before regulatory adjustments**	**5,095**
Common Equity Tier 1 capital: Regulatory Adjustments		
7	Additional Value Adjustments	(14)
8	Intangible assets (net of related tax liability)	(150)
14	Gains or losses on liabilities valued at fair value resulting from changes in own credit standing	(21)
19	CET1 instruments of financial sector entities where the institution has a significant investment in those entities (amount above 10% threshold)	(359)
20	Adjustments due to IFRS 9 transitional arrangements	1,210
22	Amount exceeding the 17.65% threshold	(142)
25	Of which: deferred tax assets arising from temporary differences	(142)
28	**Total regulatory adjustments to Common equity Tier 1 (CET1)**	**524**
29	**Common Equity Tier 1 (CET1) capital**	**5,619**
Additional Tier 1 (AT1) capital		
36	Additional Tier 1 (AT1) capital before regulatory adjustments	
Additional Tier 1 (AT1) capital: regulatory adjustments		
43	**Total regulatory adjustments to Additional Tier 1 (AT1) capital**	
44	Additional Tier 1 (AT1) capital	
45	**Tier 1 capital (T1 = CET1 + AT1)**	**5,619**
Tier 2 (T2) capital		
50	Credit risk adjustments	90
51	**Tier 2 capital (T2) capital before regulatory adjustments**	**90**
Tier 2 (T2) capital: Regulatory adjustments		
55	Direct and indirect holdings by the institution of the T2 instruments and subordinated loans of financial sector entities where the institution has a significant investment in those entities	(50)
57	**Total regulatory adjustments to Tier 2 (T2) capital**	**(50)**
58	**Tier 2 (T2) capital**	**40**
59	**Total capital (TC = T1 + T2)**	**5,659**
60	**Total Risk Weighted Assets (RWAs)**	**35,015**
Capital Adequacy Ratios		**%**
61	**Common Equity Tier 1**	**16.05%**
62	**Tier 1**	**16.05%**
63	**TOTAL**	**16.16%**
68	**Common Equity Tier 1 available to meet buffers**	**5.16%**
Amounts below the thresholds for deduction (before risk weighting)		
72	Direct and indirect holdings of the capital of financial sector entities where the institution does not have a significant investment in those entities (amount below 10% threshold and net of eligible short positions	73
73	Direct and indirect holdings by the institution of CET1 instruments of financial sector entities where the institution has a significant investment in those entities (amount below 10% threshold and net of eligible short positions)	491
75	Deferred tax assets arising from temporary differences (amount below 10% threshold, net of related tax liability where the conditions in 38 (3) are met)	171
Applicable caps on the inclusion of provisions in Tier 2		
78	Credit risk adjustments included in T2 in respect of exposures subject to internal ratings-based approach (prior to the application of the cap)	1,730
79	Cap for inclusion of credit risk adjustments in T2 under internal ratings-based approach	90

4.7. Capital requirements under Pillar I

The table below presents the risk exposure amounts (or Risk Weithted Assets - RWAs) and capital requirements at Group level under Pillar I as of 31.12.2018, according to the CRR/CRD IV regulatory framework. Capital requirements under Pillar I are equal to 8% of risk exposure amounts.

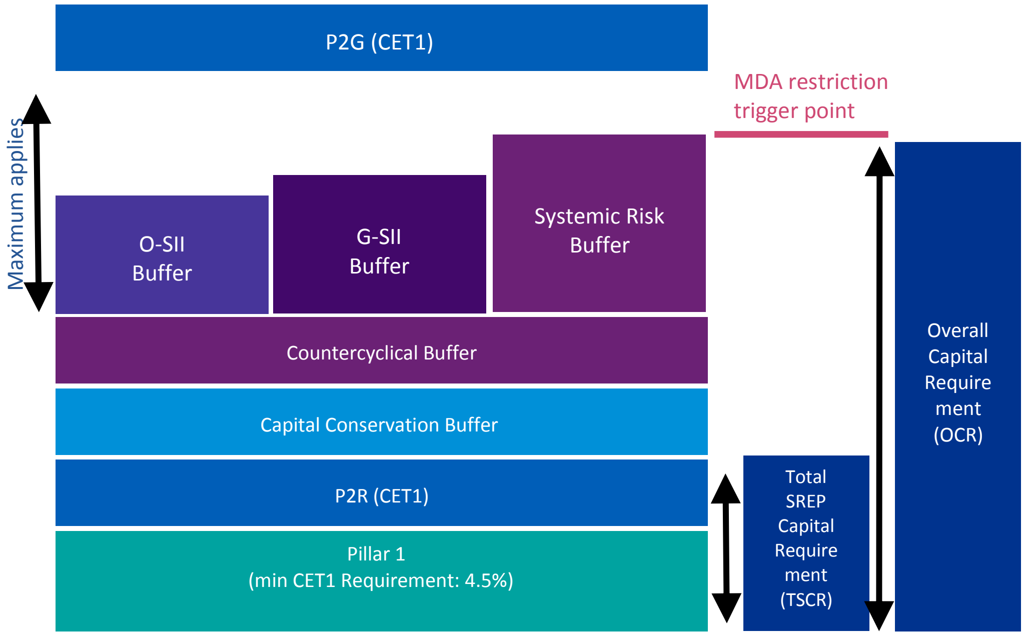
Table 12: EU OV1 - Overview of RWAs

			RWAs		Minimum Capital Requirements
			31.12.2018	30.09.2018	31.12.2018
	1	**Credit risk (excluding CCR)**	**30,258**	**29,009**	**2,421**
Article 438(c)(d)	2	*Of which the standardised approach*	*15,234*	*15,539*	*1,219*
Article 438(c)(d)	3	*Of which the foundation IRB (FIRB) approach*	*10,889*	*10,428*	*871*
Article 438(c)(d)	4	*Of which the advanced IRB (AIRB) approach*	*4,135*	*3,043*	*331*
Article 438(d)	5	*Of which equity IRB under the simple risk-weighted approach or the IMA*			
Article 107 Article 438(c)(d)	**6**	**CCR**	**585**	**589**	**47**
Article 438(c)(d)	7	*Of which mark to market*	*94*	*104*	*7*
Article 438(c)(d)	8	*Of which original exposure*			
	9	*Of which the standardised approach*	*385*	*376*	*31*
	10	*Of which internal model method (IMM)*			
Article 438(c)(d)	11	*Of which risk exposure amount for contributions to the default fund of a CCP*			
Article 438(c)(d)	12	*Of which CVA*	*107*	*109*	*9*
Article 438(e)	**13**	**Settlement risk**			
Article 449(o)(i)	**14**	**Securitisation exposures in the banking book (after the cap)**			
	15	*Of which IRB approach*			
	16	*Of which IRB supervisory formula approach (SFA)*			
	17	*Of which internal assessment approach (IAA)*			
	18	*Of which standardised approach*			
Article 438 (e)	**19**	**Market risk**	**1,363**	**2,443**	**109**
	20	*Of which the standardised approach*	*606*	*794*	*48*
	21	*Of which IMA*	*757*	*1,648*	*61*
Article 438(e)	22	Large exposures			
Article 438(f)	**23**	**Operational risk**	**2,809**	**2,981**	**225**
	24	*Of which basic indicator approach*			
	25	*Of which standardised approach*	*2,809*	*2,981*	*225*
	26	*Of which advanced measurement approach*			
Article 437(2), Article 48 and Article 60	27	Amounts below the thresholds for deduction (subject to 250% risk weight)	**1,656**	**1,686**	**133**
Article 500	28	Floor adjustment			
	29	**Total**	**35,015**	**35,023**	**2,801**

The disclosure regarding non deducted participations in insurance undertakings is not applicable since the Group does not apply the provisions set out in Article 49(1) of the CRR.

4.8. Overall Capital Requirement (OCR)

The stacking order of the various own funds requirements is shown in the figure below.



P2R: Pillar 2 Requirement, P2G: Pillar 2 Guidance, MDA: Maximum Distributable Amount, G-SII, O-SII: Global/Other Systemically Important Institutions

Figure 2: Stacking order of own funds requirements

Following the completion of the Supervisory Review and Evaluation Process (SREP) for year 2018, the ECB notified NBG Group of its total SREP capital requirement (TSCR), which applies from 1 March 2019. According to this decision, the ECB requires National Bank of Greece to maintain, on an individual and consolidated basis, a total SREP capital requirement of 11%.

The TSCR of 11% includes:

- the minimum Pillar I own funds requirement of 8% to be maintained at all times in accordance with Article 92(1) of Regulation (EU) No 575/2013, and
- an additional Pillar II own funds requirement of 3% to be maintained at all times in accordance with Article 16(2)(a) of Regulation (EU) No 1024/2013, to be made up entirely of Common Equity Tier 1 capital.

In addition to the TSCR, the Group is also subject to the Overall Capital Requirement (OCR). The OCR consists of the TSCR and the combined buffer requirement as defined in point (6) of Article 128 of Directive 2013/36/EU.

The combined buffer requirement is defined as the sum of:

- the Capital Conservation Buffer
- the institution specific Countercyclical Capital Buffer (CcyB); and
- the systemic risk / systemically important institutions buffer, as applicable.

The Capital Conservation Buffer stands at 2.5% for 2019 for all banks in the EU.

The systemic risk / systemically important institutions buffer for 2019 is 0.25% for all four systemically important banks in Greece, due to the imposition of such an O-SII buffer by the Bank of Greece (BoG Act 151 / 30.10.18).

The CCyB is implemented as an extension of the capital conservation buffer and has the primary objective of protecting the banking sector from periods of excess aggregate credit growth, that have often been associated with the build-up of system-wide risk. It is calculated as the weighted average of the buffers in effect in the jurisdictions to which a bank has significant credit exposures.

Bank of Greece defined its methodology for determining the CCyB in 2015 and consecutively set the CCyB at 0% for Greece throughout 2017 and 2018. CCyB is also currently 0% in all other countries in which NBG Group has significant exposures. **Thus, the institution specific Countercyclical Capital Buffer for NBG Group is currently 0%.**

As a result, the table below summarises the capital requirements for NBG Group for 2019:

Table 13: NBG Group Capital Requirements

	CET1 Capital Requirements	Total Capital Requirements
Pillar 1	4.5%	8.0%
Pillar 2	3.0%	3.0%
Capital Conservation Buffer (2019)	2.5%	2.5%
O-SII buffer (2019)	0.25%	0.25%
Total	**10.25%**	**13.75%**

At December 31st 2018, NBG Group's CET1 capital ratio and Total capital ratio stood at 16.05% and 16.16% respectively, exceeding the above regulatory requirements.

4.9. Leverage Ratio

Leverage ratio is calculated in accordance with the methodology set out in article 429 of the regulation (EU) No 575/2013 of the European Parliament and of the Council, as amended by European Commission delegated Regulation 62/2015 of 10 October 2014. It is defined as an institution's capital measure divided by that institution's total leverage exposure measure and is expressed as a percentage. The Group submits to the competent authority the leverage ratio on a quarterly basis.

As of 31 December 2018 Group leverage ratio, according to the transitional definition of Tier I and the EU Regulation 62/2015, amounts to 8.53% (vs 10.20% as of 31 December 2017), exceeding the proposed minimum threshold of 3%.

Leverage ratio has decreased to 8.5% (-1.67%) due to reduction of CET 1 (€0.7bn) driven mostly by the impact of IFRS9 adoption after the implementation of transitional arrangements. Furthermore, leverage exposure measure increased almost €3.8bn stemming from portfolio growth of SFTs and Derivatives.

The tables below include the summary and detailed disclosures on the Group's leverage ratio with reference date 31.12.2018 (amounts in € mio):

Table 14: Leverage ratio

Tier I	5,619
Total Exposure Measure	65,873
Leverage Ratio	**8.53%**

Table 15: Reconciliation of accounting assets and leverage ratio exposures

	Summary reconciliation of accounting assets and leverage ratio exposures	
		Exposures
1	Total assets as per published financial statements	65,095
2	Adjustment for entities which are consolidated for accounting purposes but are outside the scope of regulatory consolidation	(2,257)
3	Adjustment for fiduciary assets recognised on the balance sheet pursuant to the applicable accounting framework but excluded from the leverage ratio exposure measure according to Article 429(13) of Regulation (EU) NO. 575/2013.	
4	Adjustment for derivative financial instruments	
5	Adjustments for securities financial transactions (SFTs)	1,924
6	Adjustment for off-balance sheet items (ie conversion to credit equivalent amounts of off-balance sheet exposures)	3,038
7	Other adjustments	(1,926)
8	**Leverage ratio exposure**	**65,873.0**
	Leverage ratio common disclosure	
		CRR leverage ratio exposures
	On-balance sheet exposures (excluding derivatives and SFTs)	
1	On-balance sheet items (excluding derivatives, SFTs and fiduciary assets, but including collateral)	57,364
2	Asset amounts deducted in determing Tier 1 capital	(644)
3	**Total on-balance sheet exposures (excluding derivatives, SFTs and fiduciary assets)**	**56,720**
	Derivative exposures	
4	Replacement cost associated with all derivatives transactions (i.e net of eligible cash variation margin)	2,032
5	Add-on amounts for PFE associated with all derivatives transactions (mark-to-market method)	103
EU-5a	Exposure determined under Original Exposure Method	
6	Gross-up for derivatives collateral provided where deducted from the balance sheet assets pursuant to the applicable accounting framework	
7	(Deductions of receivables assets for cash variation margin provided in derivatives transactions)	
8	(Exempted CCP leg of client-cleared trade exposures)	
9	Adjusted effective notional amount of written credit derivatives	
10	(Adjusted effective notional offsets and add-on deductions for written credit derivatives)	
11	**Total derivatives exposures**	**2,135**
	SFT exposures	
12	Gross SFT assets (with no recognition of netting), after adjusting for sales accounting transactions	
13	(Netted amounts of cash payables and cash receivables of gross SFT assets)	
14	Counterparty credit risk exposure for SFT assets	
EU-14a	Derogation for SFTs: Counterparty credit risk exposure in accordance with Articles 429b(4) and 222 of Regulation (EU) No 575/2013	
15	Agent transaction exposures	
EU-15a	(Exempted CCP leg of client-cleared SFT exposure)	
	SFT exposures	
16	**Total securities financing transaction exposures**	**3,981**
	Other off-balance sheet exposures	
17	Off-balance sheet exposures at gross notional amount	10,204
18	Adjustments for conversion to credit equivalent amounts	(7,166)
19	**Other off-balance sheet exposures**	**3,038**
	Capital and total exposure measure	
20	**Tier 1 capital**	**5,619**
21	**Leverage ratio total exposure measure**	**65,873**
	Leverage Ratio	
22	**Leverage ratio**	**8.53%**
	Choice on transitional arrangements and amount of derecognised fiduciary items	
EU-23	Choice on transitional arrangements for the definition of the capital measure	Transitional
EU-24	Amount of derecognised fiduciary items in accordance with Article 429(11) of Regulation (EU) NO. 575/2013	-
	Split-up of on balance sheet exposures (excluding derivatives and SFTs)	
		CRR leverage ratio exposures
EU-1	Total on-balance sheet exposures (excluding derivatives, SFTs, and exempted exposures), of which:	**57,364**
EU-2	Trading book exposures	**4,529**
EU-3	Banking book exposures, of which:	**52,835**
EU-4	*Covered bonds*	
EU-5	*Exposures treated as sovereigns*	*16,818*
EU-6	*Exposures to regional governments, MDB, international organisations and PSE not treated as sovereigns*	*593*
EU-7	*Institutions*	*833*
EU-8	*Secured by mortgages of immovable properties*	*11,061*
EU-9	*Retail exposures*	*3,525*
EU-10	*Corporate*	*9,174*
EU-11	*Exposures in default*	*6,387*
EU-12	*Other exposures (eg equity, securitisations, and other non-credit obligation assets)*	*4,443*

5. CREDIT RISK

5.1. Definitions and general information

For accounting purposes, "past due" exposures are those exposures which are past due for at least 1 day. Credit impaired exposures include all past-due exposures more than 90 days.

The Group has aligned the definition of default for financial reporting purposes, with the non performing exposures (NPE) definition used for regulatory purposes, as per EBA Implementing Technical Standards on Supervisory reporting on forbearance and non-performing exposures, as adopted by the Commission Implementing Regulation (EU) 2015/227 of 9 January 2015 amending Implementing Regulation (EU) No 680/2014 laying down implementing technical standards with regard to supervisory reporting of institutions according to Regulation (EU) No 575/2013 of the European Parliament and of the Council ("EBA ITS"). The definition of default for financial reporting purposes is consistent with the one used for internal credit risk management purposes.

A debt security is considered as credit impaired, and is classified into Stage 3, when at least one payment of capital or interest is overdue by the issuer, based on the contractual terms of the instrument, irrespective of the days past due. In addition, a debt security is assessed as credit impaired if there is at least one external credit rating on the security or the issuer corresponding to Default or Selective Default.

5.2. Impairment – Expected Credit Losses

ECL are recognised for all financial assets measured at amortised cost, debt financial assets measured at FVTOCI, lease receivables, financial guarantees and certain loan commitments. ECL represent the difference between contractual cash flows and those that the Group expects to receive, discounted at the EIR. For loan commitments and other credit facilities in scope of ECL, the expected cash shortfalls are determined by considering expected future draw downs.

