Pillar III Disclosure Report of Eurex Clearing AG 2015

Disclosures as of 31 December 2015

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According to Part 8 of the Regulation (EU) No. 575/2013 (Capital Requirements Regulation [CRR]) in conjunction with § 26a German Banking Act (Kreditwesengesetz, KWG).

July 2016

Foreword

The purpose of the document is to fulfil regulatory disclosure requirements based on the revised Basel banking framework commonly know as "Basel III". For the European Union (EU) the current disclosures framework is covering the "Basel III" requirements and includes some additional components as laid down by Directive 2013/36/EU (Capital Requirements Directive, CRD IV) and Regulation (EU) No 575/2013 (Capital Requirements Regulation, CRR). Both legal texts together are also named CRD IV-package.

Eurex Clearing AG (Eurex Clearing or ECAG) is licensed as a Central Counterparty (CCP) under Regulation (EU) No 648/2012 (EMIR) and in addition is authorised as a credit institution taking deposits and granting loans to a limited extend under the German Banking Act (Kreditwesengesetz, KWG). Eurex Clearing is subject to supervision by the German Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin).

Eurex Clearing has no subsidiary that requires consolidated supervision based on Article 18 CRR or § 10a KWG. In addition, Eurex Clearing is not included in a group of undertakings that is subject to supervision on a consolidated level.

Eurex Clearing fulfils therefore the disclosure requirements detailed in Part 8 CRR and § 26a KWG, which has transposed the disclosure requirements of Articles 89 to 96 CRD IV into German law on a stand alone level, as follows:

- A remuneration report that fulfils the requirements according to Article 450 CRR. That report is disclosed by year on the website of Eurex Clearing: www.eurexclearing.com/clearing-en/about-us/regulatory-standards/remuneration.

- All other disclosure requirements as defined in Part 8 CRR and the related technical standards are published within this report which can also be found by year as of 2014 and subsequent on the website of Eurex Clearing: www.eurexclearing.com/clearing-en/about-us/regulatory-standards/pillar-iii-disclosure-report.

- Moreover, this report contains information about the Governance Arrangements stipulated in § 26a (1) sentence 1 KWG (implementation of Article 88 CRD IV into German law).

- The Country-by-Country reporting to fulfil the requirements according to § 26a (1) sentence 2 KWG (implementation of Article 89 CRD IV into German law) is included as an annex to the financial statements of Eurex Clearing which is published on the website of the German Federal Gazette (www.bundesanzeiger.de) and can also be found on the website of Eurex Clearing: www.eurexclearing.com/clearing-en/about-us/corporate-overview/annual-reports.

- The information about the Return on Assets (RoA) according to § 26a (1) sentence 4 KWG (implementation of Article 90 CRD IV into German law) is disclosed in the management report of the financial statement of Eurex Clearing which is published on the website of the German Federal Gazette (www.bundesanzeiger.de) and can also be found on the website of ECAG: www.eurexclearing.com/clearing-en/about-us/corporate-overview/annual-reports.

In the following, we always refer to the respective laws in place during the reporting period (that is 2015 and in principle as valid on 31 December 2015 if not stated otherwise).

How this document is organised

The report is presented over nine chapters, as follows:

1. Introduction;
2. Implementation of Basel III at Eurex Clearing AG;
3. Risk Management overview;
4. Management of operational risk;
5. Management of credit risk;
6. Management of market risk, including interest rate risk of exposures on positions not included in the trading book;
7. Management of liquidity risk;
8. Capital structure, capital ratio and Leverage Ratio;
9. Governance Arrangements.

An explanatory list of the abbreviations used is provided as an appendix to this document.

Contact details

For further information or if you have specific questions regarding this report, please contact us at media.relations@eurexclearing.com.

Eurex Clearing AG July 2016

1. Introduction

1.1 Background

1.1.1 Basel III framework

In December 2010, the Basel Committee on Banking Supervision (BCBS) published its revised banking regulatory framework commonly known as "Basel III"[1].

In Basel III framework itself does not apply to Eurex Clearing.

The Basel III framework contains of capital requirements mainly for credit risk (including credit risk mitigation techniques), operational risk and market risk. Beside this Basel III includes a definition of regulatory capital, the requirement of capital buffers, credit valuation adjustments (CVA) for certain Over-The-Counter (OTC) derivatives exposures in the capital framework, the requirement of a Leverage Ratio (put simply, a minimum ratio of capital to unweighted total assets plus off-balance-sheet risk positions), strict liquidity management requirements and close monitoring of liquidity by supervisory authorities (in particular the introduction of quantitative minimum ratios for short-term (Liquidity Coverage Ratio, LCR) and medium-term liquidity (Net Stable Funding Ratio, NSFR)).

The Basel III rules contain partially transitional rules starting 2013 and lasting until 2019.

The Basel III package also comprises the capital requirements for exposures to central counterparties (CCPs). Meanwhile, this topic has been revised twice. An updated set of interim rules were issued in July 2012[2] and a revised final standard was published in April 2014[3]. On 1 January 2017 the final standard will supersede the interim rules.

Certain details with regard to the Leverage Ratio are foreseen to be adjusted and fine-tuned in various steps until 2019.

The Basel III rules have been implemented in the EU by means of a regulatory package commonly known as "CRD IV", consisting of a directive[4] and a regulation[5]. Both legal documents were published in July 2013 and are in force since 1 January 2014. The CRD IV directive itself had to be transposed into national law by that date.

In addition to CRD IV and CRR, substantial parts of the implementation are steered via technical standards drafted by the European Banking Authority (EBA). The EBA has prepared a large number of such standards and the majority has been put in place by the EU Commission. These Level 2 implementing measures are important for the regulatory standards, for the Pillar III disclosure report and other disclosures for the year 2015 and beyond. There are still some standards outstanding and others are to come in the next years.

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[1] The main documents of this package are: "Basel III: A global regulatory framework for more resilient banks and banking systems", http://www.bis.org/publ/bcbs189.htm and "Basel III: International framework for liquidity risk measurement, standards and monitoring", http://www.bis.org/publ/bcbs188.htm;

[2] Capital requirements for bank exposures to central counterparties, interim rules: http://www.bis.org/publ/bcbs227.pdf;

[3] Capital requirements for bank exposures to central counterparties, final standard: http://www.bis.org/publ/bcbs282.pdf;

[4] Directive 2013/36/EU of the European Parliament and of the Council: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:176:0338:0436:EN:PDF;

[5] Regulation (EU) No 575/2013 of the European Parliament and of the Council: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:176:0001:0337:EN:PDF.

EU legislation has incorporated a number of the Basel amendments and additions that the BCBS had published by the middle of the second quarter of 2013 including the interim rules for exposures towards CCPs as issued by the BCBS. The aim is to transpose further amendments arising from the Basel process into EU law without delay via Level 2 texts or review clauses.

The CRD IV-package did not only transform the Basel III rules as such but also implemented additional components. These components include dedicated rules for capital requirements related to systematic risk and systematically important institutions. On top of that, limits on the variable part of the remuneration, strengthened corporate governance rules and, by means of CRR being valid directly in all EU (EEA) countries, a more or less fully harmonised "single rule book" has been introduced in the EU.

Whereas the Basel III rules only apply directly to global commercial banks with an international remit, the EU rules apply to all banks that operate in the EU. The CRD IV-package therefore partly addresses both regional and size-related issues and provides specific or modified regulations for certain types of business.

CRD IV and the options to be exercised as national discretion by competent authorities under CRR were implemented in Germany by way of the "CRD IV-Umsetzungsgesetz" (CRD IV-Implementation act) of 3 September 2013, as well as by a number of regulations published in the second half of December 2013. In addition, small corrections and adoptions have been introduced with the "Financial Markets Laws Amendment Act" (Gesetz zur Anpassung von Gesetzen auf dem Gebiet des Finanzmarktes) of 15 July 2014.

1.1.2 Beyond Basel III

Having finalised the Basel III framework, the BCBS is continuing the development of the regulatory framework. Meanwhile, the BCBS published its final rule set on the liquidity coverage ratio (LCR)[6] and the net stable funding ratio (NSFR)[7] in January 2013 and October 2014 respectively as part of the Basel III liquidity framework. The BCBS foresaw a start of the phasing-in rules starting as of 1 January 2015 with a 60% minimum ratio LCR, reaching a fully implementation (100% binding ratio) as of 2019. The NSFR will be fully binding as minimum standard as of 1 January 2018.

In addition, rules for systematically important banks (SIBs)[8], on intraday monitoring of liquidity[9] and a final standard for measuring and controlling large exposures[10] have been issued. In April 2014, the BCBS finalised its work on the capital treatment of bank exposures to central counterparties and published the final standard that will take effect on 1 January 2017[11].

The BCBS issued its revised standards on minimum capital requirements for market risk in January 2016[12] containing a revised boundary between the trading book and non-trading, a revised internal models approach and a revised standardized approach for market risk, a shift from value-at-risk to an expected shortfall measure of risk under stress and the in-

[6] Basel III: The Liquidity Coverage Ratio and liquidity risk monitoring tools: http://www.bis.org/publ/bcbs238.pdf;
[7] Basel III: the net stable funding ratio : http://www.bis.org/bcbs/publ/d295.pdf;
[8] Global systemically important banks: updated assessment methodology and the higher loss absorbency requirement: http://www.bis.org/publ/bcbs255.htm;
[9] Monitoring tools for intraday liquidity management - final document: http://www.bis.org/publ/bcbs248.htm;
[10] Supervisory framework for measuring and controlling large exposures – final documents: http://www.bis.org/publ/bcbs283.pdf;
[11] Capital requirements for bank exposures to central counterparties - final standard: http://www.bis.org/publ/bcbs282.htm;
[12] Standards Minimum capital requirements for market risk: http://www.bis.org/bcbs/publ/d352.pdf.

corporation of the risk of market illiquidity. The revised market risk framework will take effect on 1 January 2019.

In April 2016, the BCBS has issued the final standards on interest rate risk in the banking book in order to ensure that banks have appropriate capital to cover potential losses and limit incentives for capital arbitrage between the trading book and non-trading book[13]. The final rule set is applicable as of 1 January 2018.

On top of that, a second proposal to revise the Standardised Approach for Credit Risk and Credit Risk Mitigation Techniques has been issued for consultation[14] (December 2015; first proposed issued in December 2014). In addition, a revision of the so-called Basel I floor has be initiated with the aim to replace this with a floor for the model based approaches for all categories of risks in relation to the capital charges calculated by the Standardised Methods (December 2014)[15].

In November 2015, the BCBS has issued a consultative document in regard of the prudential treatment of banks' investments in TLAC[16]. It is applicable to all banks subject to the Basel Committee's standards, including both G-SIBs and non-G-SIBs. The objective of the proposed treatment is to reduce the risk of contagion if a G-SIB should enter into resolution.