Recognition of expected credit losses

At initial recognition, an impairment allowance is required for ECL resulting from default events that are possible within the next 12 months (12-month ECL), weighted by the risk of a default occurring. Instruments in this category are referred to as instruments in Stage 1. For instruments with a remaining maturity of less than 12 months, ECL are determined for this shorter period.

In the event of a significant increase in credit risk ("SICR"), an ECL allowance is required, reflecting lifetime cash shortfalls that would result from all possible default events over the expected life of the financial instrument ("lifetime ECL"), weighted by the risk of a default occurring. Instruments in this category are referred to as instruments in Stage 2.

Lifetime ECL are always recognised on financial assets for which there is objective evidence of impairment, that is they are considered to be in default or otherwise credit-impaired. Such instruments are referred to as instruments in Stage 3.

Write-off

A write-off is made when the Group does not have a reasonable expectation to recover all or part of a financial asset. Write-offs reduce the principal amount of a claim and are charged against previously established allowances for credit losses. Recoveries, in part or in full, of amounts previously written off are generally credited to "credit provisions and other impairment charges". Write-offs and partial write-offs represent derecognition or partial derecognition events.

Measurement of expected credit losses

The Group assesses on a forward-looking basis the ECL associated with all financial assets subject to impairment under IFRS 9. The Group recognises an ECL allowance for such losses at each reporting date. The measurement of ECL reflects:

- An unbiased and probability-weighted amount that is determined by evaluating a range of possible outcomes. The Group uses three macroeconomic scenarios and estimates the ECL that would arise under each scenario. A weighting is allocated to each scenario, such that the weighted probabilities of all three scenarios are equal to one. The distribution of possible ECL may be non-linear, hence three distinct calculations are performed, where the associated ECLs are multiplied by the weighting allocated to the respective scenario. The sum of the three weighted ECL calculations represents the probability-weighted ECL.
- The time value of money.
- Reasonable and supportable information that is available without undue cost or effort at the reporting date about past events, current conditions and forecasts of future economic conditions.

For the purposes of measuring ECL, the estimate of expected cash shortfalls reflects the cash proceeds expected from collateral liquidation (if any) and other credit enhancements that are part of the contractual terms and are not recognised separately by the Group. The estimate of expected cash shortfalls on a collateralized loan exposure reflects the assumptions used regarding the amount and timing of cash flows that are expected from foreclosure on the collateral less the costs of obtaining and selling the collateral, irrespective of whether the foreclosure is probable.

The ECL calculations are based on Exposure at Default ("EAD"), Credit Conversion Factor ("CCF"), Probability of Default ("PD"), Loss given default ("LGD") and Discount Rate.

The PD and LGD are determined for three different scenarios whereas EAD projections are treated as scenario independent.

The ECL is determined by projecting the PD, LGD and EAD for each time step between future cash flow dates and for each individual exposure or collective segment. These three components are multiplied together and adjusted for the likelihood of survival, if appropriate. This effectively calculates an ECL for each future period, which is then discounted back to the reporting date and summed.

Significant increase of credit risk

A financial asset is considered as non-credit impaired, when the definition for Stage 3 classification is not met. The exposure is classified as Stage 2 if it has suffered a SICR, otherwise it is classified as Stage 1.

At each reporting date, the Group performs the SICR assessment comparing the risk of a default occurring over the remaining expected lifetime of the exposure with the expected risk of a default as estimated at origination.

The Group's process to assess SICR has three main components:

- a quantitative element, i.e. reflecting a quantitative comparison of PD or credit rating at the reporting date versus the respective metric at initial recognition,
- a qualitative element, i.e. all Forborne Performing Exposures (FPE), in accordance with EBA ITS, internal watch list for corporate obligors, and
- "backstop" indicators. The Group applies on all lending exposures the IFRS 9 presumption that a SICR has occurred when the financial asset is more than 30 days past due.

5.3. General information on Credit Risk

Table 16: EU CRB-B - Total and average net amount of exposures

	a	b
Exposure Class	Net value of exposures at 31.12.2018	Average net exposures over 2018
Central Governments or Central Banks		
Intitutions		
Corporates	19,817	19,309
Of which: Specialised lending	3,519	3,255
Of which: SMEs	6,942	7,144
Retail	12,007	12,080
Secured by real estate property	10,873	10,929
SMEs	778	789
Non-SMEs	10,095	10,140
Qualifying revolving		
Other Retail	1,134	1,151
SMEs	1,134	1,151
Non-SMEs		
Equity		
Total IRB approach	**31,824**	**31,390**
Central Governments or Central Banks	17,509	16,468
Regional governments or local authorities	12	15
Public sctor entities	664	540
Multirateral development banks	6	6
International organisations	47	130
Institutions	11,072	8,690
Corporates	954	1,046
Of which: SMEs	622	687
Retail	5,129	5,330
Of which: SMEs	241	256
Secured by mortgages on immovable property	1,200	1,211
Of which: SMEs	240	248
Exposures in default	1,873	2,029
Items associated with particularly high risk	122	126
Covered bonds		
Claims on institutions and corporates with a short-term credit assessment		
Collective investments undertakings	0	0
Equity exposures	636	618
Other exposures	3,203	3,083
Total standardised approach	**42,426**	**39,293**
Total	**74,250**	**70,683**

Table 17: EU CRB-C - Geographical breakdown of exposures

Exposure Class	Greece	Cyprus	Marshall Islands	Romania	FYROM	Luxemburg	United Kingdom	Other Countries	Total
Central Governments or Central Banks									
Intitutions									
Corporates	17,777	74	1,004	82	0	75	93	712	**19,817**
Retail	12,007								**12,007**
Equity									
Total IRB approach	***29,784***	***74***	***1,004***	***82***		***75***	***93***	***712***	***31,824***
Central Governments or Central Banks	15,028	170		289	308			1,713	**17,509**
Regional governments or local authorities	12	1							**12**
Public sctor entities	663							1	**664**
Multirateral development banks						6			**6**
International organisations						47			**47**
Institutions	803	2		131	1	8	5,189	4,937	**11,072**
Corporates	243	312		103	227			68	**954**
Retail	4,021	50		406	639		1	12	**5,129**
Secured by mortgages on immovable property	351	38		429	375		1	7	**1,200**
Exposures in default	1,579	144		71	61		7	10	**1,873**
Items associated with particularly high risk		117					2	4	**122**
Covered bonds									
Claims on institutions and corporates with a short-term credit assessment									
Collective investments undertakings	0								
Equity exposures	576				1	6	23	29	**636**
Other exposures	3,028	24		76	49		4	22	**3,203**
Total standardised approach	***26,304***	***857***		***1,507***	***1,662***	***67***	***5,227***	***6,803***	***42,426***
Total	**56,088**	**931**	**1,004**	**1,589**	**1,662**	**142**	**5,319**	**7,515**	**74,250**

Table 18: EU CRB-D - Concentration of corporate exposures by industry

	a	b	c	d	e	f	g	h	i	j
	Agriculture, forestry and fishing	Mining and quarrying	Manufacturing	Electricity, gas, steam and air conditioning supply	Water supply	Construction	Wholesale and retail trade	Transport and storage	Accommodation and food service activities	Information and communication
Central Governments or Central Banks										
Intitutions										
Corporates	253	29	5,377	2,002	104	2,128	3,529	2,669	1,121	731
Retail										
Equity										
Total IRB approach	***253***	***29***	***5,377***	***2,002***	***104***	***2,128***	***3,529***	***2,669***	***1,121***	***731***
Total standardised approach*										
Total	**253**	**29**	**5,377**	**2,002**	**104**	**2,128**	**3,529**	**2,669**	**1,121**	**731**

Table 18: EU CRB-D - Concentration of corporate exposures by industry *(continued)*

	k	l	m	n	o	p	q	r	s	u	v
	Other Financial Services	Real estate activities	Professional, scientific and technical	Administrative and support service activities	Public administration and defence,	Education	Activities of extraterritorial organisations	Human health services and social work	Arts, entertainment and recreation	Other services	**Total**
Central Governments or Central Banks											
Intitutions											
Corporates	187	924	191	164		19	7	237	142	4	**19,817**
Retail											
Equity											
Total IRB approach	***187***	***924***	***191***	***164***		***19***	***7***	***237***	***142***	***4***	***19,817***
Total standardised approach*											
Total	**187**	**924**	**191**	**164**		**19**	**7**	**237**	**142**	**4**	**19,817**

**All corporate exposures are under IRB approach, therefore the breakdown of standardised exposures by industry is not applicable for the purposes of this table*

Table 19: EU CRB-E – Maturity of exposures

	a	b	c	d	e	f
	Net exposure value					
	On demand	<= 1 year	> 1 year <= 5 years	> 5 years	No stated maturity	**Total**
Central Governments or Central Banks						
Intitutions						
Corporates	180	2,478	5,421	4,013		**12,091**
Retail	247	1,457	904	8,900		**11,509**
Equity						
Total IRB approach	***427***	***3,935***	***6,325***	**12,913**		**23,600**
Central Governments or Central Banks	6,310	5,511	804	2,995	1,889	**17,508**
Regional governments or local authorities		2	6	2		**11**
Public sctor entities	509	14	40	46		**609**
Multirateral development banks	6					**6**
International organisations	20			27		**47**
Institutions	1,261	9,286	82	76	212	**10,917**
Corporates	78	192	192	195	20	**677**
Retail	347	636	794	2,061		**3,838**
Secured by mortgages on immovable property	16	389	52	733		**1,190**
Exposures in default	31	1,084	61	693		**1,869**
Items associated with particularly high risk	5	66	13	8	2	**95**
Covered bonds						
Claims on institutions and corporates with a short-term credit assessment						
Collective investments undertakings	0	0	0	0	0	**0**
Equity exposures		2			635	**636**
Other exposures	3,002	201				**3,203**
Total standardised approach	***11,585***	***17,383***	***2,044***	***6,836***	***2,758***	***40,606***
Total	**12,012**	**21,318**	**8,369**	**19,749**	**2,758**	**64,206**

Table 20: EU CR1-A - Credit quality of exposures by exposure class and instrument

Exposure Class	a	b	C	d	e	G
	Gross carrying values of		Specific credit risk adjustments****	General credit risk adjustments	Accumulated write-offs	Net values (a+b-c-d)
	Defaulted exposures	Non-defaulted exposures				
Central Governments or Central Banks						
Intitutions						
Corporates	5,387	17,791	3,361		400	19,817
Of which: Specialised lending	*179*	*3,465*	*125*			*3,519*
Of which: SMEs	*3,796*	*5,448*	*2,303*			*6,942*
Retail	5,626	9,650	3,269		84	12,007
Secured by real estate property	*4,715*	*8,639*	*2,481*		*60*	*10,873*
SMEs	*775*	*628*	*625*			*778*
Non-SMEs	*3,940*	*8,011*	*1,855*		*60*	*10,095*
Qualifying revolving						
Other Retail	*912*	*1,011*	*789*		*23*	*1,134*
SMEs	*912*	*1,011*	*789*		*23*	*1,134*
Non-SMEs						
Equity						
Total IRB approach	**11,013**	**27,441**	**6,631**		**484**	**31,824**
Central Governments or Central Banks		17,511	2			17,509
Regional governments or local authorities		12				12
Public sctor entities		665	1			664
Multirateral development banks		6				6
International organisations		47				47
Institutions		11,075	3			11,072
Corporates		969	15			954
Of which: SMEs		*635*	*13*			*622*
Retail		5,420	291			5,129
Of which: SMEs		*262*	*21*			*241*
Secured by mortgages on immovable property		1,200				1,200
Of which: SMEs		*240*				*240*
Exposures in default	4,070		2,198		50	1,873
Items associated with particularly high risk		178	55			122
Covered bonds						
Claims on institutions and corporates with a short-term credit assessment						
Collective investments undertakings**		0				0
Equity exposures		636				636
Other exposures		3,203				3,203
Total standardised approach	**4,070**	**40,922**	**2,565**		**50**	**42,426**
Total	**15,083**	**68,363**	**9,196**		**534**	**74,250**
Of which: Loans***	14,455	32,151	9,037		534	37,569
Of which: Debt securities****	17	4,336				4,353
Of which: Off-balance sheet exposures	611	9,593	160			10,044

**Column C refers to loans and is presented after the application of IFRS9 transitional arrangements. Assets held for sale are also included since they are still regulatory consolidated*

***Collective Investment Undertakings exposures are immaterial (€0.8)*

**** Loans include deposits to Central Banks and Institutions*

*****Debt Securities do not iclude the 30y IRS with Hellenic Republic*

Table 21: EU CR1-B - Credit quality of corporate exposures by industry

Sector	a Gross carrying values of Defaulted exposures	b Non-defaulted exposures	C Specific credit risk adjustments	d General credit risk adjustments	e Accumulated write-offs	G Net values (a+b-c-d)
Agriculture, forestry and fishing	136	169	52		1	253
Mining and quarrying	7	27	5			29
Manufacturing	1,437	4,840	901		89	5,377
Electricity, gas, steam and air conditioning supply	39	1,999	36			2,002
Water supply	2	103	2		1	104
Construction	354	2,019	246		27	2,128
Wholesale and retail trade	1,313	3,051	835		184	3,529
Transport and storage	514	2,438	283		47	2,669
Accommodation and food service activities	386	927	193		7	1,121
Other Financial Services	130	159	103		1	187
Information and communication	389	587	245		10	731
Real estate activities	448	761	286		7	924
Professional, scientific and technical activities	86	146	42		2	191
Administrative and support service activities	19	156	10		20	164
Public administration and defence, compulsory social security						
Education	17	18	16			19
Activities of extraterritorial organisations and bodies	2	6	2			7
Human health services and social work activities	65	236	63		2	237
Arts, entertainment and recreation	40	144	42			142
Other services	1	4	1		2	4
Total	**5,387**	**17,791**	**3,361**		**400**	**19,817**

Table 22: EU CR1-C - Credit quality of exposures by geography

Country	a Gross carrying values of Defaulted exposures	b Non-defaulted exposures	C Specific credit risk adjustments	d General credit risk adjustments	e Accumulated write-offs	G Net values (a+b-c-d)
Greece	14,030	50,602	8,545		520	56,088
Cyprus	290	839	197			931
Marshall Islands	103	950	49			1,004
Romania	282	1,485	178		3	1,589
FYROM	119	1,616	73		6	1,662
Luxemburg	8	139	5			142
United Kingdom	17	5,312	9			5,319
Other countries	234	7,421	140		5	7,515
Total	**15,083**	**68,363**	**9,196**		**534**	**74,250**

5.4. Provision analysis

Table 23 : EU CR2-A - Changes in the stock of general and specific credit risk adjustments

		a Accumulated specific credit risk adjustment	b Accumulated general credit risk adjustment
1	**Opening balance**	**(11,251)**	
2	Increases due to amounts set aside for estimated loan losses during the period	(179)	
3	Decreases due to amounts reversed for estimated loan losses during the period		
4	Decreases due to amounts taken against accumulated credit risks adjustments	1,702	
5	Transfers between credit risk adjustments		
6	Impact of exchange rate differences	(21)	
7	Other adjustments	197	
8	**Closing balance**	**(9,552)**	
9	Recoveries on credit risk adjustments recorded directly to the statement of profit or loss		
10	Specific credit risk adjustments directly recorded to the statement of profit or loss		

Table 24 : EU CR2-B - Changes in the stock of defaulted and impaired loans and debt securities

		a Gross carrying value defaulted exposures
1	**Opening balance**	**15,407**
2	Loans and debt securities that have defaulted or impaired since the last reposrting period	1,469
3	Returned to non-defaulted status	(328)
4	Amounts written off	(534)
5	Other changes*	(1,541)
6	**Closing balance**	**14,473**

** Other changes include repayments and sales*

5.5. Non-performing and forborne exposures

The Bank continues to operate in a challenging economic environment as a result of the Greek financial crisis. Against this backdrop, the Bank is executing a well-developed strategy that aims to reduce its NPE ratio and maximise collections from the Bank's troubled assets portfolio. This strategy includes a set of detailed operational targets and Key Performance Indicators as well as a time-bound action plan for their implementation with a view to significantly reducing NPE stocks.

The strategy establishes realistic but sufficiently ambitious targets, and NBG assesses its effectiveness and adequacy on a regular basis. The strategy is both consistent with, and linked to, the Bank's business plan and the current ICAAP.

The Bank's NPE Management actions as well as internal monitoring and modelling mechanisms are built around the Business segmentation criteria and largely operating in a bottom-up approach. The main strategy drivers of the Bank's NPE Management Strategy are:

- Restructurings
- Sale & securitization of portfolios
- Liquidations
- Real estate collateral repossessions

The execution of the envisaged strategic actions and the related timetables depend on the legal, market and economic conditions and are consequently subject to ongoing re-evaluation.

Table 25: Credit quality of forborne exposures

		a	b	c	d	e	f	g	h
		Gross carrying amount/ nominal amount of exposures with forbearance measures				**Accumulated impairment**		**Collateral received and financial guarantees received on forborne exposures**	
		Performing forborne	**Non performing forborne**	Of which defaulted	Of which impaired	On performing forborne exposures	On non-performing forborne exposures		Of which collateral and financial guarantees received on non-performing exposures with forbearance measures
1	Loans and advances	**2,570**	**6,673**	**4,648**	**6,601**	**(235)**	**(3,062)**	**5,016**	**3,218**
2	*Central Banks*								
3	*General Governments*		*65*	*64*	*65*		*(32)*	*24*	*24*
4	*Credit Institutions*								
5	*Other Financial Corporations*		*112*	*98*	*112*	*(0)*	*(84)*	*6*	*6*
6	*Non-Financial Corporations*	*450*	*2,836*	*2,291*	*2,764*	*(56)*	*(1,449)*	*1,447*	*1,131*
7	*Households*	*2,120*	*3,660*	*2,195*	*3,660*	*(179)*	*(1,497)*	*3,539*	*2,057*
8	Debt Securities								
9	Loan Commitments given								
10	**Total**	**2,570**	**6,673**	**4,648**	**6,601**	**(235)**	**(3,062)**	**5,016**	**3,218**

Table 26: Credit quality of performing and non-performing exposures by past due days

		a	b	c	d	e	f	g	h	i	l
		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	Past due >5 years	Of which defaulted
1	**Loans and advances**	**30,621**	**30,212**	**409**	**16,272**	**4,394**	**536**	**794**	**3,972**	**6,575**	**13,773**
2	*Central Banks*	*4,582*	*4,582*								
3	*General Governments*	*359*	*359*		*93*	*60*		*1*	*22*	*10*	*93*
4	*Credit Institutions*	*2,587*	*2,587*								
5	*Other Financial Corporations*	*475*	*475*		*149*	*67*		*2*	*58*	*22*	*135*
6	*Non-Financial Corporations*	*11,643*	*11,549*	*94*	*7,455*	*2,432*	*113*	*393*	*1,848*	*2,669*	*6,498*
7	*Of which SMEs*	*3,773*	*3,725*	*48*	*4,547*	*794*	*79*	*318*	*1,181*	*2,174*	*4,031*
8	*Households*	*10,975*	*10,660*	*315*	*8,575*	*1,835*	*422*	*399*	*2,045*	*3,874*	*7,046*
9	**Debt Securities**	**7,712**	**7,712**								
10	*Central Banks*										
11	*General Governments*	*7,460*	*7,460*								
12	*Credit Institutions*	*75*	*75*								
13	*Other Financial Corporations*	*3*	*3*								
14	*Non-Financial Corporations*	*174*	*174*								
15	**Off-balance sheet exposures**	**9,047**			**236**						**155**
16	*Central Banks*										
17	*General Governments*	*55*									
18	*Credit Institutions*	*3*									
19	*Other Financial Corporations*	*154*									
20	*Non-Financial Corporations*	*7,607*			*229*						*149*
21	*Households*	*1,229*			*6*						*6*
22	**Total**	**47,380**	**37,924**	**409**	**16,508**	**4,394**	**536**	**794**	**3,972**	**6,575**	**13,928**

Table 27: Performing and non-performing exposures and related provisions

	a	b	c	d	e	f	g	h	i	j	k	l	m	n
	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- accumulated impairment and provisions			Non-performing exposures- accumulated impairment, accumulated negative changes in fair value due to credit risk and provisions			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		
Loans and advances	**30,621**	**23,162**	**7,459**	**16,272**		**16,272**	**(571)**	**(144)**	**(427)**	**(8,968)**		**(8,968)**	**14,318**	**6,560**
Central Banks	*4,582*	*4,582*												
General Governments	*359*	*350*	*9*	*93*		*93*	*(3)*	*(3)*	*(0)*	*(56)*		*(56)*	*65*	*28*
Credit Institutions	*2,587*	*2,587*												
Other Financial Corporations	*475*	*451*	*25*	*149*		*149*	*(18)*	*(13)*	*(5)*	*(114)*		*(114)*	*17*	*13*
Non-Financial Corporations	*11,643*	*10,205*	*1,438*	*7,455*		*7,455*	*(197)*	*(66)*	*(130)*	*(4,855)*		*(4,855)*	*6,227*	*2,157*
Of which SMEs	*3,773*	*2,793*	*980*	*4,547*		*4,547*	*(126)*	*(24)*	*(102)*	*(3,015)*		*(3,015)*	*2,045*	*1,230*
Households	*10,975*	*4,988*	*5,987*	*8,575*		*8,575*	*(353)*	*(61)*	*(292)*	*(3,943)*		*(3,943)*	*8,009*	*4,363*
Debt Securities	**7,712**	**6,533**	**1,178**				**(85)**	**(10)**	**(76)**					
Central Banks														
General Governments	*7,460*	*6,282*	*1,178*				*(84)*	*(8)*	*(76)*					
Credit Institutions	*75*	*75*												
Other Financial Corporations	*3*	*3*												
Non-Financial Corporations	*174*	*174*					*(1)*	*(1)*						
Off-balance sheet exposures	**9,047**	**8,452**	**595**	**236**		**236**	**(15)**	**(4)**	**(11)**	**(52)**		**(52)**		
Central Banks														
General Governments	*55*	*53*	*1*											
Credit Institutions	*3*	*3*												
Other Financial Corporations	*154*	*36*	*117*				*(3)*	*(1)*	*(2)*					
Non-Financial Corporations	*7,607*	*7,136*	*471*	*229*		*229*	*(12)*	*(3)*	*(9)*	*(52)*		*(52)*		
Households	*1,229*	*1,223*	*6*	*6*		*6*								
Total	**47,380**	**38,148**	**9,232**	**16,508**		**16,508**	**(672)**	**(158)**	**(514)**	**(9,020)**		**(9,020)**	**14,318**	**6,560**

Table 28: Quality of non-performing exposures by geography

		a	b	c	d	e	f
		Gross carrying amount/ nominal amount			Accumulated impairment	Provisions on off-balance-sheet commitments and financial guarantees given	Accumulated negative changes in fair value due to credit risk on non-performing exposures
			Of which non-performing	Of which subject to impairment			
1	**On-balance-sheet exposures**	**54,604**	**16,272**	**51,085**	**(9,552)**		**(73)**
2	*Greece*	*47,370*	*15,593*	*43,873*	*(9,130)*		*(73)*
3	*Other Countries*	*3,120*	*37*	*3,097*	*(17)*		
4	*North Macedonia*	*1,532*	*120*	*1,532*	*(85)*		
5	*Marshall Islands*	*983*		*983*			
6	*United Kingdom*	*800*	*1*	*800*	*(1)*		
7	*Cyprus*	*532*	*364*	*532*	*(222)*		
8	*Luxemburg*	*87*	*13*	*87*	*(5)*		
9	*Romania*	*181*	*144*	*181*	*(92)*		
10	**Off-balance-sheet-exposures**	**9,283**	**236**			**(67)**	
11	*Greece*	*8,901*	*236*			*(67)*	
12	*North Macedonia*	*232*					
13	*Cyprus*	*85*					
14	*United Kingdom*	*65*					
15	**Total**	**63,887**	**16,508**	**51,085**	**(9,552)**	**(67)**	**(73)**

Table 29: Credit quality of loans and advances by industry

		a	b	c	d	e
		Gross carrying amount			**Accumulated impairment**	Accumulated negative changes in fair value due to credit risk on non-performing exposures
			of which non-performing	Of which loans and advances subject to impairment		
1	Agriculture, forestry and fishing	327	160	327	(76)	
2	Mining and quarrying	994	491	994	(371)	(1)
3	Manufacturing	2,946	1,280	2,946	(807)	(22)
4	Electricity, gas, steam and air conditioning supply	2,055	73	2,055	(66)	
5	Water supply					
6	Construction	1,196	591	1,196	(432)	(0)
7	Wholesale and retail trade	4,714	2,383	4,714	(1,646)	(4)
8	Transport and storage	2,424	609	2,424	(310)	(41)
9	Accomodation and food service activities	1,429	563	1,429	(323)	(1)
10	Information and communication	26	4	26	(3)	
11	Financial and insurance activities					
12	Real estate activities	1,157	394	1,157	(267)	
13	Professional, scientific, and technical activities	544	362	544	(280)	
14	Administrative and support service activities	7	3	7	(2)	
15	Public administration and defence, compulsory social security					
16	Education					
17	Human health services and social work activities	302	120	302	(71)	
18	Arts, entertainment and recreation	9	6	9	(4)	
19	Other services	966	414	773	(324)	(2)
20	**Total**	**19,097**	**7,455**	**18,904**	**(4,982)**	**(70)**

5.6. Credit Risk Mitigation techniques

Since 2007, NBG uses a specialised Collateral Management system, both for corporate and retail exposures. The system aims to:

- Record Bank's collaterals
- Establish a connection between loan contract and collateral
- Assess qualitatively all collaterals
- Monitor collaterals' market value and estimate coverage ratio
- Provide information regarding each and every obligor's collaterals
- Retrieve necessary data for the estimation of capital requirements per facility
- Automatically monitor the obligor's entire credit risk position.

The Collateral Management system provides a large number of control elements, reducing operational risk, also keeping track of all securities offered to the Bank, both those that are currently active and those that matured.

The system calculates and/or keeps the following values per collateral:

- Value as of input day
- Current market value (for traded securities, etc.)
- Security/Guarantee value: this is lower than the Current market value by a fixed proportion which, in turn, is based on the collateral's liquidation feasibility
- Market value, Tax value, Forced Sale value, Land and Buildings value and Construction Cost for all real estate collaterals.

In principle, NBG accepts the following credit risk mitigation types (funded and unfunded):

- Guarantees from:
  - Physical and Legal entities, both from the Private and Public Sector
  - Central governments, Regional governments, local authorities and PSEs
  - Financial institutions
  - The Greek Government and the Hellenic Fund for Entrepreneurship and Development (ETEAN SA)
- Pledges of
  - Securities (cheques and bills of exchange)
  - Deposits
  - Equity, Mutual funds and Non-tangible securities (bonds, etc.)
  - Claims against Central Government, Public and Private Sector Entities
  - Goods, Exported claims and Leases
  - Letters of Guarantee and Trademarks
  - Claims on Insurance Contracts
  - Claims from Credit Cards' sales
- Liens
  - On Real Estate and Ships
- Other
  - Discounting of Bills of Exchange
  - Cash
  - Receivables

Credit and Counterparty Risk exposures secured by CRR eligible credit risk mitigation instruments (collateral and guarantees) as of 31.12.2018 (in € mio) were as follows:

Table 30 : EU CR3 - CRM techniques – Overview

		a	b	c	d	e
		Exposures unsecured - Carrying amount	Exposures secured - Carrying amount	Exposures secured by collateral	Exposures secured by financial guarantees	Exposures secured by credit derivatives
1	Total loans	7,041	30,312	21,224	9,088	
2	Total debt securities	7,567	59	59		
3	**Total exposures**	**14,608**	**30,371**	**21,283**	**9,088**	
4	*Of which defaulted*	*1,266*	*5,265*	*4,558*	*707*	

5.7. Portfolios under the Standardised Approach

External Credit Assessment Institutions (ECAI) used to risk weight exposures under the Standardised Approach are Standard & Poor's, Moody's Investors Service Ltd and Fitch Ratings Ltd. There is no process to transfer the issuer and issue credit assessments onto items not included in the trading book, as this is not applicable to NBG Group's portfolios.

The asset classes for which ECAI ratings are used are the following:

- Central Governments and Central Banks
- Regional Governments and Local Authorities
- Public Sector Entities
- Financial Institutions
- Corporate (Standardised approach)

The table below presents the Exposures (net of accounting provisions), before and after Credit Risk Mitigation (CRM), as of 31.12.2018, according to the supervisory exposure classes (amounts are in € mio):

Table 31: EU CR4 - Standardised approach - Credit Risk Exposure and CRM effects

	a	b	c	d	e	f
	Exposures before CCF and CRM		**Exposures post CCF and CRM**		**RWAs and RWA density**	
Exposure classes	On-balance-sheet amount	Off-balance-sheet amount	On-balance-sheet amount	Off-balance-sheet amount	RWAs*	RWA density
Central governments or central banks	15,619		16,598		5,432	**33%**
Regional governments or local authorities	11	1	10		2	**20%**
Public sector entities	609	55	580	7	191	**33%**
Multilateral development banks	6		38			**0%**
International organisations	47		47			**0%**
Institutions	1,698	154	1,711	85	225	**13%**
Corporates	644	277	627	91	690	**96%**
Retail	3,838	1,292	3,012	3	2,230	**74%**
Secured by mortgages on immovable property	1,190	10	1,190	6	460	**38%**
Exposures in default	1,869	3	1,866		1,945	**104%**
Exposures associated with particularly high risk	95	28	95	21	173	**150%**
Covered bonds						
Institutions and corporates with a short-term credit assessment						
Collective investment undertakings**	0	0	0	0	0	**100%**
Equity	636		636		1,373	**216%**
Other items	3,203		3,203		2,512	**78%**
Total	**29,464**	**1,821**	**29,613**	**213**	**15,234**	**51%**

**Counterparty Credit Risk RWAS are not included*

***Collective Investment Undertakings exposures are immaterial (€0.8) but produce a RWA density*

Table 32 : EU CR5 - Standardised approach

	Exposure classes	Risk Weight							
		0%	2%	4%	10%	20%	35%	50%	70%
1	Central governments or central banks	11,284			152	4			
2	Regional governments or local authorities					10			
3	Public sector entities					494			
4	Multilateral development banks	38							
5	International organisations	47							
6	Institutions	1,096				554		80	
7	Corporates								
8	Retail								
9	Secured by mortgages on immovable property						828	368	
10	Exposures in default								
11	Exposures associated with particularly high risk								
12	Covered bonds								
13	Institutions and corporates with a short-term credit assessment								
14	Collective investment undertakings								
15	Equity								
16	Other items	687				5			
17	**Total**	**13,152**			**152**	**1,066**	**828**	**448**	

Table 32 : EU CR5 - Standardised approach *(continued)*

	Exposure classes	Risk Weight								Total*
		75%	100%	150%	250%	370%	1250%	Others	Deducted	
1	Central governments or central banks		4,987		172					**16,598**
2	Regional governments or local authorities									**10**
3	Public sector entities		93							**586**
4	Multilateral development banks									**38**
5	International organisations									**47**
6	Institutions		59	8						**1,797**
7	Corporates		718							**718**
8	Retail	3,015								**3,015**
9	Secured by mortgages on immovable property									**1,196**
10	Exposures in default		1,707	159						**1,866**
11	Exposures associated with particularly high risk			115						**115**
12	Covered bonds									
13	Institutions and corporates with a short-term credit assessment									
14	Collective investment undertakings									
15	Equity		145		491					**636**
16	Other items		2,511							**3,203**
17	**Total**	**3,015**	**10,220**	**282**	**663**					**29,826**

**Counterparty Credit Risk exposures are not included*

5.8. Portfolios under the Internal Ratings Based Approach

The Bank uses:

- The Foundation Internal Ratings Based (F-IRB) Approach with respect to its exposures to corporate customers, including Specialised Lending exposures
- The Advanced Internal Ratings Based (A-IRB) Approach with respect to its Mortgage Portfolio and its SME Retail Portfolio.

5.8.1. Structure and use of internal ratings systems

The Bank has developed Internal Rating Systems for Corporate Exposures (including Specialised Lending Exposures), as well as for Exposures to individuals fully collateralised by residential real estate (Housing Loans) and SME Retail Exposures.

As far as Corporate Exposures are concerned, the Rating System classifies the obligors to NBGs "Obligor Risk Rating'' (ORR) scale. Credit Assessments by External Credit Assessment Institutions (ECAIs) are not taken into consideration, as this is implemented by the models employed. The Obligor Rating Process is explicitly described in the Credit Policy of the Corporate Portfolio. Based on this Rating System, a Probability of Default (PD) is assigned to each obligor.

Project Finance and Object Finance facilities, falling under Specialised Lending Exposures, are rated using a Slotting Criteria model, with given specific risk-weighted factors following regulatory guidelines.

SME Retail clientele is rated through the combined application of two models, the SMEs Application Model and the SMEs Behavioural Model, both developed internally. The final evaluation of the application is carried out at a borrower level, combining financial data (if available), quality indicators and the rating which is produced by the behavioural model. The SMEs behavioural model takes into account the customer's transactional behaviour, the collateral provided, the cooperation with the Bank and the geographical area that the business operates.

For Housing Loans, the Bank uses two rating systems reflecting both obligor and facility risk. These systems provide both a Probability of Default (PD) estimate and a Loss Given Default (LGD) estimate. Both rating systems group loans in pools with common risk characteristics, avoiding large concentration in each pool. For the assignment into pools, obligor and facility risk criteria as well as current delinquency and repayment history criteria are used. Both rating procedures are consistent with the Retail Credit Policy and take into consideration all available up to date information. Internal pools, PDs and LGDs are used in risk management as well as in loan approval.

5.8.2. Credit Risk Mitigation

All risk mitigation items (collaterals and guarantees) are recorded, monitored and assessed through the Bank's Collateral Management System. Exposures can either be secured via pledging of collateral or contractually guaranteed by a third party (e.g. individuals, corporate entities, financial institutions, Public Sector Entities, the Hellenic Government or the Hellenic Fund for Entrepreneurship and Development – ETEAN SA). Guarantees being accepted by the Bank and their risk mitigation impact on underlying credit risk are described in the Credit Policy documents of both Corporate and Retail Portfolios (see also Section 5.6).