A revision of the Standardised Approach, including its variant the Alternative Standardised Approach, was initiated in October 2014[17] to calibrate the capital charges for operational risk. In March 2016 the BCBS proposed in its relating consultative document to replace all current approaches by a so-called Standardised Measurement Approach (SMA)[18]. The new proposed approach builds on simplicity and comparability of a standardised approach and contains the risk sensitivity of an advanced approach.

In March 2016, the BCBS also issued a consultative document on disclosure requirements[19]. The paper combines already existing and newly introduced disclosure requirements in a consolidated and enhanced Pillar III framework.

Moreover, in order to reduce the complexity of the internal model based approaches for credit risk (Internal Rating Based Approaches, IRBA), to improve comparability and to address excessive variability in the capital requirements for credit risk the BCBS issued a consultative document in March 2016[20]. The document proposes changes to the internal model approaches to reduce the variation in credit risk-weighted assets.

In April 2016 the BCBS issued a consultative document regarding revisions to the Leverage Ratio framework[21], e.g. higher requirements for G-SIBs, replacement of the Current Exposure Method for the calculation of derivative exposures by the Standardised Approach for Counterparty Credit Risk (SA-CCR), etc..

None of these initiatives have so far led to a final rule set.

In November 2015, the Financial Stability Board (FSB) has issued principals and a term sheet for the "Total Loss-Absorbing Capacity" (TLAC)[22] in order to overcome capital short-

[13] Interest rate risk in the banking book: http://www.bis.org/bcbs/publ/d368.pdf.
[14] Revisions to the standardised approach for credit risk: http://www.bis.org/bcbs/publ/d347.pdf;
[15] Capital floors: the design of a framework based on standardised approaches: http://www.bis.org/bcbs/publ/d306.htm;
[16] TLAC Holdings: http://www.bis.org/bcbs/publ/d342.pdf;
[17] Operational risk - Revisions to the simpler approaches: http://www.bis.org/publ/bcbs291.pdf;
[18] Standardised Measurement Approach for operational risk: http://www.bis.org/bcbs/publ/d355.pdf;
[19] Pillar 3 disclosure requirements - consolidated and enhanced framework: http://www.bis.org/bcbs/publ/d356.pdf;
[20] Reducing variation in credit risk-weighted assets – constraints on the use of internal model approaches: http://www.bis.org/bcbs/publ/d362.pdf;
[21] Revisions to the Basel III leverage ratio framework: http://www.bis.org/bcbs/publ/d365.pdf;
[22] Adequacy of Loss-Absorbing Capacity of Global Systemically Important Banks in resolution: http://www.fsb.org/wp-content/uploads/TLAC-Principles-and-Term-Sheet-for-publication-final.pdf.

ages in crisis / resolution situations which in the past led to the intervention with tax payer`s money. This additional requirement is applicable to systemically important banks (G-SIBs and O-SIBs) and will take effect on 1 January 2019 (transitional rules) respectively 1 January 2022.

The BCBS has also indicated a broader review of the treatment of exposures towards sovereigns and central banks in the future.

It is supposed at some point in time, that all the BCBS measures in addition to Basel III will be summarised in a comprehensive framework. Furthermore, it is expected that the appropriate adoption at EU level most likely will lead to a CRD V-package including a revised regulation (CRR II). Due to several review clauses a first proposal of the revised package is expected in the last quarter of 2016. Several important regulatory measures within the EU play an additional role in defining future requirements for banks and have impact on the disclosure requirements. This relates inter alia to the Banking Recovery and Resolution Directive (BRRD)[23] including the Minimum Requirement for own funds and Eligible Liabilities (MREL)[24] as well as the introduction of the Single Supervisory Mechanism (SSM)[25].

[23] BRRD: Directive 2014/59/EU of the European Parliament and of the Council of 15 May 2014: Recovery and resolution of credit institutions and investment firms: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014 L0059&from=EN;

[24] MREL: EBA Final Draft RTS on criteria for determining the minimum requirement for own funds and eligible liabilities under Directive 2014/59/EU: http://www.eba.europa.eu/documents/10180/1132900/EBA-RTS-2015-05+RTS+on+MREL+Criteria.pdf;

[25] SSM: Regulation (EU) No 1022/2013 of the European Parliament and of the Council of 22 October 2013 establishing a European Supervisory Authority: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:287:0005:0014:En:PDF.

1.2 The "Three Pillars" framework

1.2.1 Overview

The Basel banking framework contains of three pillars:

- Minimum quantitative (capital) requirements (Pillar I);
- Supervisory Review Process (Pillar II);
- Disclosure requirements in order to reach market discipline by transparency to the public (Pillar III).

The "Three Pillars" framework, originally introduced with Basel II in 2014, evolved over time and further details have been defined. The "Three Pillars" complement each other and are mutually reinforcing. Figure 1-1 illustrates the "Three Pillars" model of Basel III.

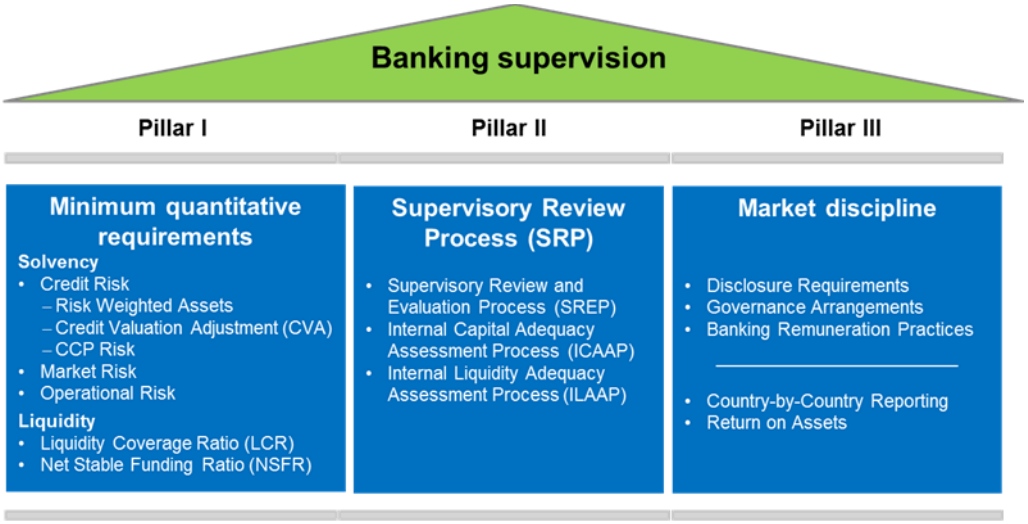


Figure 1-1 "Three Pillars" model of Basel III /CRD IV

Within the "Three Pillars" model, Pillar I offers the possibility to use different risk measurement approaches per risk category for capital requirements in the range of simple (standardised) to sophisticated model based methods according to their business model. Here, credit risk contains under Basel III a CVA charge and CCP counterparty risk. In addition to solvency requirements Pillar I also covers the requirement of liquidity (LCR and elements of the NSFR which is applicable as of 2018). Furthermore, a mandatory Leverage Ratio (Pillar I ratio) is in discussion to be potentially added in 2018.

Besides this, an Internal Capital Adequacy Assessment Process (ICAAP) and Internal Liquidity Adequacy Assessment Process (ILAAP) had been made mandatory and supervisors are obliged to review, evaluate and assess the robustness of banks and their risk models including capital and liquidity adequacy as of 2016.

In order to get a common view on the risk situation and to allow the market participants to benchmark the capital adequacy of any given bank, disclosure requirements are laid down in Pillar III. On EU level, additional elements like the Country-by-Country reporting and the Return on Assets have to be disclosed in order to increase transparency. Governance Arrangements including the structure within an institution and information regarding remuneration are further disclosures which have to be made.

The next chapters describe each of the three pillars and the Basel III framework as applicable in the EU in more detail.

1.2.2 Pillar I

1.2.2.1 Solvency

The first Pillar deals, among other things, with the minimum capital requirements. Capital requirements are to be calculated for credit risk, including CVA charge and CCP counterparty risk, market risk and operational risk. The capital charge for each risk category has to be calculated using an approach that is suitable and sufficient for the individual bank. For the sake of an evolutionary approach, both simple and more refined measurement methods have been defined for each risk category (for detailed information see below).

The own funds requirements for operational, market, CVA and CCP risk have to be multiplied by 12.5 and are summed up with the Risk Weighted Assets for credit risk to build the total risk exposure. The total risk exposure has to be multiplied by the required capital ratio of the related entity representing the total minimum own funds with is currently at least 8% (see figure below).

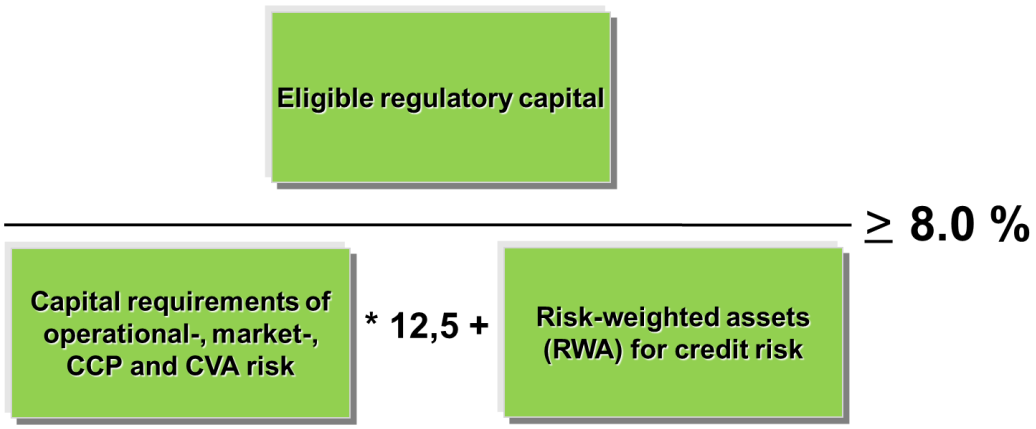


Figure 1-2 Calculation of the minimum capital requirements (capital ratio)

Capital

Basel III sets out provisions regarding the quantity of minimum capital requirements. As described in Figure 1-3, the required portion of the highest possible quality of own funds (Common Equity Tier 1 (CET1)) has to be 4.5% of the total risk exposure amount since 2015.

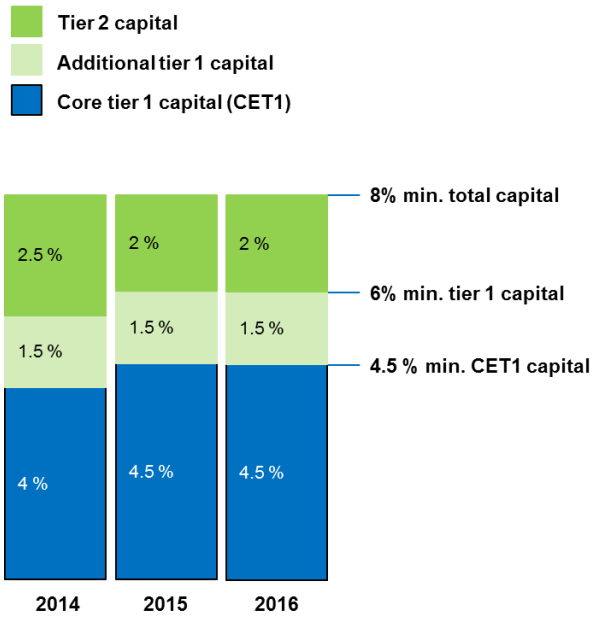


Figure 1-3 Quantitative minimum capital requirements

On top of the minimum capital requirements of 8%, Basel III requires additional capital/risk buffers: A countercyclical buffer and a capital conservation buffer. Subsequently, the BCBS introduced further buffers for systemically important banks: G-SIB and O-SIB buffer. In the EU, CRD IV also requires the systemic risk buffer which is non-cumulative (the highest applies) to the G-SII and O-SII buffers and might be imposed on all total risk exposures or on risk exposures relating to particular countries.

The capital conservation buffer has to be maintained as of 2016 in order to strengthen the capital basis of a bank during profitable times, but allowing for a temporarily underrun in case of an economic downturn of the bank or unexpected/sudden losses.

Similarly, the countercyclical capital buffer which has to be hold available to ensure that it accumulate during periods of economic growth in a dedicated region while it may be set to lower levels in case of an economic downturn in that region.

The capital conservation buffer will be phased in from 2016 until 2019 to finally reach 2.5% of the total risk exposure of the institution. In the same manner also the maximum value of the countercyclical buffer will be phased in. However, the value will be fluctuating over time depending on the economic situation. The respective amount in principle is set by the competent authority of the individual country in which the (credit) exposures are domiciled. The individual rate of any given bank will therefore be a blended rate taking the size of credit operations in the various countries into account. It is to be noted though, that the authority supervising any given bank may set higher levels of buffer requirements or phase-in the requirements faster than the standard phase-in schedule.

The standard phase-in schedule with the maximum standard requirements is shown in Figure 1-4.

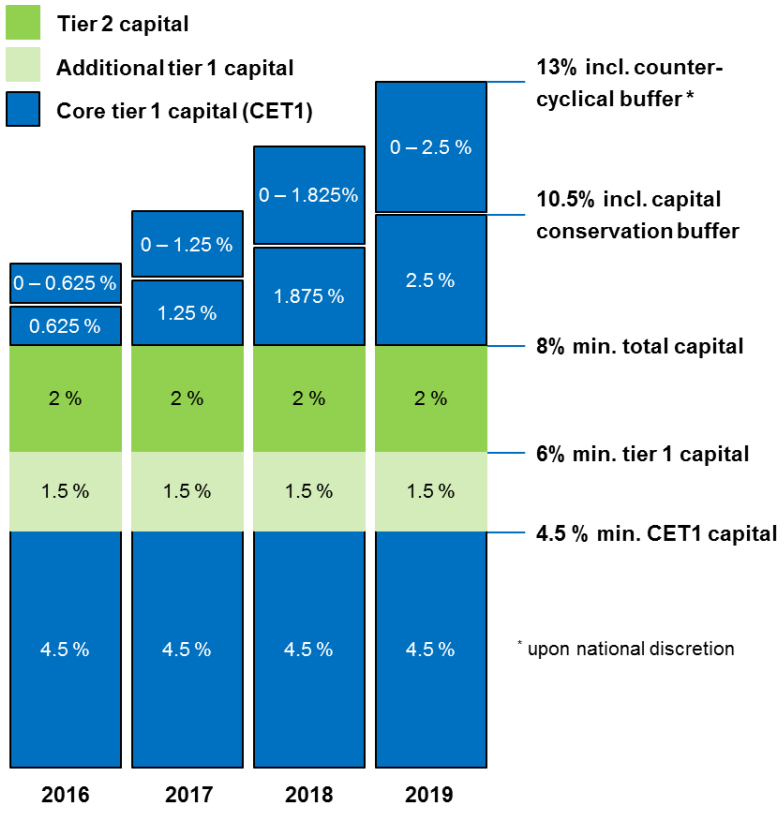


Figure 1-4 Overview of capital requirements and related transitional periods

In addition to the buffers illustrated in Figure 1-4, a buffer for systemically important institutions (applicable as of 1 January 2016) and a systemic risk buffer (applicable as of 1 January 2014) have to be maintained in case that the competent authority requires them. For G-SIBs the maximum surcharge is 3.5% of the total risk exposure amount while for O-SIBs the maximum surcharge is limited to 2.0% of the total risk exposure amount. The systemic risk buffer is limited to 5.0% of the total risk exposure amount and might be imposed on isolated exposures as well upon national discretion, e.g. for exposures in a particular country or region. As already described, only the higher of "Systemic risk" or "Systemically Important Bank" buffer is applicable.

The G-/O-SIB buffer has been developed by the BCBS in order to reduce the implicit reliance on state aid ("too-big-to-fail"). The objective of the buffer for systemic risk in the EU is to allow further strengthening of the capital basis in case exposures with systemic risk exist.

Figure 1-5 demonstrates how the capital requirements and the additional capital buffers will add up once they are completely phased-in as of 2019.

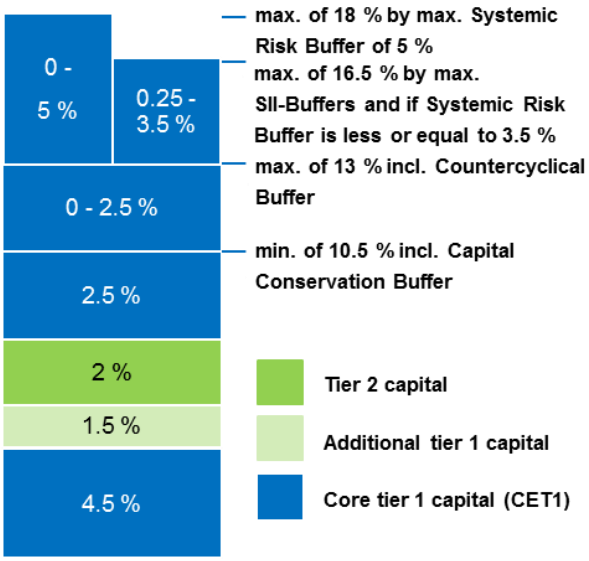


Figure 1-5 Overview of the total own funds requirements feasible as of 1 January 2019

The minimum capital requirements of 8.0% of the total risk exposure amount and the mandatory minimum portion of a certain quality may not be breached by the credit institutions. In contrast the capital buffers may be underrun for a certain period of time as they are no binding minimum ratios and are explicitly foreseen to balance out unexpected events. The buffers are foreseen to maintain a sufficient capital base to absorb losses in stressed periods. All four mentioned capital buffers must consist of CET1 capital instruments.

If the supervisory authority concludes that application of the risk measurement method is not adequate or appropriate (for example, the method is not sufficient for the particular bank or specific type of business, or the business risk is not appropriately reflected in the method), the supervisory authority may set additional capital requirements via Pillar II measures.

Credit risk (Risk Weighted Assets - RWA)

To measure the credit risk, one simple approach (Standardised Approach - StA) and two advanced approaches (Foundation Internal Rating Based Approach (FIRB) and Advanced Internal Rating Based Approach (IRBA)) are available. The Standardised Approach is based on external credit risk assessments and the two advanced approaches are based on internal ratings.

The calculation of the Risk-Weighted Assets (RWA) for credit risk is shown in Figure 1-6.

Figure 1-6 Calculation of the RWA

The basis for assessment is, in principle, the asset value taking into account the eligible credit risk mitigation techniques. This basis for the assessment must be multiplied by a regulatory risk weight that depends on predefined regulatory asset classes and the counterparties' credit risk assessment by a nominated External Credit Assessment Institution (ECAI) or based on internal data depending on the approach chosen.

Figure 1-7 illustrates the choices regarding the assessment of credit risk. In general, the capital, charge decreases and the risk sensitivity increases with the complexity of the approach. Furthermore, the implementation and running efforts and costs are also increasing with complexity.

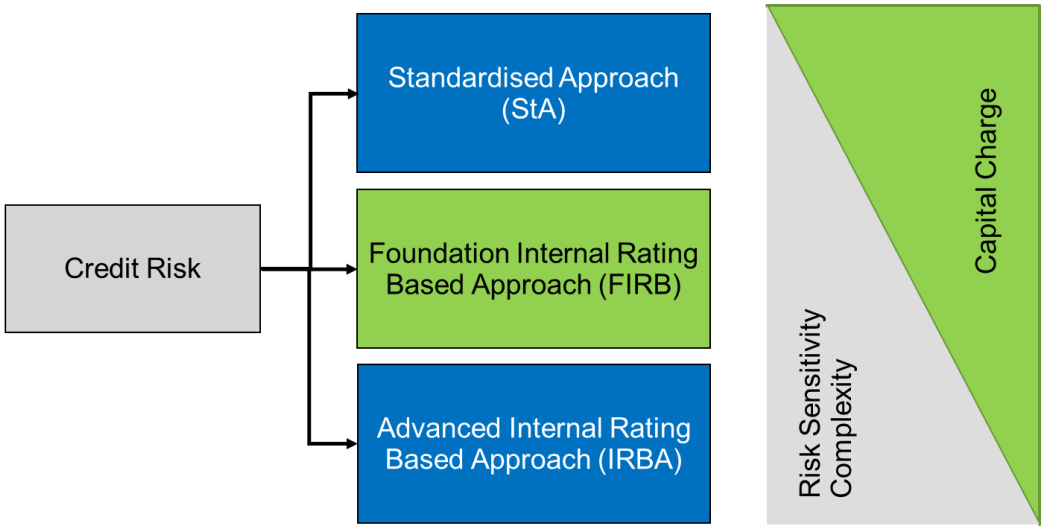


Figure 1-7 Possible calculation methods for the credit risk

The Standardised Approach defines 17 regulatory asset classes that relate partially to counterparty type only and partially to a specific type of business. The risk weights of each of these classes (for example, central governments, public sector entities, corporate institutions, securitisations, covered bonds, participations etc.) are fixed (for example, 0%, 20%, 50%, 100% etc.) or depend on ratings given by an accepted External Credit Assessment Institution (ECAI), such as Moody's, Standard & Poor's, Fitch etc. or are based on credit assessments by Export Credit Agencies (for example, Euler Hermes Kreditversicherungs AG, the Organisation for Economic Cooperation and Development (OECD) etc.).

Credit institutions may use these Export Credit Agencies' credit assessments if the chosen Export Credit Agency participates in the OECD "Arrangement for Officially Supported Export Credits" or the Export Credit Agency publishes its credit assessment and subscribes to the OECD agreed methodology for the purposes of exposures to central governments and central banks only.

Furthermore, the credit assessment of the Export Credit Agency must be associated with one of the minimum export insurance premiums (MEIP) that the OECD establishes under this methodology (for so-called high income states, e.g. Germany, the OECD does not provide country risk classifications anymore).