For corporate and retail portfolios, collateral values and related trends in Greece are monitored and updated based on independent appraisals by RICS-certified appraisers, an independent published Greek real property index ("PropIndex"), and official reports prepared by the Bank of Greece.

The existence and value of collaterals is closely monitored, according to documented internal procedures of the Bank. The frequency and the objective of the appraisals are determined by the competent approval units and in any case comply with the relevant policies.

Property valuations are performed in line with the European Valuation Standards (EVS) and the International Valuation Standards (IVS). They include "Valuations", to determine the market value of assets, and if needed "Technical Opinions", to document in writing a clear and objective opinion on the fair value for the implementation of a building project, investment plan or equipment supply.

The main collateral type, is mortgage on real estate. Supplementary on mortgage it is possible to accept financial collaterals such as pledge on deposits or securities. More specifically, for housing loans the Bank preferably requires for each loan contract first lien in mortgage on the financed property or other property suitable for collateral. For the retail residential property loans, the first valuation is done by inspection (on-site visit) inside the real property, thereafter on an annual basis by "Propindex", a real estate index for the Greek market, and sampling (5%) utilizing desktop methodology.

Similarly, for the commercial property and for Plots/Lands, revaluation is done by an on-site visit every 3 and 5 years respectively, and in the interim on an annual basis utilizing desktop methodology.

Other property valuation types that include Commercial, Residential and Plots/Land for Business banking purposes or regarding customers that fall within the jurisdiction of the Special Assets Unit ("SAU"), are treated with a similar methodology to retail banking and in any case are revaluated annually, either by on-site assessment, via a real estate index or utilizing desktop methodology.

The Collateral Management System that NBG uses to assess current evaluations of commercial values is a web-based software platform providing a flexible and easily adjusted workflow according to NBG's business requirements, enabling online collaboration with all involved units and entities (external appraisers, internal reviewers, business units, branch network, central operations) to efficiently manage the delegation of business requests involving the re-estimation of pledged real estate property, securing either corporate or retail loans. Following this implementation, NBG derives the best possible results for appraising and obtaining the most up-to-date information on collateral coverage amounts and the optimum coordination of the competent external appraisers, under the direct supervision of the Group's Technical Services Division sharing its assistance whenever it is necessary.

Collaterals and guarantees eligible for regulatory Credit Risk Mitigation purposes, as per EU Regulation 575/2013, are explicitly marked within the Collateral Management System in order to correctly assess their effect on Expected Loss and Regulatory Capital requirements.

Table 33: EU CR7 - IRB approach - Effect on the RWAs of credit derivatives used as CRM techniques

	a	b
	Pre-credit derivatives RWAs	Actual RWAs
Exposures under FIRB		
Central Governments or Central Banks		
Intitutions		
Corporates - SMEs	2,923	2,923
Corporates - Specialised lending	2,504	2,504
Corporates - Other	5,463	5,463
Exposures under AIRB		
Central Governments or Central Banks		
Intitutions		
Corporates - SMEs		
Corporates - Specialised lending		
Corporates - Other		
Retail - Secured by real estate SMEs	508	508
Retail - Secured by real estate non-SMEs	3,286	3,286
Retail - Qualifying revolving		
Retail - Other SMEs	341	341
Retail - Other non-SMEs		
Equity IRB		
Other non-credit obligation assets		
Total	**15,024**	**15,024**

5.8.3. Control mechanisms of Internal Rating Systems

NBG Group's Credit Risk Models' policies describe specific rules regarding the control and monitoring of all credit rating systems and relevant models. The purpose of the policies is to ensure transparency across the Group regarding model development, validation and monitoring and change, as well as to facilitate the Internal Audit Division's review. All risk systems and models used by the Bank and its Subsidiaries to monitor and estimate credit risk fall under the GRCA Division's competence, which has access to all data and models across the Group.

The aforementioned rating systems have been approved by BoG for use in regulatory capital calculation. The systems are validated on an annual basis, but are also checked monthly through the corporate and retail portfolio quality reports. Rating systems are reviewed in case of either a significant discrepancy, between observed risk metrics (default frequency, actual losses) and predicted parameters or of a pronounced delinquency tendency.

An independent Model Validation Unit reporting directly to the CRO ensures validation of all internal models, provides guidelines on potential improvements steming from findings illustrated in the validation reports and safeguards the timely accomplishment of the specified remedial actions emerging from the reported model's deficiencies. It also prepares and submits reports destined to inform Bank's Senior Management and Board Risk Committee and coordinates all respective actions taken by Bank's subsidiaries Risk Divisions.

5.8.4. Models and Internal Rating process of the Corporate Portfolio

The Obligor Risk Rating methodology is presented in full detail in the Corporate Credit Policy. The Obligors' Risk Rating (ORR) Scale being straightly connected to the assigned Probabilities of Default consists of 21 grades, 19 of which concern performing obligors whereas the remaining 2 relate to defaulted obligors, "default" being defined as per regulatory rules and the relevant Credit Policy. Every ORR grade is mapped to a single PD.

The rating of an Obligor reflecting the relative default risk is conducted by the relevant Business Division and approved either by the responsible Credit Approving Body, through the relevant credit approval process, or by the Head of the Credit Division and the Head of Corporate Division in cases that a Credit Facility Framework approval is not involved (categorisation procedure). Different credit exposures against the same obligor all receive the same ORR, irrespective of any difference between corresponding facilities (e.g. collateral pledged, type of credit line, etc.). ORRs are reviewed at least annually or more often upon any release of new information or publication of financial statements regarding the Obligor.

For rating corporate obligors the Bank uses five different models developed by GRCA. Specifically:

- All firms with full financial statements are rated using the Corporate Rating Model (CRM); any existing rating by an ECAI is not taken into consideration.
- Smaller-sized firms, which belong to the corporate portfolio not sharing the obligation to disclose full financial statements (i.e. they keep Greek GAAP B' category General Ledger books) are rated using a Limited Financials Scorecard.
- Specialised Lending exposures i.e., project finance and object finance (ocean-going vessels) related exposures, are rated using two Slotting Criteria models, structured like expert judgement scorecards.

- Special categories of obligors, namely venture companies, insurance companies etc., are rated using an Expert Judgment Model.

Further analysis of each rating model used in the Corporate Portfolio is provided below.

Selected features of IRB Corporate credit risk models:

Component modelled	Business Unit	Portfolio	Model description and methodology	Number of years used data	Exposure class
Probability of Default	Corporate Divisions	**Corporate customers with full financial statements**	Corporate Rating Model (CRM) – "Hybrid" rating model, combining statistical analysis with qualitative assessment	8 – 10 years	Large & SME Corporate
Probability of Default	Corporate Divisions	**Smaller-sized firms, which do not disclose full financial statements**	Corporate Limited Financials Model – Model based on logistic regression methodology that uses a set of mainly qualitative variables followed by a small number of quantitative criteria	8 – 10 years	Large & SME Corporate
Probability of Default	Corporate Divisions	**Obligors belonging to special categories, like venture companies lacking full year financial statements**	Expert Judgment Model – Scorecard where the rating focuses solely on qualitative criteria	8 – 10 years	Large & SME Corporate
Probability of Default	Corporate Divisions	**Project Finance and Object Finance (oceangoing shipping) exposures**	Specialised Lending Ranking Models (Slotting Criteria) – Scorecards evaluating the facilities based on certain criteria mainly qualitative	8 – 10 years	Specialised Lending

I. Corporate Rating Model (CRM)

CRM is a "hybrid" rating model, combining statistical analysis to the accumulated credit granting experience of the Bank. It combines objective quantitative data and subjective qualitative criteria, with the latter aiming to further refine the counterparty's rating assessment and enhancing the critical analysis applied.

CRM is implemented via the Risk Analyst platform (an upgraded version of Moody's Risk Advisor™ software) used by the Bank since early 2004. It consists of two separate analytical tools: the Financial Component and the Expert Component. In the former, the company's financial data (balance sheet, income statement) are fed in as input and various levels of analysis follow, for example, short-term and long-term projections, comparison with peer companies, and financial ratio calculations. In the Expert Component, qualitative data, supported by sound, experienced underwriter opinion, are imported in the CRM.

The first component of financial investigation studies several financial variables as calculated by disclosed financial statements. The Financial Component of CRM (a) examines each ratio's absolute value, (b) weighs its historical trend and volatility and finally, (c) compares the financial ratios of the company in question to that of its peers. In the second component of CRM, qualitative data related to the financial ratios participating in the first component of the model are included. Furthermore, the Relationship Manager replies to qualitative questions about the company and assesses its quality of management, its business environment etc. All these criteria are weighted to produce the final obligor assessment.

As a result, the overall weighting between quantitative and qualitative factors is ideally derived, by weighing up a number of factors and determining the most appropriate combination. Finally, the quantitative and the qualitative factors are adequately weighted to produce the final obligor assessment, represented by a Borrower Rating score on a scale from 1 (worst) to 100 (best). This score is then mapped to NBGs ORR scale. Each ORR grade is eventually assigned a different PD.

In addition, the model controls the consistency of answers given and flags any errors, such as inconsistencies between disclosed data and qualitative assessment by the Relationship Manager. It also produces evaluation reports for the obligor in general as well as concerning its liquidity, capital structure and operations. The model also allows the analyst to examine thoroughly the company's cash flow management and debt coverage. The latter factors are crucial in estimating the obligor's creditworthiness.

Although CRM is a "hybrid" model, comprising statistical analysis and accumulated business experience, its design was checked based on standard statistical techniques. These included univariate analysis to assess the predictive power of each variable, multivariate analysis for discovering possible multicollinearities between variables, etc. The final mix of qualitative and quantitative variables was decided empirically, in order to emphasize and hence accordingly weight, the more reliable quantitative criteria.

II. Expert Judgment Model

The Expert Judgment Model is used for special categories of obligors that cannot be rated by CRM or any other corporate model. These include insurance, factoring, leasing companies and financial services firms, etc.

Their rating focuses on qualitative criteria, supplied by Underwriters and Relationship Managers, which are distinguished in the following characteristics:

- Industry Risk
- Competition
- Years in Business
- Management Stability

- Risk Signs
- Customer base Concentration
- Frequency of Financing Requests
- Company and Owners Credit History
- Owner's Financial Status

The model classifies performing obligors in four risk classes (High, Significant, Medium and Low), then mapped to four ORR grades and linked to a corresponding obligor PD.

III. Specialised Lending Slotting Criteria Scorecards

Following regulatory directives and the relevant BIS (Basel II) documents, the Bank developed two simplified Slotting Criteria models, which are used to rate Project and Object Finance exposures. The group of criteria included are in perfect accordance with regulatory demands and include:

- Financial strength of Project
- Political and Legal Environment
- Transaction Characteristics
- Sponsor Strength
- Asset Characteristics
- Security/ Collaterals Package
- Environmental Issues

Both scorecards require the completion of a questionnaire by the authorised Credit Underwriter. Each one of the aforementioned groups receives a score, based on answers given to each criterion subclass. The weighted sum of all, in terms of a convex linear combination, ranks performing exposures into four categories (Strong, Good, Satisfactory and Weak), then mapped to an implied obligor PD and consequently to an ORR grade in NBG's scale.

IV. Limited Financials Scorecard

This scorecard was developed based on historical data from 2003 onwards and started operating in June 2008. It is used for newly founded companies and for companies that keep accounting books of categories A' and B' (according to Greek law and Greek GAAP) hence not meeting the requirements of CRM.

The predictive power of the model was measured by using a number of metrics and common accuracy ratios, for both "in-sample" and "out of sample" subsamples. The accuracy of predicting default, was judged to be highly satisfactory.

The assessment criteria of the model are presented below:

- Sales Growth
- Borrowed Funds to Sales
- Net Profit to Debt
- Industry Risk
- Competition
- Years in Business
- Management Stability
- Risk Signs
- Owners' Financial Status Last 3 Years' Credit Bureau Delinquencies to Last Year's Sales
- Company & Owners Credit History
- Behavioural Rating Grade (if available)

The use, whenever possible, of a behavioural rating as a supplementary independent variable in the scorecard, enhances significantly its efficiency on portfolio level and guarantees a more objective employment of all qualitative information stored in the customer databases of the Bank. The Limited Financials Scorecard, produces a score on a 0 to 100 scale, which is, in turn, mapped to ten different ORR grades in the master scale and consequently, to a corresponding obligor PD.

5.8.5. Models and Internal rating process of Retail SMEs

The creditworthiness of Retail SME performing obligors with respect to the assessed probabilities of default is ranked on a 13- grade rating scale, while obligors in default share a common default indication. Additionally obligors are ranked with respect to the probability of being transferred to Collections Division where contracts are being denounced and liquidation process of pledged collaterals is initiated - in an eight level scale. This ranking is used in the process of estimating loss given default (LGD) risk parameter for SMEs obligors.

The above processes are supported by three (3) statistical models which are described below. The output of the models I and II are combined to determine the probability of default (PD) for each obligor, while LGD estimate is obtained by applying model III.

Selected features of IRB credit risk models for SMEs:

Component modelled	Business Unit	Portfolio	Model description and methodology	Number of years used data	Exposure class
Probability of Default	Retail SME Division	**SME obligors with annual turnover less than €2.5 mio**	Two module SME Rating model used to assess the creditworthiness of Small and Medium Enterprises- Model based on logistic regression methodology that uses a set of mainly behavioural variables followed by a small number of quantitative criteria.	8 - 10 years	Retail SME
Loss Given Default	Retail SME Division	**SME obligors with annual turnover less than €2.5 mio**	Model estimating and assigning a percentage of loss on the outstanding exposure given the fact that either default occurs or the credit contract could be unilaterally denounced by the Bank.	8 - 10 years	Retail SME

I. Application Model

The design and development of the model was performed by the GRCA Division. The model is supported by a software platform, which was implemented by the Bank's IT Division and its utilisation has been introduced in the workflow process of the competent Business Unit. The platform supports credit underwriting process by providing all necessary tools for, registering annual or interim financial statements, inserting qualitative parameters, conducting financial ratio analysis, producing projected financial statements, completing the estimation of the independent variables used by the model and enhancing credit approval process.

The underwriting process is triggered by the submission of a credit request application for a new or an existing credit framework based on a contractual agreement. The produced rating grade is carried out on a borrower level and is associated with all credit risk taken by the Bank under this agreement (loans, credit lines, letters of guarantee etc.).

This portfolio consists of enterprises with full financial data (published balance sheets, income statements), as well as others having limited financial information. In order to handle this uneven situation, the model is designed as an envelope of two independent modules. Each one has its own data requirements (predictive factors), but both produce a credit assessment that falls in the same discrete rating scale.

- Module 1 (M_1): Deals with counterparties having full financial statements
- Module 2 (M_2): Deals with counterparties having limited financial information

The table below lists the predictive factors used by the above modules:

		M_1	M_2
Financial	Last Year's Sales	✓	
	Sales Growth (%)	✓	✓
	Last Year's Sales to Total Assets (%)	✓	
	Debt to Sales (%)	✓	✓
	Profit to Total Debt (%)	✓	✓
	Leverage (Borrowed Funds to Total Assets (%))	✓	
	Cash to Short-Term Liabilities (%)	✓	
Qualitative	Industry Risk		✓
	Competition		✓
	Behavioural Model Rating	✓	✓
	Management Stability	✓	✓
	Company & Owners Credit History	✓	✓
	Years in Business	✓	✓
	Last 3 Years' Credit Bureau Delinquencies to Last Year's Sales	✓	✓
	Risk Signs	✓	✓
	Owners' Financial Status	✓	✓

II. Behavioural Model

The design, development and implementation of the model was performed by the GRCA Division. The operating characteristics of the model are summarised below:

- The model's parameters values are drawn from a predefined data structure. This structure is automatically updated at the end of each month with the responsibility of the IT Division.
- It produces credit assessments with monthly frequency for all SMEs obligors with active funding for at least one semester at the date of assessment. This task is performed by the execution of a fully automated procedure of data processing.
- Credit assessments are stored in databases owned by IT Division, in order to be available to all relevant Bank Units.
- A credit assessment reflects all credit risk taken by the Bank on obligor level, for a specific obligor.

The list below presents the predictive factors of the model:

- Past Due Amount to Exposure
- Times In Delinquency
- Overdraft Usage
- Previous Default (ever)
- Location Risk
- Cooperation Years
- Deposits to Exposure
- Avg Deposits to Avg Exposure
- Uncovered Checks
- Exposure Bucket
- Coverage By Cash
- Coverage By Self Liquidating Items

At the end of each month a new behavioural credit assessment is produced for each SME obligor through the implementation of the procedure described and each obligor is assigned a rating from a 13-grade rating scale.

III. Loss Given Default Model

The design, development and implementation of the model was performed by GRCA. The operating characteristics of the model are summarised below:

- The model's parameters values are drawn from a predefined data structure. This structure is automatically updated at the end of each month by the Business Process and IT Divisions.
- The main key for LGD is the estimation of the probability an obligor has, to finally end up in a non performing state. A non performing state is defined as the state in which the total contractual debt of an obligor is considered as due and legal actions are ready to start. The aforementioned obligor's probability combined with the observed historicall average recovery rate of SME portfolio during the collection period, determines the loss given default (LGD) estimate.
- LGD estimates are stored in databases owned by IT Division, in order to be available to all relevant Bank Units.

At the end of each month, on a recurrent basis, a new LGD estimate is produced for each SME obligor through a fully automated procedure.

5.8.6. Corporate model validation

For all corporate models, the independent Bank's Model Validation Unit has been engaged in a formalized validation process, adhering to an annual frequency as required by the Bank's "Model Validation Policy" (August 2017), to ensure that the models keep satisfying all rules and technical constraints posed during their development phase. Key targets of this specific procedure are: a) the measurement of the predictive power of the models which should meet specific quantitative criteria regarding best industry practices employed being substantiated by sound statistical evidence and b) the estimation and the statistical correlation of observed default frequencies per each model's rating grade, versus respective expected probabilities of the latter. Relative results, comments and required actions are formally communicated to Group's CRO, who in turn introduces them to the Board Risk Committee (BRC) complemented by own recommendations, hence conforming to competently approved internal policies and practices.

5.8.7. Applications of internal ratings of corporate portfolio

Apart from the estimation of Expected Loss and Risk Weighted Assets for Capital Adequacy purposes, internal ratings and IRB risk parameters are building blocks of credit risk estimation and are used in a variety of applications and internal processes regarding credit risk across the entire portfolio. More specifically their usage is applied to:

- **Credit approvals:** Credit risk parameters are used in the approval process to appraise obligors' creditworthiness and to assess credit limits assigned at obligor level.
- **Credit grading:** Estimated by each corporate model rating grades are employed to map obligors to a common rating scale, providing an identical measure of credit risk.
- **Risk based pricing:** Risk parameters are used to allow for risk-adjusted pricing.
- **Risk appetite:** Obligor's risk rating is used in the Bank's risk appetite framework.
- **Impairment calculation:** Collectively assessed impairment provisions, incorporate the use of risk parameters, adjusted as necessary.
- **Internal capital calculation:** Internal Capital calculation / used for ICAAP purposes.
- **Risk management reports:** Model outputs are used as key indicators in reports to inform senior management, regarding the analysis and management of credit risk.

5.8.8. Models and Internal Rating process of the Mortgage Portfolio

All mortgages (except those fully and unconditionally guaranteed by the Hellenic Government) are rated on a monthly basis, and ranked in homogeneous groups (pools) for risk estimation purposes. The corresponding PD and LGD models are based on 20 years of historical data and their development reflects the Bank's long term experience in mortgage lending, taking into account the Greek legal framework as well as the Bank's policies regarding foreclosure of real estate collateral.

Selected features of IRB credit risk models for the mortgage portfolio:

Component modelled	Regulatory thresholds	Portfolio	Model description and methodology	Number of years used data
Probability of Default	PD floor of 0.03%	**Retail Secured by immovable property Non-SME**	Model based on logistic regression methodology and segmented along months on books. It is a through-the-cycle model and calibrated with 12-year default data.	13 years
Loss Given Default	LGD floor of 10%	**Retail Secured by immovable property Non-SME**	Classification model based on actual recoveries experience. It takes into account product type, default status and time in default.	> 15 years

I. PD Model

In order to rank performing mortgage loans into risk categories the following procedure is followed:

1. The existence (or not) of an explicit and unconditional Greek Government Guarantee for capital and interest is examined. Claims that satisfy this criterion (usually loans to victims of natural disasters, population minorities, etc.) are treated separately.
2. The origination date of the loan is recorded. For loans that have not yet reached 14 Months on book (MoB), step 3 is followed. Otherwise, step 4 is followed.
3. Loans with up to 13 MoB are scored with a separate model. It uses criteria that refer to the facility (loan maturity, product type), the obligor (application score) and repayment patterns (current delinquent amount, patterns of delinquency in the last 12 months, etc.). This score is stored and step 5 follows.
4. Loans with over 13 MoB are scored using a specifically developed behavioural model. The model uses criteria referring to the facility (loan amount, product type) and the repayment patterns (current delinquent amount, patterns of delinquency in the last 12 months, etc.) but not the original application score, since it is shown to be no longer relevant. This behavioural score is stored and step 5 follows.
5. Based on the score calculated from the applicable model, each loan is placed into one of 10 distinct Risk Pools and assigned with the relevant PD.

The PD estimate for each pool was estimated by tracking each active loan, within the years 2004-2015 (observation), and its corresponding default event one year later (performance tracked in years 2005-2016).

II. LGD Model

For Loss Given Default (LGD) estimation, the procedure followed in order to place all mortgage loans – including the defaulted ones - in a distinct pool with a common LGD is as follows:

1. All facilities are distinguished into "performing" and "in default", depending on the delinquency they present during the rating date and its materiality. Step 2 is followed for the former and step 3 for the latter.
2. Performing loans are further divided into two groups, depending on the existence (or not) of a Greek Government interest rate subsidy.
3. For defaulted loans, except for the existence (or not) of the interest rate subsidy, the time spent in default status is also considered.

LGD is calculated as the difference between 100% (full recovery, no loss) and the average recovery rate over the exposure at default. Recovery rates are calculated cumulatively for different time horizons, starting from the default date itself. More specifically, the Bank calculates the percentage that can be recovered in 1, 2 or more years after default until, according to the Bank's experience, potential recovery is diminished (practically nothing more can be recovered).

All loans that presented material delinquency since 1990 and had completed at least one year in default status were used in the development of the LGD model. This increased significantly the robustness and power of results. All relevant cash flows (both revenues and costs) arising after default and until final settlement, were taken into account in recovery estimates. Given the long time period that elapses between default and subsequent cash flows, the time value of money is definitely of importance. Hence, in order to calculate recovery rates, all cash flows were discounted back to the original default date, and their present value was compared to the outstanding debt at the time of default. These calculations were performed on an account basis and not on a customer basis.

5.8.9. Mortgages model validation

The models' validity and predictive power are attentively monitored by the GRCAD and validated by the independent Bank's Model Validation Unit. The MVU is engaged in a formalized validation process, which encompasses qualitative and quantitative controls, adhering to an annual frequency as required by the Bank's "Model Validation Policy" (August 2017), to ensure that the models keep satisfying all rules and technical constraints posed during their development phase. For validation purposes, the most recent available information is used based on all rated loans with outstanding balance during an "observation period". The duration of the observation period for the PD model validation is usually one year, while the respective period for the LGD model may be longer, determined by the model's structure. Upon process's finalization, the obtained results are communicated through a formalized report channel to the Group CRO. Following his approval, the results of the process are in turn presented to the Board Risk Committee (BRC), further ratified by own recommendations. The most recent Mortgage PD and LGD models' validation, illustrated the high discriminative power for both models.

5.8.10. Applications of internal ratings of mortgage portfolio

Apart from the estimation of Expected Loss and Risk Weighted Assets for Capital Adequacy purposes, the internal credit risk parameters (PD and LGD) are further used in:

- the ICAAP
- Stress-testing
- new loans' risk-based pricing
- the overall mortgage portfolio quality assessment and monitoring
- the regular internal reporting to the Board Risk Committee and the Executive Committee of the Bank with regard to the mortgage portfolios' quality as well as in the formulation and implementation of the Bank Strategy by its Senior Management.

5.8.11. Quantitative information for the portfolios under the IRB approach

The following tables present information regarding the IRB portfolios as per 31.12.2018 (in € mio):

Table 34: EU CR6 - IRB approach - Credit risk exposures by exposure class and PD range

	a	b	c	d	e	f	g	h	i	j	k	l
PD scale	Original on-balance-sheet exposures	Off-balance-sheet exposures pre CCF	Average CCF	EAD post CRM and post CCF	Average PD	Number of obligors	Average LGD	Average maturity	RWAs	RWA density	EL	Value adjustments and provisions
Corporate SME-FIRB												
0.00 to <0.15	326	293	**19%**	382		123	43%	2,5	105	28%		(3)
0.15 to <0.25	130	114	**15%**	145		123	40%	2,5	51	35%		(1)
0.25 to <0.50	108	80	**3%**	108		102	41%	2,5	48	44%		(1)
0.50 to <0.75	219	230	**7%**	231	1%	291	39%	2,5	127	55%	1	(2)
0.75 to <2.50	1,144	759	**10%**	1,209	1%	977	40%	2,5	928	77%	7	(10)
2.50 to <10	888	605	**10%**	937	5%	1,043	40%	2,5	960	102%	17	(16)
10 to <100	383	171	**40%**	444	18%	505	38%	2,5	704	159%	31	(81)
100 (Default)	3,373	423	**47%**	3,455	100%	4,131	41%	2,5			1,410	(2,189)
Subtotal	**6,570**	**2,674**	**19%**	**6,912**	**52%**	**7,295**	**40%**	2,5	**2,923**	**42%**	**1,466**	**(2,303)**
Corporate-FIRB												
0.00 to <0.15	847	958	**29%**	1,125		44	45%	2,5	283	25%		(7)
0.15 to <0.25	230	266	**22%**	289		27	42%	2,5	128	44%		(2)
0.25 to <0.50	114	88	**8%**	110		14	43%	2,5	64	58%		(1)
0.50 to <0.75	337	196	**21%**	379	1%	38	43%	2,5	289	76%	1	(2)
0.75 to <2.50	1,429	1,991	**33%**	2,080	1%	367	43%	2,5	2,195	106%	13	(13)
2.50 to <10	1,153	1,040	**37%**	1,540	4%	73	42%	2,5	2,071	135%	23	(12)
10 to <100	175	52	**36%**	194	17%	31	42%	2,5	433	223%	14	(23)
100 (Default)	1,237	175	**31%**	1,276	100%	366	41%	2,5			517	(873)
Subtotal	**5,523**	**4,766**	**31%**	**6,993**	**20%**	**960**	**43%**	2,5	**5,463**	**78%**	**569**	**(934)**
Retail SME Sec -AIRB												
0.00 to <0.75												
0.75 to <2.50	7	2	**50%**	8	2%	179	12%		2	20%		
2.50 to <10	158	5	**44%**	160	6%	1,750	12%		56	35%	1	(2)
10 to <100	448	9	**50%**	452	32%	4,920	14%		276	61%	21	(86)
100 (Default)	774	1	**44%**	774	100%	8,498	72%		174	22%	558	(537)
Subtotal	**1,387**	**16**	**48%**	**1,395**	**67%**	**15,347**	**46%**		**508**	**36%**	**581**	**(625)**

PD scale	a Original on-balance-sheet exposures	b Off-balance-sheet exposures pre CCF	c Average CCF	d EAD post CRM and post CCF	e Average PD	f Number of obligors	g Average LGD	h Average maturity	i RWAs	j RWA density	k EL	l Value adjustments and provisions
Retail non SME Sec - AIRB												
0.00 to <0.25												
0.25 to <0.50	474			474		19,630	11%		36	8%		(2)
0.50 to <0.75												
0.75 to <2.50	4,160			4,159	1%	79,900	13%		670	16%	5	(38)
2.50 to <10	1,968			1,968	4%	42,128	13%		779	40%	10	(100)
10 to <100	1,408			1,408	29%	27,586	13%		1,028	73%	53	(277)
100 (Default)	3,940			3,939	100%	69,384	35%		773	20%	1,391	(1,439)
Subtotal	**11,950**			**11,949**	**37%**	**238,628**	**20%**		**3,286**	**28%**	**1,459**	**(1,855)**
Retail other - AIRB												
0.00 to <0.75												
0.75 to <2.50	17	80	**2%**	18	2%	1,305	15%		3	16%		
2.50 to <10	210	222	**2%**	211	6%	6,467	15%		38	18%	2	(3)
10 to <100	309	173	**8%**	320	30%	13,807	17%		99	31%	17	(51)
100 (Default)	904	8	**21%**	894	100%	24,534	78%		201	22%	696	(734)
Subtotal	**1,440**	**483**	**4%**	**1,444**	**59%**	**46,113**	**54%**		**341**	**24%**	**715**	**(789)**
Total	**26,870**	**7,939**		**28,693**		**308,343**			**12,521**		**4,790**	**(6,506)**

Table 35: EU CR10 - IRB (specialised lending and equities)

Specialized Lending Exposures (Slotting Criteria)							(€ mio)
Reg. Cat. Risk Rating	Remaining Maturity	On-balance-sheet amount	Off-balance-sheet amount	Risk Weight	Exposure amount	RWAs	Expected Losses
Strong	*< 2.5 years*	166	163	50%	185	92	
	>= 2.5 years	1,452	14	70%	1,467	1,027	6
Good	*< 2.5 years*	310	226	70%	350	245	1
	>= 2.5 years	975	31	90%	1,002	902	8
Satisfactory	*< 2.5 years*	4		115%	4	5	
	>= 2.5 years	54		115%	54	63	2
Weak	*< 2.5 years*	19		250%	19	46	1
	>= 2.5 years	50		250%	50	124	4
In Default**	*< 2.5 years*	4			4		2
	>= 2.5 years	175			175		87
Total	*< 2.5 years*	**503**	**389**		**562**	**388**	**5**
	>= 2.5 years	**2,707**	**46**		**2,748**	**2,115**	**107**
Equities under the simple risk weighted approach*							
Categories		**On-balance-sheet amount**	**Off-balance-sheet amount**	**Risk Weight**	**Exposure amount**	**RWAs**	**Capital Requirements**
Private equity exposures				190%			
Exchange-traded equity exposures				290%			
Other equity exposures				370%			
Total							

**Not applicable due to permanent partial use according to CRR/575, article 150 par. 1 (e) and 1 (c)*

Table 36: EU CR8 – RWA flow statements of credit risk exposures under the IRB approach

		a	b
		RWA amounts	Capital requirements
1	**RWAs as at the end of the previous reporting period**	**13,471**	**1,078**
2	Asset Size*	427	34
3	Asset quality	(62)	(5)
4	Model updates		
5	Methodology and policy*	1,148	92
6	Acquisitions and disposals		
7	Foreign exchange movements		
8	Other	40	3
9	**RWAs as at the end of the reporting period**	**15,024**	**1,202**

**Methodology and policy diffs due to defaulted exposures assignment with a non-zero RW%. Asset size diffs due to new disbursements.*

6. COUNTERPARTY CREDIT RISK

For regulatory purposes, CCR derives from OTC derivative and secured interbank transactions, namely repurchase agreements, and is calculated in both the trading portfolio and the banking book. The main contributor to CCR within NBG Group is the Bank.

The approach for the calculation of the exposure values for CRR depends on the type of transaction. For OTC derivative transactions, the exposure at default (EAD) is calculated based on the mark-to-market method. In particular, the EAD is calculated as the current value plus the potential future credit exposure, based on regulatory add-ons, taking into account the netting clauses and collateral agreements that are in place. In the case of repurchase agreements, the EAD is calculated in accordance with the financial collateral comprehensive method.

In addition, the GFLRM Division calculates the capital requirements against credit valuation adjustment (CVA) risk. CVA is an adjustment to the fair value of derivative instruments to account for CCR, due to possible changes in the creditworthiness of the counterparty. NBG employs the standardized approach for the calculation of the respective capital charges. The calculations only refer to transactions with financial insitutions.

The components of CCR on a Group level are shown in the tables below, as of December 31st, 2018.

Table 37: EU CCR1 - Analysis of CCR exposure by approach (€ mio)

		Notional	Replacement cost/ current market value	Potential Future Credit Exposure	EEPE	Multiplier	EAD post CRM	RWAs
1	Mark to market		4,777	800			2,135	94
2	Original exposure							
3	Standardised approach							
4	IMM (for derivatives and SFTs)							
5	Of which securities financing transactions							
6	Of which derivatives and long settlement transactions							
7	Of which from contractual cross-product netting							
8	Financial collateral simple method (for SFTs)							
9	Financial collateral comprehensive method (for SFTs)						1,924	385
10	VaR for SFTs							
11	Total							**479**

Table 38: EU CCR2 – CVA capital charge (€ mio)

		Exposure value	RWAs
1	Total portfolios subject to the advanced method		
2	(i) VaR component (including the 3x multiplier)		
3	(ii) SVaR component (including the 3x multiplier)		
4	All portfolios subject to the standardised method	107	107
EU4	Based on the original exposure method		
5	**Total subject to the CVA capital charge**	**107**	**107**

Table 39: EU CCR8 – Exposures to CCPs (€ mio)

		EAD psot CRM	RWAs
1	**Exposures to QCCPs (total)**		
2	Exposures for trades at QCCPs (excluding initial margin and default fund contributions); of which	**114**	9
3	(i) OTC derivatives	82	2
4	(ii) Exchange-traded derivatives	33	7
5	(iii) SFTs		
6	(iv) Netting sets where cross-product netting has been approved		
7	Segregated initial margin		
8	Non-segregated initial margin		
9	Prefunded default fund contributions	**6**	
10	Alternative calculation of own funds requirements for exposures		
11	**Exposures to non-QCCPs (total)**		
12	Exposures for trades at non-QCCPs (excluding initial margin and default fund contributions); of which		
113	(i) OTC derivatives		
14	(ii) Exchange-traded derivatives		
15	(iii) SFTs		
17	Segregated initial margin		
18	Non-segregated initial margin		
19	Prefunded default fund contributions		
20	Unfunded default fund contributions		

Table 40: EU CCR3 - Standardised approach - CCR exposures by regulatory portfolio and risk (€ mio)

	Exposure classes	Risk Weight											Total
		0%	2%	4%	10%	20%	50%	70%	75%	100%	150%	Others	
1	Central governments or central banks	1,889											**1,889**
2	Regional governments or local authorities												
3	Public sector entities												
4	Multilateral development banks												
5	International organisations												
6	Institutions	6	82			1,965	87			1	3		**2,143**
7	Corporates									27	6		**33**
8	Retail												
9	Institutions and corporates with a short-term credit assessment												
10	Other items												
11	**Total**	**1,895**	**82**			**1,965**	**87**			**28**	**9**		**4,065**

Table 41: EU CCR6 - Credit derivatives exposures (€ mio)

	Credit derivative hedges		Other credit derivatives
	Protection bought	Protection sold	
Notionals			
Single-name credit default swaps	**25**		
Index credit default swaps			
Total return swaps			
Credit options			
Other credit derivatives			
Total notionals	**25**		
Fair values			
Positive fair value (asset)			
Negative fair value (liability)	**0.85**		

7. MARKET RISK

The Bank uses market risk models and specific processes to assess and quantify the portfolio's market risk, based on best practice and industry-wide accepted risk metrics. More specifically, the Bank estimates the market risk of its trading and available-for-sale portfolios using the Value at Risk (VaR) methodology. In particular, it has adopted the Variance-Covariance (VCV) methodology, with a 99% confidence interval and 1-day holding period.