In the EU, in principle the risk weights for banks are derived from their individual credit assessments (ratings). However, as a fall back solution it is also possible to derive the risk weight from the central government of the country of residence in case no credit assessment exists or no rating agency for the regulatory asset class for banks has been nominated.

In order to use the FIRB or the IRBA, banks must fulfil a number of additional requirements. A detailed review of processes, estimates and documentation as well as an explicit permission from the respective authority are necessary to be allowed to use one of the Internal Rating Based Approaches for the calculation of the risk-weighted asset amounts.

Even further developments of the advanced risk measurement systems must be approved by the respective supervisory authority. Using these approaches, the bank does not rely on information provided by an external rating agency but carries out its own assessments, which form the basis for determining potential future losses. These calculated potential losses are in turn used as the basis for the corresponding capital requirements.

The permission of the supervisory authority may be granted:

- In general, for probability of default (PD[26]) estimates (Foundation Internal Rating Based Approach (FIRB)); or
- For probability of default estimates, own estimates of loss given default (LGD[27]) and maturity adjustment for effective maturity based on PD (Advanced Internal Rating Based Approach (IRBA)).

Credit Risk Mitigation (CRM)

It is at the discretion of each institution whether to use credit risk mitigation techniques or not.

If an institution decides to use any credit risk mitigation techniques, the institution must consider various operational and procedural requirements beside quantitative requirements. The pool of possible collateral to be used is in principle enlarged in the two advanced credit risk approaches compared with the standardised credit risk approach.

Two methods to calculate the credit risk mitigation of financial collaterals are available: the Simple Approach and the Comprehensive Approach. Depending on the calculation method used, only predefined financial collateral types can be considered.

The Simple Approach is a substitution approach. The risk weight that would be assigned under the provisions of the standardised credit risk approach, if the lender institution had a direct exposure to the issuer of the collateral instrument, shall be assigned to those portions of claims collateralised by the market value of generally eligible financial collateral. The remainder of the exposure shall receive the risk weight that would be assigned to an unsecured exposure to the counterparty under the provisions of the standardised credit risk approach.

In the Comprehensive Approach, institutions must calculate their adjusted exposure to a counterparty in order to take account of the effects of that collateral. Using haircuts, banks are required to adjust both the amount of the exposure to the counterparty and the value of any collateral received in support of that counterparty to take account of possible future fluctuations in the value of either, occasioned by market movements. This will produce volatility adjusted amounts for both exposure and collateral.

[26] PD: the probability (as a percentage) of default by a counterparty over a one-year period;

[27] LGD: the ratio (as a percentage) of the loss on an exposure due to the default of a counterparty to the amount outstanding at default.

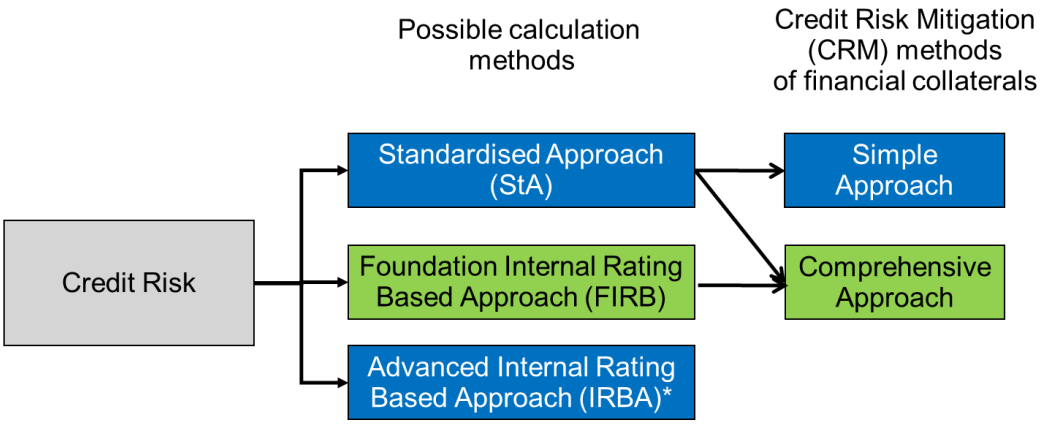
Additionally where the exposure and collateral are held in different currencies an additional downwards adjustment must be made to the volatility adjusted collateral amount to take account of possible future fluctuations in exchange rates. Institutions have two ways of calculating the haircuts:

- Standard supervisory haircuts;
- Own estimate haircuts, using own internal estimates of market price volatility.

Supervisors allow banks to use own estimate haircuts only when they fulfil certain qualitative and quantitative criteria.

In summary, it can be noted that the Comprehensive Approach for credit risk mitigation allows taking into account many more financial collateral types with only a slight increase in the complexity of the calculation method.

Figure 1-8 gives a simplified overview of the calculation methods of financial collaterals under Basel III.



*Credit Risk Mitigation is taken into account as part of the LGD assessment.

Figure 1-8 Overview of possible calculation methods of financial collaterals

Credit Valuation Adjustment (CVA)

Credit Valuation Adjustment means an adjustment to the mid-market valuation of the portfolio of transactions with a counterparty in OTC derivative transactions. That adjustment reflects the current market value of the institution's counterparty credit risk, but does not reflect the current market value of the credit risk of the institution towards the counterparty. An institution shall calculate the own funds requirements for CVA risk for all OTC derivative instruments in respect of all of its business activities, other than credit derivatives, recognised to reduce risk-weighted exposure amounts for credit risk.

In addition, CVA risk may also be applicable on SFT exposures in case the competent authority determines that the institution's CVA risk exposures arising from those transactions are material.

Central Counterparty Risk (CCP Risk)

When a bank acts as a clearing member of a CCP, a risk weight of 2% must be applied to the bank's trade exposure to the CCP in respect of derivatives Securities Financing Transactions and long-settlement transactions. This preferential treatment may only be applied in case the CCP in question is classified as qualified CCPs. Under CRR, a CCP is considered to

be a "qualified CCP" if it is granted an authorisation under Regulation (EU) No. 648/2012 (European Markets Infrastructure Regulation - EMIR) or an equivalent regulation in its country of residence.

In addition to the 2% risk weight for the trade exposure a capital charge has to be applied on the contribution of the clearing members to the default funds of the qualified CCP.

There are further rules with regards to client positions of a clearing member related to CCP business. As they are not applicable for Eurex Clearing, it is not explained here in detail. The comprehensive basis for the CCP Risk is defined in Articles 300 – 311 CRR.

Market risk

Market risk is typically defined as the uncertainty about future earnings and about the value of assets and liabilities (on- or off-balance sheet items) due to changes in interest rates, foreign exchange rates, security prices or commodity prices.

Basel III distinguishes between the bank's trading book (held with trading intent [short-term] and typically valued mark-to-market) and the non-trading book (typically held for a longer term or to generate permanent earnings [hold or income-making intention]) and attaches different requirements accordingly.

Certain positions cannot be allocated by the nature of the position but need dedication. The institution needs to have a clear policy for allocation and must document the current allocation. If the positions finally allocated to the trading book exceed certain thresholds, capital requirement rules for the trading book apply. If the thresholds are not surpassed, those rules are not relevant.

Market risk under the perspective of Pillar I is defined as the risk of losses in positions (on- and off-balance sheet) arising from movements in market prices. The risks subject to this requirement are as follows:

- The risks pertaining to interest rate related instruments and equities in the trading book only;
- Foreign exchange risk and commodities risk independent of trading book allocation.

The interest rate risks of exposures on positions not included in the trading book are taken into account under Pillar II (in the context of other or further risks).

According to Basel III two methods are given to calculate the capital requirements for market risk (standardised approach and internal models).

Operational risk

The main drivers of operational risk in banks are the growing dependence of banking operations on IT systems, the enlarged use of electronic banking, the progressive development of risk systems and, especially, the increasing complexity of business processes in banking.

Legal and compliance risk have become increasingly important drivers for operational risk. In this context, operational risk is by nature very different from credit risk and market risk. Operational risk is far more difficult to capture because it is inherent to many activities and is still nearly inevitable.

Recent events have shown that operational risk can be significant, and resulting losses can even threaten a bank's existence.

Under Basel III three methods are applicable to calculate the capital requirements for operational risk as shown in Figure 1-9.

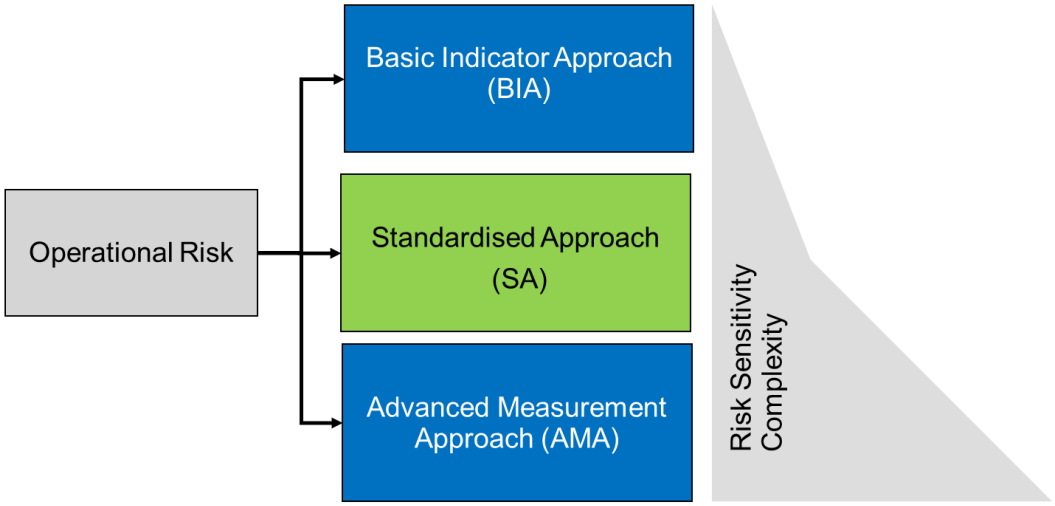


Figure 1-9 Possible calculation methods for the operational risk

Complexity and risk sensitivity in the two more simple approaches are nearly similar, whereas it is much higher in the advanced approach.

First, there is the **Basic Indicator Approach (BIA)**, in which a bank's operational risk is estimated as a percentage (alpha factor 15%) of the gross income (calculated as the average of the previous three financial years). This approach involves a simple calculation but is not very risk sensitive.

Next is the **Standardised Approach (SA),** which splits business into predefined business lines. Operational risk is estimated as a specified percentage (beta factor 12%, 15% or 18%) of gross income per business line. This can be seen as a basic indicator approach applied to each business line.

The **Advanced Measurement Approach (AMA)** requires internal loss data and model-based methods to calculate the regulatory capital requirements. Comparable to the Advanced Internal Rating Based approaches, an explicit permission as well as a detailed review of processes, estimates and documentation by the respective supervisory authority is necessary to be allowed to use the AMA to calculate the operational risk amounts. The application of advanced measurement approaches will be subject to both qualitative and quantitative criteria and banks will be allowed to recognise the risk mitigating impact of insurance.