The variance-covariance methodology can be summarized as follows:

1. Collection of transactional data per type of product;
2. Identification of "risk factors" i.e., variables whose price changes could affect the value of the portfolio. The risk factors relevant to the financial products in the Bank's portfolio are interest rates, equity indices, foreign exchange rates and commodity prices;
3. Collection of market data for instruments/positions valuation;
4. Specification of the confidence interval and the holding period for the VaR calculations at 99% and 1-day, respectively;
5. Estimation of the model's parameters:
    - the variance of each risk factor, from which respective volatilities are derived;
    - the covariance of the risk factors, from which respective correlations are derived;
    - the beta of stocks;
    - the volatility for the estimation of equity specific risk.
6. Estimation of the VaR per type of risk (interest rate risk, equity risk, foreign exchange risk);
7. Estimation of Total VaR, taking into consideration the correlation matrix among all risk factors.

The calculation of the model's parameters relies on the following statistical assumptions:

- Returns on individual risk factors follow a normal distribution
- Portfolio's payout is considered to be linear

The VaR is calculated on a daily basis for the Bank's trading and held-to-collect-and-sell (HTCS) portfolios, along with the VaR per risk type (interest rate, equity and foreign exchange risk). The VaR estimates are used internally as a risk management tool, as well as for regulatory purposes. The GFLRM Division calculates the VaR of the Bank's trading and HTCS portfolios, for internal use, on a daily basis, using the latest 75 exponentially weighted daily observations to construct the VCV matrices. For regulatory purposes, the calculations apply only on the trading portfolio and the VCV matrices are based on 252, equally weighted, daily observations per risk factor. Currently the number of risk factors involved in the VaR calculations is 1,435.

Morover, since the Bank has approval to use an internal model approach only for general market risk purposes, the issuer risk and the equity specific risk of the portfolio are excluded from the regulatory VaR calculations. The respective capital requirements are based on the Stansardized Approach.

Additionally, the GFLRM Division calculates the stressed VaR (sVaR) of the Bank's trading portfolio, which is defined as the VaR, where model inputs are calibrated to historical data from a continuous 1-year period of significant financial stress, relevant to the Bank's portfolio. To identify this 1-year time window of significant stress, NBG follows a conservative approach, which covers the entire period from the beginning of the financial crisis of 2008. More specifically, VCV matrices dating back to the 3rd of January 2008, are calculated on a daily basis and the VCV matrix that corresponds to the maximum VaR of NBG's trading portfolio, over the entire period, is selected. To ensure consistency, at each year-end, the process is repeated for certain days of the last calendar month of the year, and subsequently the identified "stressed VCV matrix" is applied over the next year. Similarly to VaR, NBG calculates sVaR on a daily basis, using a 1-day holding period and 99% confidence level.

For the calculation of the regulatory capital requirements, the VaR/sVaR is scaled up to 10-days via the square-root-of-time rule[1].

Based on the above, the capital charges for the Bank's general market risk are calculated as the sum of the following two amounts:

- the maximum of: a) the VaR of the previous day, calculated with a 10-days holding period, b) the average VaR of the last 60-days, using a 10-days holding period and multiplied by a factor(m_c), determined by the regulator and varying between three (3) and four (4),

  plus

- the maximum of: a) the Stressed VaR of the previous day, calculated with a 10-days holding period, b) the average Stressed VaR of the last 60-days, using a 10-days holding period and multiplied by a factor (m_s), determined by the regulator and varying between three (3) and four (4).

Finally, the use of internal model is granted only for NBG, therefore the calculation of market risk capital charges for the rest of the Group's subsidiaries is based on the Standardized Approach.

The components of capital requirements under the standardized approach and the internal model approach for market risk, as of 31st December, 2018, are shown in the tables below.

[1] 10-day VaR is obtained by multiplying the 1-day VaR with the square root of 10 (i.e. $VaR10{-}day = VaR1{-}day * \sqrt{10}$)

Table 42: EU MR1 – Market risk under the standardized approach (€ mio)

		RWAs	Capital requirements
	Outright products		
1	Interest rate risk (general and specific)	52	4
2	Equity risk (general and specific)	57	5
3	Foreign echange risk	166	13
4	Commodity risk		
	Options		
5	Delta-plus method	332	27
6	**Total**	**606**	**48**

Table 43: EU MR2-A – Market risk under the IMA (€ mio)

		RWAs	Capital requirements
1	**VaR** (higher of values a and b)	**168**	**13**
(a)	Previous day's VaR (Article 365(1) of the CRR (VaRt-1))		4
(b)	Average of the daily VaR (Article 365(1)) of the CRR on each of the preceding 60 business days (VaRavg) x multiplication factor (mc) in accordance with Article 366 of the CRR		13
2	**SVaR** (higher of values a and b)	**589**	**47**
(a)	Latest SVaR (Article 365(2) of the CRR (SVaRt-1))		14
(b)	Average of the SVaR (Article 365(2) of the CRR) during the preceding 60 business days (SVaRavg) x multiplication factor (ms) (Article 366 of the CRR)		47
6	**Total**	**757**	**61**

Table 44: EU MR2-B – RWA flow statements of market risk expsoures under the IMA (€ mio)

		VaR	SVaR	IRC	Comprehensive risk measure	Other	Total RWAs	Total capital requirements
1	**RWAs as of September 30, 2018**	**513**	**1,135**				**1,648**	**132**
1a	*Regulatory adjustment*	*346*	*761*				*1,106*	*89*
1b	*RWAs at the previous quarter-end (end of the day)*	*167*	*374*				*542*	*43*
2	Movement in risk levels	(128)	(194)					
3	Model updates/changes							
4	Methodology and policy							
5	Acquisitions and disposals							
6	Foreign exchange movements							
7	Interest Rate Volatilities	9	-2					
8a	*RWAs at the end of the reporting period (end of the day)*	*48*	*179*				*227*	*18*
8b	*Regulatory adjustment*	*120*	*410*				*530*	*42*
8	**RWAs as of December 31, 2018**	**168**	**589**				**757**	**61**

During the fourth quarter of 2018, the sensitivity of the Bank's trading book to the euro swap rates decreased sharply due to the deleveraging of the interest rate portfolio. This led to significant lower capital charges for General Market Risk, under the internal model approach, at the end of the year.

Finally, the Bank's regulatory VaR/sVaR estmates during the last reporting period are shown in the table below.

Table 45: EU MR3 – IMA values for trading portfolios (€ mio)

	VaR (10 day 99%)	
1	Maximum value	8
2	Average value	4
3	Minimum value	3
4	Period end	4
	SVaR (10 day 99%)	
5	Maximum value	22
6	Average value	16
7	Minimum value	13
8	Period end	14

7.1. Stress Testing

The daily VaR refers to “normal” market conditions. Supplementary analysis is, however, necessary for capturing the potential loss that might incur under extreme and unusual conditions in financial markets. Thus, the GFLRM Division conducts stress testing on a weekly basis, through the application of different stress scenarios on the relevant risk factors (interest rates, equity indices, foreign exchange rates). Stress testing is performed on both the Trading and the HTCS portfolios, as well as separately on the positions of the Trading Book.

The scenarios used are shown in the following table:

Table 46: Stress test Scenarios

Scenario	Description			
Interest Rate Risk				
		0 - 3 months	3 months –5 years	> 5 years
1	Parallel Curve shift	+200 bps.	+200 bps.	+200 bps.
2	Parallel Curve shift	-200 bps.	-200 bps.	-200 bps.
3	Steepening of the curve	0 bps.	+100 bps.	+200 bps.
4	Flattening of the curve	+200 bps.	+100 bps	0 bps.
Equity Risk				
	-30% for all indices			
Foreign Exchange Risk				
	EUR depreciation by 30%/EUR appreciation by 30%			

Additionally, the following volatility stress test scenarios are defined and the Trading and HTCS P&L is assessed, on a daily basis:

Table 47: Volatility stress test Scenarios

Scenario	Description
1	IR: normal +1bp, lognormal +1%, EQT & FX: +1%
2	IR: normal +5bp, lognormal +5%, EQT & FX: +5%
3	IR: normal +10bp, lognormal +10%, EQT & FX: +10%
4	IR: normal -1bp, lognormal -1%, EQT & FX: -1%
5	IR: normal -5bp, lognormal -5%, EQT & FX: -5%
6	IR: normal -10bp, lognormal -10%, EQT & FX: -10%

7.2. Back testing

In order to verify the predictive power of the VaR model used for the calculation of Market Risk capital requirements, the Bank conducts back-testing on a daily basis. In accordance with the guidelines set out in the Capital Requirements Regulation 575/2013, the calculations only refer to the Bank’s trading portfolio and involve the comparison of the hypothetical as well as the actual daily gains/losses of the portfolio, with the respective estimates of the VaR model used for regulatory purposes. The hypothetical gains/losses is the change in the value of the portfolio between days t and t+1, assuming that the portfolio remains constant between the two days. In the same context, the actual gains/losses is the change in the value of the portfolio between days t and t+1, including all the transactions and/or any realized gains/losses that took place in day t+1, excluding fees, commissions and net interest income.

Any excess of the hypothetical / actual losses over the VaR estimate is reported to the regulatory authorities within five business days. During 2018, there were three cases, in which the back-testing result exceeded the respective VaR calculation. The graph below illustrates the regulatory VaR, as well as the hypothetical and the actual P&L, since the beginning of 2018.

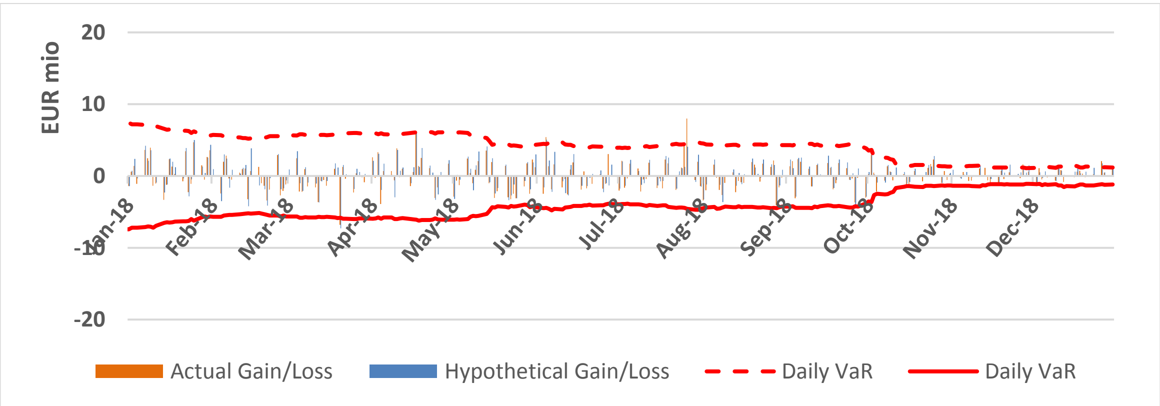


Figure 3: EU MR4 – Comparison of VaR estimates with gains/losses

8. OPERATIONAL RISK

The Bank has adopted the Standardised Approach (SA) for the calculation of operational risk regulatory capital requirements, on an individual, as well as on a consolidated basis. Under the Standardised Approach, the capital requirement for operational risk is the average, over three years, of the risk-weighted relevant indicators calculated each year through the allocation of Gross Income to the eight (8) regulatory business lines. Being conservative and compliant with regulatory reporting requirements, the Bank classifies revenues accrued from activities that cannot be readily mapped into a particular business line (unallocated) to the business line yielding the highest capital risk weight (18%). The Bank has decided to use ‘’Trading and Sales’’ business line for this allocation.

9. EQUITY EXPOSURES NOT INCLUDED IN THE TRADING BOOK

Investments in shares of stock not included in the Trading and Fair Value through Profit and Loss (FVTPL) portfolio are included in the Fair Value through Other Comprehensive Income (FVTOCI) portfolio. These investments are held with the intention of achieving capital gains. The FVTOCI investments in shares are initially recognised and subsequently measured at fair value. Initial measurement includes transaction costs. The fair value of FVTOCI investments in shares that are quoted in active markets is determined on the basis of the quoted prices. For those not quoted in an active market, fair value is determined, where possible, using valuation techniques and taking into consideration the particular facts and circumstances of the shares' issuers. The carrying amount of FVTOCI equity instruments listed on a Stock Exchange Market equals their market value. The carrying amount as of 31.12.2018 is presented below:

Table 48: FVTOCI Equity instruments

	€ mio
Listed	79
Not Listed	48
Total	**127**

The total amount of realized losses from the disposal of FVTOCI equity instruments and mutual funds for the year 2018 was €18 mio. The net amount of unrealized gains of FVTOCI equity instruments and mutual funds as at 31 December 2018 was €12 mio after tax.

The amount of unrealized gains of FVTOCI equity instruments, recognized in reserves as at 31 December 2018 is included in Common Equity Tier 1 capital (CET1).

10. SECURITISATION

Overview

Securitisation is defined as a structure where the cash flow from a pool of financial assets is used to service obligations to at least two different tranches or classes of creditors (holders of asset backed securities), with each class or tranche reflecting a different degree of credit risk (i.e. one class of creditor is entitled to receive payments from the pool before another class of creditors). Primary recourse for securitizations lies with the underlying securitized financial assets. Hence, the holders of the asset backed securities only have recourse to the securitized financial assets.

Securitisations may be categorised as either: (a) conventional securitizations - where assets are sold to a Special Purpose Vehicle (SPV), which issues notes in different tranches with different risk and return profiles. Cash flow arising from those assets is used by the SPV to pay the coupons and principal on the notes issued by the SPV; or (b) synthetic securitizations - where only the underlying credit risk or part of the credit risk is transferred to a third party through the use of credit derivatives or guarantees, without the ownership of assets being transferred to the SPV. In both conventional and synthetic securitizations, the risk is dependent on the performance of the underlying asset pool.

The Bank may be involved in the following types of business activities that give rise to securitisation exposures:

A. Bank originated securitisations – where the Bank assigns the financial assets it has originated to a SPV, which in turn issues asset backed securities;
B. the purchase of asset backed securities for trading or portfolio investment.

Bank originated securitizations

As originator, the Bank may securitize financial assets (e.g. mortgage or corporate loans) in a traditional or a synthetic transaction, depending on the objectives of such transaction. The objectives pursued through a transaction can vary from funding to the reduction of the credit risk and capital requirements or more sophisticated asset management.

When conducting a securitization as originator and taking into account such transaction's objective, the Bank considers all aspects of such transaction and makes a comprehensive judgment on the structure and the appropriateness of such transaction. The Bank assesses the effects on the liquidity position, the reduction of credit risk, the cost of capital, the improvement of return on risk as well as any operational effects.

Where the Bank intends to securitise assets it has originated, it ensures the terms and conditions applicable to the proposed securitisation and any support facilities or dealings are arm's length and market based and compliant with prudential regulations.

Where the Bank has sold assets to a SPV but retains a servicer role in managing those assets on behalf of the SPV the Bank ensures those securitised assets are effectively ring-fenced from the Bank's own assets in accordance with the applicable legislation.

All of the securitizations that the Bank has concluded to date have been conventional securitizations and were initiated purely for funding and contingent liquidity purposes. The objective of the securitizations has been to access international debt capital markets and potentially to access the liquidity provided by the Eurosystem to ensure functional credit and money markets. For the Bank, securitizations have been an opportunistic source of liquidity rather than a core external funding source. The Bank has not derecognized any of the securitised assets and currently consolidates the existing securitisation vehicles.

Securitizations as Investor

In the case of the Bank acting as investor in a securitisation position, the Bank will use the Ratings Based Method of EU Regulation 575/2013 (CRR, Art. 261) for capital calculation purposes. For the Ratings Based Method, the Bank uses ratings provided by the rating agencies. As at December 31st, 2018 there was no exposure after credit risk mitigation to securitised positions for investment purposes.

National Bank of Greece Outstanding Securitisations

SINEPIA DAC (SME loans)

SINEPIA DAC is a securitisation transaction involving SME and Corporate loans. The transaction was launched on 8th of August 2016 and had an original outstanding balance of €648 mio. Six floating rate tranches of bonds were issued, 4 senior classes (A1 to A4, rated BB by S&P and B- by Fitch) with an original balance of €324 mio and two junior tranches (M and Z, both unrated) with an original balance of €324 mio. The senior classes were subscribed by the European Investment Bank, the European Investment Fund, the European Bank for Reconstruction and Development and the Bank. The junior notes were fully subscribed by the Bank. As at 31/12/2018, the senior notes were fully repaid, while there were €205 mio outstanding from the junior notes.

The table below provides more details on the Bank's securitisations:

Table 49: Securitisations

Issuer (SPE)	Asset Type	Issue Date	Final Maturity	Outstanding (€mio)
Sinepia Class M	SME loans	08/08/16	18/07/35	140
Sinepia Class Z	SME loans	08/08/16	18/07/35	65

11. INTEREST RATE RISK IN THE BANKING BOOK

Interest Rate Risk in the Banking Book (IRRBB) concerns potential losses on the Bank's earnings (Net Interest Income – "NII") and/or the net present value of assets and liabilities (Economic Value of Equity – "EVE") arising from changes in interest rates.

The main sources of IRRBB are the following:

- Repricing risk: it arises from timing differences in the maturity (for fixed-rate) and repricing (for floating-rate) of the Group's assets, liabilities and off balance-sheet positions, which can expose the Group's income and underlying economic value to adverse interest rate fluctuations,
- Yield curve risk: it arises from unanticipated changes in slope and / or the shape of the yield curve, resulting in adverse effects on the Group's income or underlying economic value,
- Basis risk: it asises from imperfect correlation in the adjustment of the rates earned and paid on different instruments with otherwise similar repricing characteristics,
- Optionality risk: it occurs when a bank's customer or counterparty has the right, but not the obligation, to buy, sell, or in some manner alter the quantity and / or the timing of cash flows of an instrument or financial contract.

On a regular basis the Bank measures the effect on the Net Interest Income and the Economic Value of Equity after applying a number of specified interest rate scenarios (parallel shifts, flattening and steepening of the interest rate curves).

The interest rate risk is calculated on the basis of the contractual repricing terms, i.e. the next repricing date, if the instrument's interest rate is floating, or its maturity, if the instrument's rate is fixed.

The main assumptions made for the calculation of the interest rate risk in the banking book are the following:

- Saving and Current Accounts: maturity is estimated taking into account the stickiness of the deposits. Furthermore, a 20% pass-through rate assumption is used for the calculation of the NII changes,
- Mortgages: prepayment risk options have not been taken into account,
- Non-performing loans: they have been treated as "Non-rate sensitive"

It should be noted that:

- the sensitivity of the interest income is measured on the basis of an instantaneous shock in the interest rate curve which is subsequently kept constant over a period of 12 months, assuming a contant balance sheet, i.e., new business assumptions affecting potentially the mix of asset and liabilities are not considered,
- the sensitivity of the Economic Value of Equity is measured across the full maturity spectrum of the bank's assets and liabilities, assuming that matured transactions are not replenished.

The following table illustrates the impact of a +/- 100bps parallel interest rate shift to the Net Interest Income measure, broken down by the main currencies. The Net Interest Income results are presented herein, as this measure produced a higher overall negative interest rate sensitivity compared to the Economic Value of Equity measure.

As of the end of December 2018, the sensitivity of the Net Interest Income to an instantaneous and parallel rate change of -100 bps is -23 € mio.

The sensitivity analysis of Net Interest Income for the Banking Book as of 31.12.2018 is presented below:

Table 50: Sensitivity Analysis of NII

Currency	Net Interest Income Sensitivity (change from base scenario)	
(€ mio)	-100 bps	+100 bps
EUR	(17)	101
USD	(9)	8
OTHER	3	2
TOTAL	**(23)**	**111**

The reduction in the economic value in the event of a +/-200 bps change in interest rates remained within the limits set by the prevailing Regulatory provisions (EVE sensitivity does not exceed both 15% CET1 Capital and 20% of the Regulatory Capital).

12. LIQUIDITY RISK

Liquidity risk is defined as the current or prospective risk to earnings and capital arising from the institution's inability to meet its liabilities when they come due without incurring unacceptable losses.

It reflects the potential mismatch between incoming and outgoing payments, taking into account unexpected delays in repayments (term liquidity risk) or unexpectedly high outflows (withdrawal/call risk). Liquidity risk involves both the risk of unexpected increases in the cost of funding of the portfolio of assets at appropriate maturities and rates, and the risk of being unable to liquidate a position in a timely manner and on reasonable terms.

The Bank's executive and senior management has the responsibility to implement the liquidity risk strategy approved by the Board Risk Committee ("BRC") and to develop the policies, methodologies and procedures for identifying, measuring, monitoring and controlling liquidity risk, consistent with the nature and complexity of the relevant activities. The Bank's executive and senior management is informed about current liquidity risk exposures, on a daily basis, ensuring that the Group's liquidity risk profile stays within the approved levels.

In addition, top management receives, on a daily basis, a liquidity report which presents a detailed analysis of the Group's funding sources, counterbalancing capacity, cost of funding and other liquidity metrics related to the Risk Appetite Framework ("RAF"), Recovery Plan ("RP") and Contingency Funding Plan ("CFP"). Moreover, the Asset Liability Committee ("ALCO") monitors the gap in maturities between assets and liabilities, as well as the Bank's funding requirements based on various assumptions, including conditions that might have an adverse impact on the Bank's ability to liquidate investments and trading positions and its ability to access the capital markets. On a long term perspective, the Loans-to-Deposits ratio is monitored. This ratio stood at 68.9% and 70.1% as of 31 December 2018, on a domestic (Greece) and on a Group level, respectively.

Since liquidity risk management seeks to ensure that the respective risk of the Group is measured properly and is maintained within acceptable levels then, even under adverse conditions, the Group must have access to funds necessary to cover customer needs, maturing liabilities and other capital needs, while simultaneously maintaining the appropriate counterbalancing capacity to ensure the above. In addition to the Bank's liquidity buffer, the rest of the Group's subsidiaries maintain an adequate liquidity buffer, well above 10% of their total deposits, which ensures their funding self-sufficiency in case of a local crisis.

The Bank's principal sources of liquidity are its deposit base, Eurosystem funding currently via the Targeted Longer-term Refinancing Operations ("TLTRO") with ECB and repurchase agreements (repos) with major foreign Financial Institutions ("FIs"). ECB funding and repos with FIs are collateralized mainly by high quality liquid assets, such as, EU sovereign bonds, Greek government bonds and T-Bills, as well as by other assets, such as highly rated corporate loans and covered bonds issued by the Bank.

After the successful disengagement from the ELA in November 2017, where NBG was the first Greek systemic bank to achieve this goal, 2018 was another milestone year for NBG's liquidity profile, since it managed to restore both Basel III liquidity metrics (LCR and NSFR) within the regulatory limits, once again ahead of all the Greek systemic banks. This development clearly marks NGB's leading position in the liquidity front and ensures the ability of the Bank to fund the recovering Greek economy and contribute to a healthy balance sheet.

More specifically, on December 31st 2018, the Bank's customer deposit balance stood at €42.2 billion, a significant increase of €3.5 billion compared to the respective figure as of December 31st 2017. Notably, about half of this increase pertains to retail deposits that are considered the most stable type of customer deposits. The bulk of the customer deposits are denominated in Euro, commensurately funding the assets in the same currency, indicating that the Bank's exposure to foreign currencies is limited. Moreover, during the same period, the Bank managed to further decrease its reliance on ECB funding by €0.5 billion, reducing its total exposure to Eurosystem funding, through the TLTRO, to €2.25 billion, the lowest level since the beginning of the crisis. In addition, NBG's covered bond issuances received an investment grade rating, and thus are considered eligible collateral for ECB's Main Refinancing Operations, another major achievement and vote of confidence for the Bank.

Additionally, the international secured financing markets continued to be open for NBG, which the Bank tapped for €3.4 billion, approximately at the same level as in 2017. Finally, the divestment of foreign subsidiaries, namely NBG Albania and SABA contributed marginally to NBG's liquidity position in the amount of €0.1 billion. All of the above resulted in a blended cost of funding for the Bank at 0.46%, by year end decreased by about 4bp, compared to 2017.

As discussed above, both the LCR and the NSFR were significantly improved during 2018, exceeding their respective minimum regulatory thresholds for the first time. The Bank's LCR has restored in July 2018 and further increased thereafter, reaching the highest level of 128% at year end. Moreover, NSFR exceeded the minimum regulatory threshold of 100% for the first time in September and stood at 107% on December 31st 2018.

Finally, another metric that the Bank closely monitors, the Distance to ELA, increased by €6.9 billion and stood at €8.4 billion on December 31st 2018, of which €4 billion was deposited with the Bank of Greece, 0.9 billion was collateral eligible for funding with the ECB and c. €3.5 billion pertained to the unencumbered Greek Government bonds and T-Bills that could be used for secured funding with FIs, further showing NBG's improved liquidity position.

The next table presents the key components of NBG's LCR, as per the respective guidelines on LCR disclosure (EBA/GL/2017/01). It should be noted that the data points used in the calculations below, refer to the period after the restoration of the LCR.

Table 51: Liquidity Coverage Ratio

Group LCR		Total unweighted value		Total weighted value	
EUR million					
Quarter ending on		30.09.2018	31.12.2018	30.09.2018	31.12.2018
Number of data points used in the calculation of averages		3	6	3	6
HIGH-QUALITY LIQUID ASSETS					
1	**Total high-quality liquid assets (HQLA)**			**6,897**	**7,325**
CASH-OUTFLOWS					
2	Retail deposits and deposits from small business customers, of which:	24,591	24,273	1,365	1,366
3	*Stable deposits*	22,244	21,886	1,112	1,094
4	*Less stable deposits*	2,338	2,381	243	266
5	Unsecured wholesale funding	11,110	11,130	4,679	4,644
6	*Operational deposits (all counterparties) and deposits in networks of cooperative banks*	48	40	12	10
7	*Non-operational deposits (all counterparties)*	11,062	11,091	4,667	4,634
8	*Unsecured debt*				
9	Secured wholesale funding			1,651	1,522
10	Additional requirements	94	94	61	69
11	*Outflows related to derivative exposures and other collateral requirements*	58	67	58	67
12	*Outflows related to loss of funding on debt products*				
13	*Credit and liquidity facilities*	36	27	3	2
14	Other contractual funding obligations	88	191	70	174
15	Other contingent funding obligations	590	586	290	289
16	**TOTAL CASH OUTFLOWS**			**8,116**	**8,063**
CASH-INFLOWS					
18	Inflows from fully performing exposures	1,877	1,621	1,425	1,182
19	Other cash inflows	1,091	1,288	997	1,198
20	**TOTAL CASH INFLOWS**	**2,967**	**2,909**	**2,422**	**2,381**
EU-20c	***Inflows Subject to 75% Cap***	2,967	2,909	2,422	2,381
				TOTAL ADJUSTED VALUE	
21	**LIQUIDITY BUFFER**			6,897	7,325
22	**TOTAL NET CASH OUTFLOWS**			5,694	5,683
23	**LIQUIDITY COVERAGE RATIO (%)**			**121.13**	**128.86**

13. ASSET ENCUMBRANCE

13.1. Information on importance of encumbrance

The following is the disclosure for the year ended 31 December 2018, of on-balance sheet encumbered and unencumbered assets, and off-balance sheet collateral (represented by median values of monthly data points in 2018), as required by Part Eight of CRD IV.

Table 52: Encumbered and Unencumbered Assets

€ mio		Carrying amount of encumbered assets 010	Fair value of encumbered assets 040	Carrying amount of unencumbered assets 060	Fair value of unencumbered assets 090
010	**Assets of the reporting institution**	**14,500**		**46,105**	
030	Equity instruments			152	
040	Debt securities	2,678	2,479	5,580	5,248
050	of which: covered bonds				
060	of which: asset-backed securities				
070	*of which: issued by general governments*	*2,556*	*2,358*	*5,446*	*5,114*
080	*of which: issued by financial corporations*	*41*	*42*	*41*	*41*
090	*of which: issued by non- financial corporations*	*82*	*81*	*83*	*83*
120	Other assets	11,908		40,376	

Table 53: Collateral received

€ mio		Fair value of encumbered collateral received or own debt securities issued 010	Fair value of collateral received or own debt securities issued available for encumbrance 040
130	**Collateral received by the reporting institution**	3,410	2,740
140	Loans on demand		
150	Equity instruments		
160	Debt securities	**2,715**	**2,740**
170	*of which: covered bonds*	-	-
180	*of which: asset-backed securities*	-	-
190	*of which: issued by general governments*	*2,659*	*2,734*
200	*of which: issued by financial corporations*	*56*	*1*
210	*of which: issued by non-financial corporations*	-	-
220	Loans and advances other than loans on demand	-	-
230	Other collateral received	707	-
240	Own debt securities issued other than own covered bonds or ABSs	-	-
241	Own covered bonds and asset-backed securities issued and not yet pledged		67
250	**TOTAL ASSETS, COLLATERAL RECEIVED AND OWN DEBT SECURITIES ISSUED**	**17,980**	

Table 54: Sources of encumbrance

€ mio		Matching liabilities, contingent liabilities or securities lent 010	Assets, collateral received and own debt securities issued other than covered bonds and ABSs encumbered 030
010	Carrying amount of selected financial liabilities	9,838	16,878
011	of which: central banks	2,500	3,194

More specifically, as at 31 December 2018, the Group and the Bank have the following main types of encumbrance for funding purposes mainly with the ECB, other central banks and FIs:

- trading and investment debt securities,
- loans and advances to customers,
- covered bonds backed with mortgage loans,
- securitised notes backed with SME loans.

In addition to the items presented above, as at 31 December 2018, the Group and the Bank have pledged an amount of €319 mio included in due from banks with respect to a guarantee for the non-payment risk of the Hellenic Republic, as well as Hellenic Republic Treasury bills of €343 mio for trade finance purposes.

Moreover, the Group and the Bank have received assets from third parties that can be sold or repledged, that are not recognized on the balance sheet, but there are held as collateral. The fair value of these assets that were used as collateral for funding purposes with ECB and financial institutions was €4.485 mio, for the Group and the Bank.

It should be noted that traditionally, the Bank has been a deposit-led bank. As a result, most of its funding was based on unsecured deposits and therefore there was no need for secured funding. In the previous years, the emergence of economic crisis in Greece has adversely affected Bank's credit risk profile, preventing it from obtaining funding in the capital markets, increasing the cost of such funding and the need for additional collateral requirements in repo contracts and other secured funding arrangements, including those with the Eurosystem. However, in the current state, NBG's reliance in secured funding through repo transactions has decreased to normal level, while its exposure to Eurosystem funding, through the TLTROs, stands at an all-times low level, reflecting NBG's liquidity strength (see also Section 12).

14. REMUNERATION POLICIES AND PRACTICES

The Bank is committed to an integrated Human Resources Management Policy and hence, has introduced procedures and has taken necessary measures in order to describe the general framework and basic principles for determining the remuneration of all employees working in the Bank and the Group. The governance arrangements and decision making process regarding the remuneration policy are presented in the following paragraphs.

14.1. The proportionality principle

The Bank applies the provisions of the current regulatory remuneration framework in a way and to the extent that is appropriate to its size, internal organization, nature, scope and complexity of its activities. In particular, the Bank aims to match the Remuneration Policy and practices with the individual risk profile, risk appetite and strategy of the Bank and its Group.

In order to apply the proportionality principle, the following (indicatively) criteria are taken into consideration (including the criteria provided in the EBA/GL/2015/22 guidelines):

1. The size of the Bank, particularly relating to the value of its assets and liabilities, its exposure to risk, the level of its regulatory own funds, as well as the number of staff and branches of the Bank.
2. The internal organization of the Bank, its listing on regulated markets, the use of internal methods for the measurement of capital requirements and its corporate goals; and
3. The nature, scope and complexity of its business activities and in particular, the type of its business activities, its Group dimension and activity on an international level, its extended customer base and variety of the type of clients, the portion of High Risk clients and/or activities over the total of clients and/or activities, the relative risks, the complexity of its products and contracts, etc.