1.2.2.2 Liquidity

Beside the capital requirements Basel III contains a quantitative (minimum) ratio for the management of liquidity risk. Two liquidity standards, the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR), were introduced to achieve this objective. Both ratios reflect the minimum level of liquidity banks must provide to meet the liquidity risks they face from a regulatory perspective either short-term (LCR) or mid-term (NSFR).

Liquidity Coverage Ratio (LCR)

The LCR requires institutions to hold sufficient liquid assets (i.e. assets that can be liquidated at negligible loss of value) to withstand the excess of liquidity outflows over inflows that could be expected to accumulate over a thirty day stressed period.

Consequently, institutions shall at all times hold liquid assets, the sum of which equals or is greater than the liquidity outflows less inflows over the next thirty days under stressed conditions (inflows are limited to 75 % of liquidity outflows). Under the Basel III rules, the LCR phasing-in rules foresaw a start with 60% minimum ratio as of 1 January 2015 (after an observation period started in 2013) and a full application (100% binding ratio) as of 2019. The EU has decided that because of delays in the legislative process to start with a 60% minimum ratio as of 1 October 2015 but to reduce the phase-in period and reach the 100% minimum ratio as from 1 January 2018. Mathematically the LCR is expressed as follows:

$$\frac{\text{Stock of high quality liquid assets}}{\text{Total net cash outflows next 30 days}} \geq 100\ \%$$

Figure 1-10 Calculation of LCR

Net Stable Funding Ratio (NSFR)

The NSFR has been established as a measure that should be used to optimise the structural liquidity of credit institutions over a time horizon of one year.

The NSFR is defined by BCBS as ratio between the available stable funding and the amount for which a stable funding is required. Those amounts are calculated by multiplying the nominal amount with the so-called available stable funding factor and the required stable funding factor. The amount of available stable funding must match the amount of required stable funding. The NSFR will become a minimum standard as of 1 January 2018.

$$\frac{\text{Available Stable Funding (ASF)}}{\text{Required Stable Funding (RSF)}} \geq 100\ \%$$

Figure 1-11 Calculation of NSFR

So far, the European Commission is only collecting data regarding the NSFR. The final ratio with its detailed components is not defined yet.

1.2.3 Pillar II

The risks of Pillar I and further significant and substantial risks must be included in an integrated capital management and risk management consideration.

The following figure gives an overview which risks were to be considered under such an integrated risk approach.

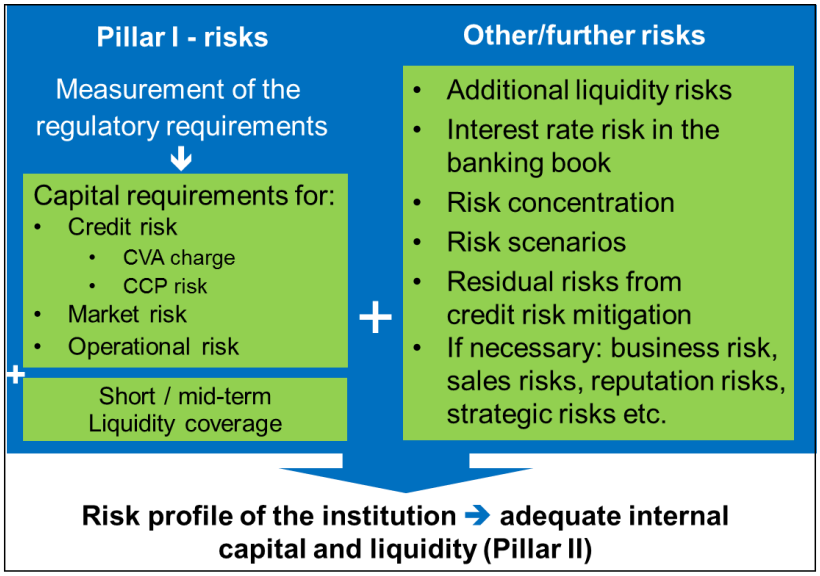


Figure 1-12 Integrated risk consideration (Pillar II) under Basel III

The bank's internal assessment comprises of internal procedures and strategies to identify all risks and to assess the necessary internal amount of capital and maintain this at all times (Internal Capital Adequacy Assessment Process - ICAAP) and in addition of the Internal Liquidity Adequacy Assessment Process (ILAAP). It assesses the liquidity profile of an institution in relation to its business and complexity.

A review and evaluation process by the supervisors (Supervisory Review and Evaluation Process - SREP) includes beside a review and evaluation of the bank's capital and liquidity adequacy also the possibility to require capital in excess of the minimum Pillar I amount and to intervene at an early stage in case risks are not captured adequately. All together, Pillar II is also called the Supervisory Review Process (SRP).

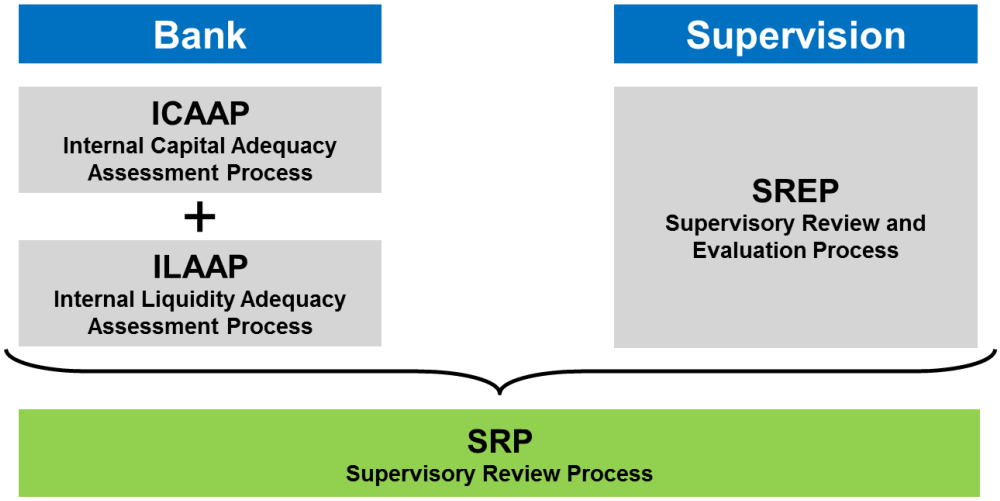


Figure 1-13 Prudential supervision under Basel III

The EU has set the necessary standards on internal organisation, risk management, capital and liquidity management, corporate governance, remuneration as well as the related Pillar II review processes within CRD IV (Chapter II, Articles 73 – 110). These rules have been transposed into German law. In addition, the EBA has issued the "Guidelines on common procedures and methodologies for the supervisory review and evaluation process (SREP)"[28], which is to be implemented and used by national competent authorities as of 1 January 2016.

1.2.4 Pillar III

The third Pillar, named Market Discipline, is also known as "regulatory disclosure" requirements. The disclosure requirements are a basic prerequisite for sound information standards among all market participants. This in turn allows market forces to take effect without obstructions, thus indicating the prevalence of market discipline.

The accord contains disclosure requirements and recommendations for various areas of banking operations, including the methods a bank uses to estimate its risks or how the bank determines its capital adequacy (that is the relationship between equity and overall risk). The bulk of these disclosure requirements applies to all banks, and more detailed requirements have to be fulfilled from banks using internal methods.

Following the changed quantitative rules for capital and capital requirements as well as the introduction of quantitative liquidity measures, Basel III and the CRD IV-package have enhanced the disclosure requirements substantially. With CRR and subsequent technical standards the disclosure requirements are much more granular and precise requirements have been set in various areas. In addition, information on the Leverage Ratio, that has been introduced as a concept under Basel III but so far is only in discussion to become potentially a binding minimum ratio under Pillar I, needs to be disclosed for the financial year 2015 in this disclosure report for the first time (see Chapter 8.4).

[28] EBA Guidelines on common procedures and methodologies for the supervisory review and evaluation process (SREP): https://www.eba.europa.eu/documents/10180/935249/EBA-GL-2014-13+%28Guidelines+on+SREP+methodologies+and+processes%29.pdf.

With regards to the disclosure of information according to the Liquidity Coverage Ratio the Basel Committee on Banking Supervision issued LCR disclosure standards[29] applicable as of 1 January 2015 in consonance with the original implementation date of the LCR requirement. So far, the European Commission did not transpose the BCBS disclosure requirements with all its detailed information into a binding disclosure requirement in the EU. Thus, this disclosure report only contains the LCR figure as of 31 December 2015 in Chapter 7.5.

The CRD IV-package also contains further information to be disclosed which included details on corporate governance and governance arrangements and information about the Return on Assets (RoA).

RoA indicates the efficiency of invested capital during a specific period of time. Mathematically the RoA is expressed as follows:

$$RoA = \frac{\text{Net Income}}{\text{Total Assets}}$$

Figure 1-14 Calculation of Return on Assets

The present report serves the purpose of meeting the requirements of Pillar III as outlined in the foreword and providing interested parties with further essential information about the business and risk situation of Eurex Clearing.

[29] Liquidity coverage ratio disclosure standards: http://www.bis.org/publ/bcbs272.pdf.

1.3 Information about Eurex Clearing AG

1.3.1 Corporate structure

Eurex Clearing and its subsidiary, Eurex Clearing Security Trustee GmbH, are fully owned by Deutsche Börse AG and are integrated into Deutsche Börse Group. The ownership and corporate structure is shown in Figure 1-15 below:

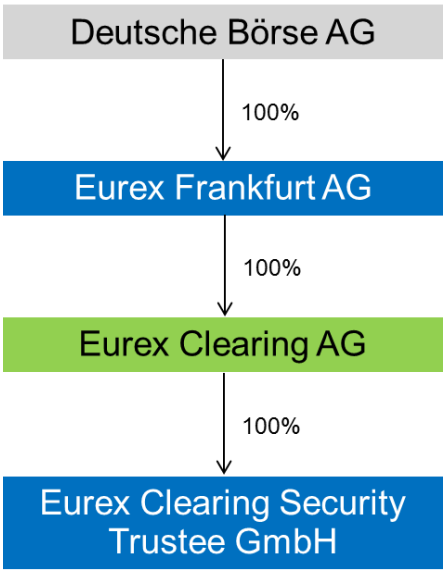


Figure 1-15 Corporate structure

Sole owner of Eurex Clearing AG is Eurex Frankfurt AG which is a 100% subsidiary of Deutsche Börse AG. Thus, Eurex Clearing is included in the consolidated accounts of Deutsche Börse AG. Consequently, Eurex Clearing is according to § 291 German Commercial Code (Handelsgesetzbuch, HGB) exempted to draw up consolidated statutory accounts. Due to the small size of Eurex Clearing Security Trustee GmbH the drawing up of consolidated statutory accounts is also not necessary in line with the provisions of § 293 HGB.

The purpose of Eurex Clearing Security Trustee GmbH is related to dedicated tasks in case of a default scenario of certain UK clearing members or clients in order to comply with the UK CASS rules. As such, Eurex Clearing Security Trustee GmbH is not a regulated entity according to CRR or KWG and is neither to be classified as a financial institution (Article 4 paragraph 26 CRR), nor a financial enterprise (§ 1 (3) KWG) nor an ancillary services undertaking (Article 4 paragraph 18 CRR) and is therefore to be regarded as an "other undertaking".

Consequently, Eurex Clearing Security Trustee GmbH is according to Article 18 CRR also not to be consolidated under regulatory terms. Thus, ECAG has to fulfil the regulatory requirements on a stand-alone level only.

1.3.2 Business operations and supervision

Eurex Clearing operates as a CCP, including the operation of a clearing system for cash and settlement of transactions on domestic and international securities or derivatives exchanges, multilateral trading platforms and of OTC transactions in various financial instruments such as derivatives, equities and bonds. Eurex Clearing ensures the performance of delivery and payment obligations after transactions are concluded on Eurex Deutschland and Eurex Zürich AG (Eurex exchanges), the Frankfurter Wertpapierbörse (FWB®, the Frankfurt Stock Exchange), the Irish Stock Exchange, Eurex Repo GmbH and Eurex Bonds GmbH.

Eurex Clearing is as a CCP in accordance with EMIR. In this regard, Eurex Clearing has been authorised in line with Article 14 EMIR as a CCP. BaFin issued the relevant license to Eurex Clearing on 10 April 2014.

Eurex Clearing is also authorised by BaFin to operate deposit taking and lending business. In connection with this authorisation, it grants loans and extends credit lines for affiliated companies and accepts cash deposits from affiliated companies. As a consequence, Eurex Clearing has to fulfil the regulatory obligations towards the German supervisory authorities and presents this report in compliance with the disclosure requirements pursuant to Part 8 of the CRR and § 26a (1) sentence 1 KWG.

However, the banking business is only minor, as the main activity of Eurex Clearing is to act as a CCP.

2. Implementation of Basel III at Eurex Clearing AG

2.1 Pillar I: Minimum capital requirements

According to its business operations and the associated risks, Eurex Clearing has selected for each risk category the most appropriate and efficient approach for measurement of minimum capital requirements.

Granting loans is not Eurex Clearing's core business. Credit risk mainly arises in the short term and with credit institutions or central banks. Therefore, Eurex Clearing has selected the standardised approach to assess the credit risk under Pillar I.

Credit risk is derived from short-term money-market investments (without trading intent), exposures on central bank or interbank operational accounts. Treasury counterparties as well as cash correspondent banks for the operational network are selected based on a high degree of creditworthiness and operational reliability.

As the money market investments are collateralised to a high degree, Eurex Clearing has selected the comprehensive approach for credit risk mitigation.

Contrary to credit risk, operational risk is much more important to Eurex Clearing compared to conventional commercial banks.

To calculate the own funds requirements for operational risks, Eurex Clearing uses the Basic Indicator Approach pursuant to Articles 315 et seq. CRR. In consultation with BaFin, Eurex Clearing expands the basis for calculating its capital requirements to include an adequate clearing portion of the fees collected for the account of the operating companies.

Eurex Clearing uses the standardised approach for assessing market risk. The complete business activity belongs to the non-trading book. Market risk, according to the regulatory classification, is currently derived from foreign currency risks only and is very limited.

The following table gives an overview of the calculation methods chosen by Eurex Clearing:

Risk Category	Calculation Method
Credit Risk	Standardised Approach
Credit Risk Mitigation (CRM) of financial collaterals	Comprehensive Approach
Operational Risk	Basis Indicator Approach
Market Risk	Standardised Approach

Table 2-1 Calculation methods chosen by Eurex Clearing

2.2 Pillar II: Supervisory Review Process (SRP)

Eurex Clearing has implemented all necessary organisational and methodological requirements for the Internal Capital Adequacy Assessment Process (ICAAP), the Internal Liquidity Adequacy Assessment Process (ILAAP) and all other elements which constitute the basis for the Supervisory Evaluation and Review Process (SREP).

The Executive Management of Eurex Clearing is informed at least on a quarterly basis about all significant and substantial risks. If necessary, risks are reported ad hoc. This reporting includes also risk that is not in the scope of Pillar I and is the basis for Eurex Clearing's internal capital and liquidity planning.

Eurex Clearing's required Economic Capital (EC) is determined using the Value-at-Risk method (VaR, see 3.2 Risk management methodology). EC measures the amount of capital that is required in order to be able to cover even extreme events over a period of 12 months. EC is calculated at a confidence level of 99.98%. This means that losses within the next twelve months will not exceed the calculated EC with a probability of 99.98%.

With the introduction of Basel III the Pillar II and its SRP was amended by the assessment of an institutions' liquidity adequacy.

Basel III requires Eurex Clearing to have in place robust strategies, policies and systems for the identification, measurement, management and monitoring of liquidity risk over an appropriate set of time horizons so as to ensure that Eurex Clearing maintains adequate levels of liquidity buffers. The design of its ILAAP framework is in the sole responsibility of Eurex Clearing.

Within the SREP, competent authorities collect quantitative and qualitative information on Eurex Clearing's ILAAP to determine Eurex Clearing's ability to cover its liquidity and funding risks, even under stressed conditions.

In 2015 Eurex Clearing performed a self-assessment to check compliance of its ILAAP Framework against the EBA Guidelines on common procedures and methodologies for the supervisory review and evaluation process. The analysis took into account the nature, scale and complexity of Eurex Clearing's business activities. As a result, Eurex Clearing considers its Liquidity Risk Management Framework to be commensurate with the requirements of the Directive, Regulation and EBA technical standards.

As part of SREP, the management of Eurex Clearing is in a constant dialogue with its supervisors.

2.3 Pillar III: Market discipline

Eurex Clearing is licensed as a CCP under EMIR and in addition is authorised as a credit institution taking deposits and granting loans to a limited extend under the KWG. Eurex Clearing is subject to supervision by BaFin.

ECAG as regulated credit institution fulfils the regulatory obligations on an individual level towards the German supervisory authorities and presents this report in compliance with the disclosure requirements pursuant to Part 8 of the CRR and § 26a (1) KWG. The information required by Article 450 CRR (information regarding remuneration), § 26a (1) sentence 2 KWG (Country-by-Country reporting) and § 26a (1) sentence 4 KWG (Return on Assets) is disclosed separately. For a comprehensive overview of all disclosures please see foreword.

Beside this, certain requirements do not apply for Eurex Clearing. As Eurex Clearing does not perform any kind of trading related disclosure requirements are not applicable (Article 439 CRR). Due to the businesses of the Eurex Clearing the following articles currently are not relevant as the underlying topics do not exist at ECAG although they apply in principle: Article 441 CRR (Indicators of global systemic importance), Article 449 CRR (Exposure to securitisation positions), Article 452 CRR (Use of the IRB Approaches to credit risk), Article 454 CRR (Use of the Advanced Measurement Approaches to operational risk) and Article 455 CRR (Use of Internal Market Risk Models).

The applicable disclosures have to be published at least on an annual basis in conjunction with the date of publication of the financial statements. In addition, Eurex Clearing asses

annually the need to publish certain information more frequently in order to ensure stakeholder's access to a core set of up-to-date information. The related assessment process of Eurex Clearing according to EBA Guideline 2014/14[30] was heading to the result that more frequently disclosures have not to be made.

2.4 Regulatory environment

Eurex Clearing fulfils the "Basel III" regulatory equity requirements as implemented in the European Union by CRD IV and CRR.

On 15 October 2013, the EU adopted the Single Supervisory Mechanism (SSM) Regulation, under which the ECB assumes responsibility in principle for banking supervision in the Eurozone; countries outside the Eurozone have the option to join the supervisory mechanism. The SSM has been set up in order to further harmonise supervisory practices in the EU and to structure a "banking union". In the first step, supervision over the largest banks (Significant Institutions, (SIs)) with international operations was transferred directly to the European Central Bank (ECB) in November 2014.

However, for the less significant institutions (LSIs), the ECB only lays down supervisory principles, harmonises interpretation decisions and coordinates the national supervisory authorities. How far that coordination will reach and how this new function of the ECB will develop over time is currently an open question.

In June 2014, the ECB decided to classify Eurex Clearing as a LSI. The decision reflects the dedicated role of Eurex Clearing outside the core banking business which is the focus of the SSM. Although, Eurex Clearing continues to be seen as systemically important as Financial Market Infrastructure (FMI), Eurex Clearing is not classified as a SI for the purposes of the SSM. As such, Eurex Clearing remains as a credit institution under the supervision of BaFin.

In 2016 the ECB confirmed the classification of ECAG based on its review in 2015 and in line with more prioritising ECB specified the classification as LSI with high priority.

[30] EBA Guideline transposed in Germany via BaFin Rundschreiben 05/2015 (BA): https://www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Rundschreiben/2015/rs_1505_ba_offenlegung.html

3. Risk Management overview

3.1 Strategy and organisation

Risk management is a fundamental component of the management and control of Eurex Clearing. Effective and efficient risk management is vital to protecting Eurex Clearing's interests and enables Eurex Clearing to achieve its corporate goals and safeguards its continued existence. Eurex Clearing has therefore established a risk management system comprising roles, processes and responsibilities applicable to all staff and organisational units of Eurex Clearing. This concept is designed to ensure that emerging risks can be identified and dealt with as early as possible.

Eurex Clearing's risk strategy is based upon its business strategy and regulates the extent of risk taken within the various business activities carried out by Eurex Clearing. The risk strategy does this by determining conditions for risk management, control and limitation. Eurex Clearing gives considerable attention to its risk mitigation process and ensures that appropriate measures are taken to avoid, reduce and transfer risk or intentionally accept it.

Eurex Clearing's risk strategy ensures and enables the timely and adequate control of risks. The information required for controlling risks is assessed using structured and consistent methods and methodologies. The results are collated and incorporated into a reporting system enabling measurement and control of the risks. Risk reporting is based on reliable information and is carried out on a regular basis and ad-hoc for existing and potential risks.

All members of the Executive Management of Eurex Clearing are ultimately responsible for the risk strategy of Eurex Clearing. The risk strategy reflects ECAG's risk appetite that defines the maximum loss that the Executive Management is willing to assume in one year, the tolerance in light of the risk as well as the desired performance levels. It is Eurex Clearing's intention to maintain risk at an appropriate and acceptable level (see also 3.4 Risk mitigation).

The members of the Executive Management ensure that the risk strategy is integrated into the business activities and that adequate measures are in place to implement the strategies, policies and procedures.

Risk awareness and a corresponding risk-conscious culture are encouraged, amongst other things, through appropriate organisational structures and responsibilities, adequate processes and the knowledge of the employees. The appropriateness of the risk management and controlling systems is continuously checked.

Risks are openly and fully reported to the responsible level of management. The responsible management is informed fully and in a timely manner about the unit's risk profile, relevant risk(s) as well as about relevant losses. Internal reporting and communication is amended by annual reports.