14.2. Human Resources and Remuneration Committee

The Human Resources and Remuneration Committee (HRRC) was established by a Board decision (meeting no. 1259/5.5.2005) in order to provide assistance to the Bank's Board of Directors regarding the attraction, retention and development of staff of high personal and professional morals, the development of an objective evaluation and fair reward framework, the establishment and maintenance of a cohesive value and motivation system aiming at the human resources development of the Bank and the Group and the alignment of the Bank's and the Group's Remuneration Policy and the relevant procedures to the legal and regulatory framework. In particular, the Committee ensures the adoption on behalf of the Bank of an accurate, well documented and transparent remuneration policy, which shall be consistent with the business strategy, the risk profile and the risk appetite of the Bank and shall not encourage excessive and short-term risk-taking. The responsibilities of the HRRC include among others the following:

- formulating, reviewing regularly and monitoring the implementation of Group HR policies and practices , including reviewing regularly, and at least whenever there are changes in the applicable regulatory framework, the Group Remuneration Policy with particular focus on the impact and incentives created by risk, capital and liquidity management. The Committee shall submit to the Board relevant proposals and may also recommend to the Board corrective measures on issues that arise during the regular review,
- monitoring regularly the implementation of Group Remuneration Policy on the basis of reports from annual reviews performed, and submitting proposals to the Board when necessary. The Committee shall cooperate with other Committees of the Board and with the Risk Management, Compliance and Corporate Governance, Internal Audit - Inspection, HR and HR Strategic Planning Divisions, as well as with external experts, whenever required,
- recommending to the Board the total level of annual variable remuneration (bonuses) at the Bank and the Group as well as the adoption of a new or modification of the existing long-term motivation program related to granting shares, according to the remuneration policy,
- recommending to the Board the goals and objectives relevant to the performance evaluation of the CEO and evaluate the CEO's performance in light of these goals and objectives and following proposal by the CEO, evaluate the performance of the Bank's Senior Management (including positions from the level of Assistant/Deputy General Manager and above that level), with the exception of the performance evaluation of the Chief Audit Executive and the Chief Compliance Officer whose performance is evaluated by the Audit Committee and the Chief Risk Officer whose performance is evaluated by the Board Risk Committee,
- submitting proposals to the Board regarding remuneration of Senior Management, upon proposal of the CEO, or of other positions that may be prescribed by the applicable regulatory framework or the Bank's Labor Regulation; and supervising the remuneration of the Chief Compliance Officer and the Chief Risk Officer, and being consulted by the Audit Committee as may be necessary in the Audit Committee's responsibility for approving the Chief Audit Executive remuneration.In fulfilling its duties, the Committee should pay particular attention to the impact of its decisions on the risk profile and management.

The Committee is governed by a Functioning Regulation (Charter), which has recently been reviewed. The Charter in force was approved by the Board on March 1st, 2019[2].

The Committee consists of at least three members of the Board, which should not exceed 40% (rounded to the nearest whole number) of total Board members (excluding the HFSF Representative). All members of the Committee are non-executive Directors, while the majority of the members (excluding the HFSF Representative) including the Chairman are independent Directors, as per the independency definition included in the Corporate Governance Code and in any case according to the provisions of the legal and regulatory framework in force. The members and Chairman of the Committee are elected by the Board of the Bank, following recommendation by the Board's Corporate Governance & Nominations Committee. The HFSF Representative on the Bank's Board is a member of the Committee, while also the HFSF Observer attends the Committee meetings. Among the members of the Committee, there are individuals with experience in the financial sector, while at least one member possesses adequate expertise, knowledge and professional experience in risk management and audit activities, in order to contribute to the alignment of the remuneration structure to the risk and capital profile of the Bank. Further, the Committee Charter includes provisions on participation of a member of the Risk Committee in meetings of the Committee when concerning matters in its competence over Remuneration, while it is noted that the current structure of the Remuneration Committee includes members of the Board's Risk Committee.

The Committee convenes at least four times a year and keeps minutes of its meetings.

Pursuant to Greek Law 3864/2010 and according to the provisions of the Relationship Framework Agreement between the Bank and the HFSF, the HFSF appointedMr. Periklis Drougkas as its Representative on the Bank's Board. The HFSF Representative participates in Board Committees, including the Human Resources and Remuneration Committee.

The Committee is currently comprised of the following members:

Table 55: Board HRRC Members

Human Resources and Remuneration Committee	
Chair	John McCormick
Member	Claude Piret
Member	Haris Makkas
Member	Yiannis Zographakis
Member	Periklis Drougkas (HFSF representative)

Mr Periklis Drougkas was appointed as of July 23rd, 2018, as the new Representative of the Hellenic Financial Stability Fund on the Board of Directors, in replacement of Mr. Christoforos Koufalias who had been previously appointed on 23.05.2018 as Representative of the Hellenic Financial Stability Fund on the Board of Directors, in replacement of Ms. Panagiota Iplixian who submitted her resignation[3]. The HFSF Representative is entitled to participate in the Board Committees and committees which do not solely comprise executive members, and has the rights and authorities prescribed by Law 3864/2010 as in force and the Relationship Framework Agreement between the National Bank of Greece and the Hellenic Financial Stability Fund. Pursuant to Law 3864/2010 (article 10 §2b), the Representative of the HFSF on the Bank's Board, has veto powers on any Board decision relating to the dividend policy and the compensation of the Board's Chairman, the CEO, other members of the Board, as well as the General Managers and their Deputies.

- During 2018, the Committee convened twelve times. Its members receive compensation for their participation.
- During 2018, the Committee dealt with the contracts, promotions and appointments of General Managers and Assistant General Managers of the Bank, while it was thoroughly briefed on the HR Strategic Projects such as the implementation of the Performance Management System ("PMS"). Furthermore, the Committee submitted to the Board of Directors for approval, among others, the Voluntary Exit Scheme as well as the Personnel Training Policy. The Committee submitted to the Board of Directors an Annual Report of its work, as per the provisions of its Charter.
- Detailed information regarding the responsibilities, the composition and the operation of the HRRC of the Bank's Board is available in the Bank's website (www.nbg.gr - section: The Group / Corporate Governance / Board of Directors / Committees), as well as in the Group and the Bank's Annual Financial Reports, as a part of the Board's Corporate Governance Statement.

14.3. Remuneration Policy

The Bank's Remuneration Policy is adopted by the Board, following the recommendation of the Board's Human Resources and Remuneration Committee (the "HRRC"), and covers all staff, including the staff in units responsible for NPL/NPE management as a specific category of personnel for whom particular incentive schemes should be provided, in compliance with the European Central Bank Guidance

[2] *It is noted that following the recent revision of Board Committees Charters, as of 01.03.2019 proposals to the Board regarding the remuneration of Board members falls within the competence of the Corporate Governance and Nominations Committee.*

[3] *As notified to the Bank by the HFSF letter dated 23/5/2018, Mr. Christoforos Koufalias is appointed as HFSF Representative to the Board of Directors in accordance with Law 3864/2010, as in force, in replacement of Ms. Panagiota Iplixian.*

to banks on non-performing loans (March 2017). The Bank’s remuneration practices are consistent with the Greek Laws 4261/2014 (which transposed European Directive 2013/36/EU – CRD IV) and 3864/2010, as in force, the EU Regulations regarding remuneration (esp. Regulations (EU) 575/2013 and 604/2014), the BoG GA 2650/19.01.2012 and the Amended Relationship Framework Agreement between the Bank and the HFSF and the Bank’s obligations towards the Monitoring Trustee, as well as the Bank's business strategy, risk profile and risk appetite and discourages excessive and short-term risk taking. Additionally, the Bank’s remuneration practices follow the EBA guidelines on sound remuneration policies which are applicable from January 2017, as well as other legislative provisions (e.g Law 4438/2016 for the alignment of Greek legislation with the Directive 2014/17/EE of the European Parliament and the Council on credit agreements for consumers relating to residential immovable property, MiFID II, EBA Guidelines on product oversight and governance arrangements on retail banking products etc).

Within a Group context, the Bank oversees the remuneration policies and practices, in order to ensure that irrespective of the type of sector in which a Group company operates, the principles set at a Group level are followed. The Remuneration Policy has been forwarded to the Group companies in order for them to adopt a Remuneration Policy taking the Bank’s Remuneration Policy as a guide and giving consideration to the respective applicable local regulatory framework, as well as the nature, scale and complexity of their activities. Based on the above and in connection with the variety of business models inside the Group, some Group companies apply more sophisticated policies or practices in fulfilling their regulatory requirements, while others meet these requirements in a simpler or less burdensome way.

The Bank monitors developments in the applicable framework, and in case there are further changes in the relevant EU framework or Bank of Greece Acts, following also the developments on the Proposal for a Directive amending Directive 2013/36/EU as regards exempted entities, financial holding companies, mixed financial holding companies, remuneration, supervisory measures and powers and capital conservation measures, as well as the EBA Guidelines and EBA Opinion on the application of the principle of proportionality to the remuneration provisions in Directive 2013/36/EU (EBA-Op-2016-20) and communication which has taken place in this respect among EBA and the EU, the Remuneration Policy shall be further revisited and where deemed appropriate adjusted in accordance with developments in the applicable framework.

14.4. Other relevant stakeholders/ Units

The Remuneration Policy is elaborated with the assistance of the Human Resources, Risk Management, Compliance and Corporate Governance Units, in accordance with their respective responsibilities. With the assistance of the aforementioned Units, the Policy is reassessed and reviewed. The implementation of the Remuneration Policy is subject to central and independent internal control carried out at least on an annual basis by the Internal Audit - Inspection Division.

The implementation of the Policy is assigned to the Human Resources Unit, while the Group Compliance and Corporate Governance Units reassure the compliance of the Policy and the remuneration practices of the Bank and the Group with the relevant regulatory framework and international best practices.

External experts may participate in the development and periodical review of the Remuneration Policy, whenever the Board sees fit. However, during 2018 no such external expert advice was sought.

14.5. Remuneration Policy Governance

The Bank’s and the Group’s remuneration policy governance is depicted in the following diagram:

Board of Directors

- Approves or reviews the Group Remuneration Policy, following relevant recommendation by the Human Resources and Remuneration Committee
- Oversees the implementation and periodic review of the Remuneration Policy and its general principles
- Ensures that the implementation of the Remuneration Policy and procedures are subject to central and independent audit and review at least annually

Human Resources and Remuneration Committee

- Recommends the adoption or review of the Group Remuneration Policy
- Is responsible for updating of the Policy and ensuring compliance of the Bank and the Group with the provisions of the Remuneration Policy

As prescribed by the applicable Remuneration Policy, the Functions of the Bank having competence over the following areas shall be involved in the design, review and implementation of the remuneration policy:

Figure 4: Remuneration policy

14.6. Main characteristics of the remuneration system of the Bank according to the Bank's Remuneration Policy

The remuneration practices of the Bank are in compliance with the provisions of the existing regulatory framework concerning all staff, as well as with regulatory provisions regarding identified staff - specific categories of staff determined in accordance with Regulation (EU) No. 604/2014.

The basic principles and the most important design characteristics of the remuneration system of the Bank, which are aligned with applicable labor legislation, Collective Labor Agreements and Business Collective Labor Agreements, as well as relevant guidelines of the supervisory authorities, are described below.

14.6.1. Remuneration structure

Total remuneration may include fixed (such as salary) as well as variable payments or benefits (such as bonus, share options etc).

In any case, total remuneration is composed primarily of fixed payments, while the fixed and variable components of total remuneration are balanced to an appropriate ratio, which is within the limits determined by Law 4261/2014 (CRD IV).

Regarding share options in particular, no options were granted in 2018.

14.6.2. Criteria used for determining variable remuneration

For determining variable remuneration, if awarded, the following are taken into account:

- the assessment of the performance (individual and collective), which is set in a multi-year framework sufficient to indicate real performance, not only under financially measurable criteria but also under qualitative criteria, including, but not limited to, knowledge of the field of work, managerial skills, efficiency and general professional conduct, level of interest in and contribution to the work produced, compliance with the Bank's policies etc.
- the risks linked to such performance over a longer time horizon,
- the overall financial standing of the Bank and the Group,
- the market conditions and the long-term business targets of the Bank and the Group (including risks and the cost of capital).

Any deficiencies or shortcomings as regards a staff member's failure to comply with the procedures and the Policy of the Bank/Group cannot be offset by achievement of targets.

14.6.3. Risk alignment of remuneration

Members of the Board of Directors and Senior Management, officers participating in decisions related to the assumption of risk, as well as other individuals whose professional activities have a material impact on the risk profile of the Bank and the Group Companies, shall not be provided with any incentive to undertake excessive risk, nor shall they be rewarded for undertaking any risks that may exceed the business decisions of the Bank/Group.

When bonuses are awarded, the Bank places emphasis on effecting payment not by means of a pure up-front cash payment, but rather by alternative means (such as shares) and in installments (Deferred Bonus Pool), considering performance and risks linked to such performance over a longer time horizon.

14.7. Adjustment / deferral / retention/ claw back of variable remuneration

The Bank's Remuneration Policy foresees particular provisions including on deferral of at least 40% of variable remuneration for at least 3 to 5 years, or in the case of a variable remuneration component of a particularly high amount, of at least 60% of the amount, as well as on retention of instruments forming part of variable remuneration, with a view to aligning incentives with the Bank's longer-term interests and taking into consideration performance and performance-linked current and future risks over time.

The Bank may suspend, entirely or in part, the payoff of variable remuneration, if specific ratios (such as capital adequacy, liquidity etc.) are not met or if the financial situation of the Bank/Group has deteriorated significantly.

Without prejudice to the provisions of labor law, the Bank shall reclaim any bonus paid if, following such payment, it is discovered that the performance for which the bonus was offered derived from practices that are irregular or inconsistent with the general principles described in the Remuneration Policy. To this end and in cases of ethical or compliance misconduct, the Human Resources and Remuneration Committee in cooperation with the Board Ethics and Culture Committee (established on July 2018), shall assess the need for ex post risk adjustment of remuneration, including the application of malus and clawback arrangements.

14.8. Payment / vesting

According to the Remuneration Policy, variable remuneration is paid or vested, including any deferred part, only if it is sustainable in terms of the aggregate financial situation of the Bank and/or the Group companies, and justified on the basis of a) the financial results of the Bank and/or any Group company and b) the performance of the business unit involved, as well as the individual staff member concerned.

14.9. Remuneration of senior management

The remuneration of Senior Management is approved by the Board, following the recommendation of the HRRC upon proposal of the CEO. In particular, their salaries are determined annually or as provided for under the terms of their relevant contracts, taking into account the salaries of peers in the Greek and international banking and other sectors, as well as the Bank's financial position, risks undertaken and supervisory indicators, and within the approved by the Board relevant salary bands. In any case, remuneration of the General Managers and their deputies should not exceed the Bank of Greece Governor's remuneration. Any other type of additional remuneration (bonus) of the aforementioned persons is abolished for the period during which the institution participates in the Recapitalization Plan of Greek Law 3864/2010.

The remuneration of Senior Management in the Risk, Compliance and Internal Audit Units shall not be related to the performance of the business units controlled. The Committee supervises the remuneration of the Chief Compliance Officer and the Chief Risk Officer, and is consulted by the Audit Committee as may be necessary in the Audit Committee's responsibility for approving the Chief Audit Executive remuneration. The Committee shall make recommendations to the Board on the design of the remuneration package and amounts of remuneration to be paid to the senior staff members in the control functions.

14.10. Directors' Remuneration

The Board develops the proposal to the General Meeting of Shareholders on the remuneration of its members for their board services. This proposal is formulated, in line with the current regulatory framework[4] and the relevant commitments and legislation to which the Bank is subject in accordance with EU state aid rules and according to the Bank's Remuneration Policy, the Charters of competent Board Committees as well as industry best practices, in a way that adequately reflects the time and effort the members are expected to contribute to the work of the Board, while at the same time promoting efficiency of the Board. In any case, remuneration of the Chairman, the CEO as well as other members of the Board of Directors should not exceed the Bank of Greece Governor's remuneration. Any other type of additional remuneration (bonus) of the aforementioned persons is abolished for the period during which the institution participates in the Recapitalization Plan of Greek Law 3864/2010.

Remuneration of the Board's Chairman, the CEO and the Executive Board members is determined based on proposal by non-executive members of the Board[5].

The salaries of the Chairman, the CEO and Board members are determined annually or as provided for under the terms of their relevant contracts, taking into account the salaries of peers in the Greek and international banking and other sectors, as well as the Bank's financial position, risks undertaken and supervisory indicators.

The remuneration of non-executive members of the Board is linked to factors such as their general responsibilities and the time they devote to carrying out their duties, but not to the short-term results of the Bank/Group and does not include bonuses.

The Annual Ordinary General Meeting of the Bank's Shareholders approves the remuneration of the Chairman of the Board, the CEO, the Executive and non-executive Directors, as well as their remuneration in their capacity as members of the Bank's Board Committees (i.e. the Audit, Corporate Governance & Nominations, Human Resources & Remuneration, Risk Management, Strategy & Transformation, and Ethics & Culture Committees for the previous financial year, pursuant to article 24, par. 2 of the Companies Act (Law 2190/1920) and determines their respective remuneration through to the next Annual General Meeting. It is noted that, according to the decision of the Annual General Meeting of 30 June 2017 the Chair of the Board of Directors and executives of the Bank do not receive remuneration as members of the Board of Directors and their remuneration is incorporated in their annual gross remuneration.

The remuneration received by the Chairman of the Board, the executive and non-executive Directors for the year 2018, due to their relationship with the Bank, and the compensation they received for their participation in the Board and Board Committees' meetings (as well as the individual attendance of each member of the Board in these meetings) have already been published in the Bank's Annual Financial Report for the annual period ended December 31st, 2018, as part of the Board's Annual Report, which is available in the Bank's website (www.nbg.gr - section: The Group / Investor Relations / Financial Information / Annual and interim financial statements).

During 2018, no variable remuneration has been granted to the Chairman of the Board and the executive Directors, while the remuneration of the non-executive Directors does not include bonuses according to the Bank's Remuneration Policy.

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[4] *It is noted that as of 1 January 2019, Greek Law 4548/2018 has entered into force, which replaces Codified Law 2190/1920, and which includes among others particular provisions regarding Directors remuneration, with which the Bank shall comply as provided.*

[5] *It is noted that following the recent revision of Board Committees Charters, as of 01.03.2019 proposals to the Board regarding the remuneration of Board members falls within the competence of the Corporate Governance and Nominations Committee.*