Eurex Clearing has developed its own corporate risk structure and distinguishes between operational, financial, business and project risks (see also 3.3 Risk structuring).

The members of the Executive Management of Eurex Clearing are responsible for the management of all risks. Eurex Clearing's risk management organisation is decentralised. Thus, the various operational units are responsible for identifying risks and for reporting them promptly to Enterprise Risk Management (ERM), a central function which belongs to Eurex Clearing's CCP Risk Management department. CCP Risk Management is responsible to for consolidation and integration of all CCP risk management functions at ECAG in order to maintain one integrated risk framework.

ERM assesses all new and existing risks. It also reports on a quarterly basis and, if necessary, ad-hoc to the Executive Management. Controlling of risks is performed in the decentralised business areas, that is, in the areas where the risks occur.

Risk control in the Eurex Clearing operational units is ensured by nominating "Operational Risk Representatives", who are responsible, as mentioned above, for identifying, notifying and controlling any risk in their area whereas ERM is responsible for the assessment and reporting of risks.

The risk management framework of Eurex Clearing, as stated in the Risk Management Policy, aims at ensuring that all threats, causes of loss and potential disruptions are properly identified as soon as possible, centrally recorded, assessed (that is, quantified in financial terms to the largest possible extent), reported in a timely manner and consistently, together with suitable recommendations to the respective Executive Management, and controlled.

These five key processes, as well as adequate quality standards, have been established in the Risk Management Policy and are reviewed on an ongoing basis.

Figure 3-1 Five-level risk management system with central and decentralised responsibilities

3.1.1 Risk identification

Risk identification consists in the identification of all threats to Eurex Clearing, as well as causes of loss and potential disruptions. Risks may arise as a result of internal activities or external factors and the risk examination must be performed with regard to existing or new processes, when concluding new business or entering new service areas.

The risk identification process is on the one hand proactive, based on regular review of processes in order to identify weak areas and points of failure (manual input required, process without double keying or four eyes controls in place, specific procedures subject to high volumes or tight deadlines etc.) or based on scenarios of disruption or failure taking into consideration all sources of issues (unavailability of systems, human error etc.). On the other hand, the risk identification process is also reactive, following an incident and, where appropriate, learning from this event.

Risk identification also involves a phase of quantification involving the definition of parameters that can be based either on statistical data, in the case of actual process monitoring, or on subjective expert appraisal when insufficient statistics are available.

All organisational units and individual employees must themselves identify and quantify potential risks in their area of responsibility.

3.1.3 Risk notification

Risk notification is the step in the risk management process that ensures that risks are centrally recorded.

All organisational units and individual employees must notify Enterprise Risk Management, in a timely manner, of the risks that they have identified and quantified.

3.1.4 Risk assessment

The assessment of an incident or a potential risk development aims at quantifying the risk in financial terms using the "Value-at-Risk" methodology and comparing the result with the available risk cover. It takes into account mitigation measures currently in place, such as business continuity measures, insurance policies etc. (see also 3.2 Risk management methodology and 3.3 Risk structuring).

A qualitative assessment may be used whenever it adds value or is deemed more adequate.

The risk assessment phase is carried out by Enterprise Risk Management based on data and information collected and produced either in a periodic or ad-hoc report by the relevant area or upon request of ERM.

Moreover, low frequency/ high impact risks are assessed by identifying scenarios of threats to which the enterprise is exposed. The evolution of their probability is monitored by using input from internal and external experts.

3.1.5 Risk control

Risk control involves determining and implementing the most appropriate treatment for the identified risk. It encompasses risk avoidance, risk reduction, risk transfer and intentional risk acceptance.

All organisational units and employees must perform risk control and implement mitigating actions according to the established escalation process.

3.1.6 Risk reporting

The relevant boards and committees are informed consistently and in a timely manner about material risks - whether existing or potential - and about the related risk control measures in order to take appropriate action. ERM respectively CCP Risk Management is in charge of providing this information to the relevant boards and committees (see also 3.5 Risk reporting and monitoring). Moreover, upon request of the relevant boards, ERM respectively CCP Risk Management will issue reports to external parties.

3.2 Risk management methodology

Eurex Clearing has installed a standardised approach for measuring and reporting all operational and financial business and project risk across its organisation: the concept of "Value-at-risk" (VaR). The purpose is to allow the overall risk appetite to be expressed in a comprehensive and easily understandable way and to facilitate the prioritisation of risk management actions.

The VaR quantifies the risks to which a company is exposed. It indicates the maximum cumulative loss that Eurex Clearing could face if certain independent loss events materialise over a specific time horizon for a given probability. Eurex Clearing's models are based, in line with the Basel III framework, on a one-year time horizon and correlations between indi-

vidual risk estimates are recognised when calculating the capital charge for operational risk.

The VaR is calculated at a confidence level of 99.98% (required Economic Capital). Eurex Clearing also performs VaR calculations in order to detect potential risk concentrations, as well as stress test calculations, which consider even more conservative model parameters than the regular VaR calculations.

In addition to classical stress tests, which analyse the impacts of predefined stress scenarios, Eurex Clearing calculates so-called reverse stress tests. With the help of this instrument, stress scenarios that would exceed the Available Risk Bearing Capacity are identified. The findings in the reverse stress tests can give rise to further analyses and implementations of measures to reduce risks.

In the example in the following figure, there is a 99.0% probability that the cumulative loss within the next year will be below EUR 2.5 million and, conversely, that there is consequently a 1% probability of a loss incurred through one or more incidents within the next year that, in total, will be equal to or greater than the VaR calculated.

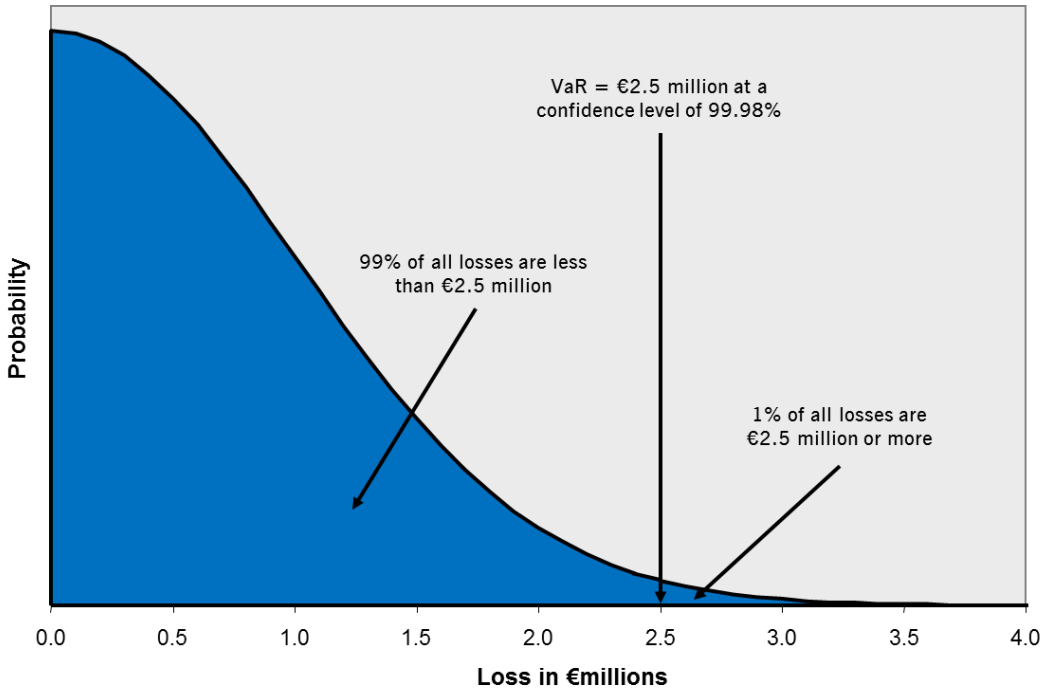


Figure 3-2 Example of VaR allocation

The calculation of the VaR is a three-step process:

1. Determination of the loss distributions for every single risk: This is performed for each risk on the basis of historical data (such as market data, default, claim or outage history) or risk scenarios. This distribution may be, for example, a Log-Normal distribution (often used for operational risk of processing errors) or a Bernoulli distribution (used, for example, for credit risk where a counterparty either defaults or fulfils).
2. Simulation of losses using the Monte Carlo method: A Monte Carlo simulation is used to run multiple trials of all random loss distributions at the same time in order to achieve a stable VaR calculation. This produces a spread of possible total losses.
3. Calculation of VaR on the basis of the Monte Carlo simulation: The losses calculated by the Monte Carlo simulation are arranged in descending order of size and the corresponding losses are determined for the specified confidence levels.

3.3 Risk structuring

ECAG defines risk as a potential negative impact on its financial, revenue and liquidity situation. ECAG differentiates between four major risk types that are managed and controlled with distinct methods. These risk types are operational risk, financial risk, business risk and project risk which are illustrated in the following figure:

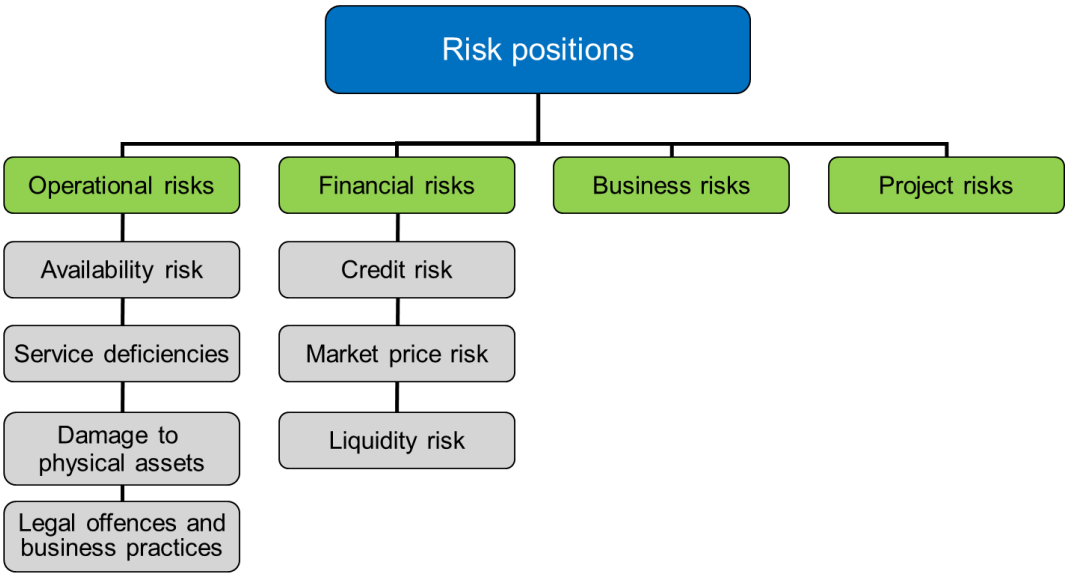


Figure 3-3 Risk structure of Eurex Clearing

Operational risk is defined as the risk of loss resulting from inadequate or defective systems and internal processes, from human or technical failure, from inadequate or defective external processes, from damage to physical assets and from legal risks that could arise from non- or inappropriate compliance with new or existing laws and regulations and all contractual commitments. Operational risks for Eurex Clearing relate to system availability, processing, legal disputes and business practice. The risk inventory is based on operational risk scenarios and internal loss data.

Financial risk includes credit risk, which describes the danger that a counterparty or contract partner might not meet its contractual obligations, market risk, that can arise in the

case of market, interest rate or currency fluctuations, as well as liquidity risk, which applies if Eurex Clearing is unable to meet any payment obligation or due to increased refinancing costs:

- Credit risk can arise from participation in clearing fund after clearing member default and margin collateral usage, collateralized and uncollateralized cash investments, liabilities, and fund assets for pension plans. The risk inventory is based on exposure data for these risk drivers.
- Market risk can arise from investment in securities and assets covering pension obligations. The risk inventory is based on exposure data.
- Liquidity risk can arise in case of customer default, payment obligations or repayment of customer deposits. Liquidity risks are not included into the aggregate risk. They are instead controlled by a limit system as defined in the Eurex Clearing Treasury Policy.

Business risk reflects sensitivity to macroeconomic evolution and vulnerability to event risk arising from external threats, such as regulatory adjustments or changes in the competitive environment, or internal weaknesses.

Project risk arises from the change of the current risk profile once a project goes live in the future. Indeed the launch of a new product, process or system may have a significant impact on one of the above mentioned risk categories. Therefore, project risks figures are included in operational, financial and business risks, which is why they are quantified within these risk types.

The following sections 4 to 7 describe the operational risk and financial risks in more detail.

3.4 Risk mitigation

It is Eurex Clearing's intention to confine risk to an appropriate and acceptable level. Depending on the risk characteristics, there are basically four types of management strategy further elaborated at the level of the single risk type:

- Risk acceptance: a deliberate decision to take risks and monitor their development;
- Risk reduction or elimination: measures to reduce either the severity or the frequency of losses;
- Risk transfer: contracts to give risks to the market;
- Risk avoidance: changes to the businesses that anticipate and prevent built-in risks.

The latter three management strategies are risk mitigating. Within Eurex Clearing, several mechanisms are used to reduce both the frequency and impact of incidents according to the type of risk.

3.5 Risk reporting and monitoring

Monitoring and reporting are essential parts of Eurex Clearing's risk management, designed to give Executive Management and the Supervisory Board timely, consistent and accurate information about the material risks that Eurex Clearing may encounter or have encountered.

All relevant data and information is collected, assessed and prepared by CCP Risk Management, who assemble the relevant information and prepare the regular management re-

ports according to the principles set down in this document (see also 3.1 Strategy and organisation).

3.5.1 Regular reports

Risk reports are issued to the Executive Management, Supervisory Board and Risk Committee of Eurex Clearing on a regular basis. These reports provide the status of a new risk situation and/or updates on existing risk developments covering causes, potential early mitigation measures, assessment and recommendations.

3.5.2 Ad-hoc reports

Enterprise Risk Management may issue ad-hoc reports when a new risk situation or the development of an existing risk should be reported to the Executive Management of Eurex Clearing, because of the material impact it has on the risk profile of the relevant units.

3.5.3 Monitoring

Internal Audit ensures, through independent audits, that the adequacy of the risk control and risk management functions is monitored. The results of these audits are also fed into the risk management system.

4. Management of operational risk

4.1 Strategy, process, structure and organisation

Eurex Clearing defines operational risks as the risk of losses that can be attributed to inadequate or non-functional systems or internal processes, human or technical errors and external events. The following risk groups are distinguished here:

- Availability (technical infrastructure, facilities, staff);
- Service deficiency (errors & omissions, supplier deficiencies, product flaws);
- Damage to physical assets (terror/sabotage, natural hazards);
- Legal offences and business practice (non-respect of laws & legal practice, contract, corporate governance).

Operational risk represents a major risk class for Eurex Clearing and one that is systematically managed and controlled. Eurex Clearing established a comprehensive framework and set of instruments meeting the requirements from both a regulatory and a business perspective.

Special consideration is given in the risk management activities to the risk of failure of the clearing systems and processes. Enterprise Risk Management regularly orders and performs Business Continuity Management tests. These tests draw a distinction between three different scenarios: staff and workspace unavailability, system unavailability and supplier unavailability. The tests relating to staff and workspace unavailability are ordered by Enterprise Risk Management without prior notice. The tests relating to system unavailability must be performed once a year. The tests relating to supplier unavailability are conducted by the organisational or business unit. The corresponding system failure tests were last carried out in March 2016.

Eurex Clearing's risk strategy, as described in 3.1 Strategy and organisation, also applies to the management of operational risk. In this risk strategy also, the risk capital dedicated to cover losses resulting from operational risk is defined, setting a limit for this risk type.

Operational risk can be differentiated according to the severity and frequency of losses. As operational risk management depends on the risk position of Eurex Clearing, the general principles are as follows:

- All main risks are identified and continuously analysed with regard to the expected or real effect on frequency and severity.
- For risks with low frequency but high severity, risk transfers are considered, for example, through insurance contracts.
- For risks with high frequency but low severity, risk reduction is considered, for example, by optimising processes.

The ultimate responsibility for operational risk management lies with the members of Executive Management of Eurex Clearing, who are supported by different units and functions. Eurex Clearing has established a segregation of duties into the predominately central operational risk management, the mostly local operational risk control and an independent review function.

The five steps of the risk management process are required to be taken into account.

It is the responsibility of line management to control operational risk within their area on a day-to-day basis. This includes the identification of suitable measures to mitigate opera-

tional risk and to improve the effectiveness and efficiency of the operational risk management. To achieve this target Executive Management appoints "Operational Risk Representatives" for their respective area with a direct reporting line to the respective member of the Executive Management.

The Operational Risk Representative is the key contact for both the employees in the respective organisational unit as well as for Enterprise Risk Management. They also support the Executive Management with all tasks regarding operational risk and are especially responsible for the collection of operational risk event data within their organisational unit. In addition to this, the Operational Risk Representatives take an active role in further developing operational risk tools and instruments. They also coordinate operational risk training for their respective organisational unit.

It is the responsibility of any single employee to support ERM, line management and the Operational Risk Representative of their organisational unit regarding any operational risk matters. Every employee is especially required to participate in the collection of operational risk event data. In addition, individual employees may be asked by line management, their Operational Risk Representative or ERM to take an active role also in the operational risk management process, for example, as experts within scenario analysis.

4.2 Determination of Pillar II capital requirement

Operational risks should be identified and assessed annually in workshops between ERM and Operational Risk (OpRisk) Representatives. To this end, the staff estimates the probability and the degree of financial loss arising from operational risks (loss scenarios). This assessment incorporates various types of information such as the number of claims for damages asserted by customers against Eurex Clearing, the share of transactions processed fully automatically (straight-through processing), faults and interruptions in the system infrastructure as well as audit results from Internal Audit.

In order to avoid operational risks from starting activities in new products or on new markets, Eurex Clearing has implemented a new product process, which aims to ensure that all of the affected units of Eurex Clearing are included at an early stage in the preparation and development process. Eurex Clearing's new product related risk management process is regulated in the "Project Risk Analysis Procedure". Furthermore, Eurex Clearing set up a New Product Committee consisting of representatives of the risk-relevant departments, the task of which is to coordinate between the affected departments when new products are launched.

ERM uses a Monte Carlo simulation to determine the loss distribution for operational risks from which the VaR parameters are derived for internal risk management in the Available Risk Bearing Capacity concept.

The risk scenarios defined in the workshops are the key benchmarks for the VaR amounts for operational risks in the calculation of Available Risk Bearing Capacity. A validation of the scenarios is planned at least once a year.

Eurex Clearing conducted an annual validation of the operational risk scenarios between June and September 2015. In connection with the annual validation of the underlying scenarios for the VaR calculations, Eurex Clearing performs stress tests in which the loss resulting from the following three risk scenarios is compared with the risk capital allocated to the operational risks.

When assessing non-extreme risk scenarios, no fat tails are modelled in the distribution function so that probability decreases with an increasing loss.

ERM uses a Monte Carlo simulation to determine the loss distribution for operational risks

from which the VaR parameters are derived for internal risk management in the liquidation concept. VaR is used to determine the required Economic Capital that is compared with Eurex Clearing's Available Risk Bearing Capacity as defined in Eurex Clearing's risk strategy.

4.2.1 Operational Risk Model

Aggregate Loss Distribution

The overall objective of the operational risk model is to simulate a loss distribution for a given time frame, which is one year (for regulatory purposes referred to as holding period in regulatory terminology). In theory this distribution could be determined directly based on the data. For such a model one would either need hundreds of years of loss history or scenarios that cover aggregate annual losses rather than single events. Since both are not available, an actuarial technique is applied modelling the likelihood of the occurrence of an event (i.e. the frequency) independently from the impact of such an event (i.e. the severity). Combining these two distributions in a Monte Carlo simulation gives the required aggregate loss distribution. From the aggregate loss distribution the required risk figures are derived:

- Expected Loss: The expected loss is generally defined as the actual monthly statistical mean of the aggregated loss distribution (it indicates which annual loss has to face on average over a long period of time).
- Value-at-Risk: The Value-at-Risk (VaR) is defined as the amount that is not exceeded in q% cases of all years. For internal purposes the 99.98% as well as the 99% percentile are calculated.
- Any other percentile can also be derived from the aggregate loss distribution.
- Unexpected Loss: The unexpected loss is generally defined as the difference between the 99.9%-VaR and the expected loss.
- Expected-Shortfall to the q-Percentile: Defined as the statistical mean of the loss distribution above the q-Percentile. It is used as a proxy for the loss amount the specific unit/ entity could face if the q-Percentile is exceeded.

Frequency Distribution

Due to the discrete nature of the occurrence of loss events, the frequency is modelled using a discrete probability distribution. In loss distribution approach models (LDA) typically three different distributions are taken into account to model the frequency: the Poisson distribution, the negative binomial distribution, and the binomial distribution. The last two distributions each have two parameters that need to be determined. One major difference to the Poisson distribution is that the variance compared to the mean is larger or smaller, respectively.

The Poisson distribution is usually applied in order to model a time series of rare and independent events. Both conditions are reasonable to assume with respect to operational risk. Due to the nature of the loss data collection process and the scenario analysis, losses caused by the same event are accumulated and modelled as one loss. Hence, each event occurs independently from the other events. The number of OpRisk events is very small compared to the time interval under consideration. I.e. the inter arrival time of events is typically very large. Hence, even for high-frequency areas the assumption of a Poisson distribution appears to be justified.

The Poisson distribution has only one parameter λ, which is equal to the mean and the variance of the distribution. One of the biggest advantages of the Poisson distribution is its simplicity: if one data set is Poisson distributed with parameter λ_1 and another one, independent from the first one, is Poisson distributed with λ_2 then the combined data set is as well

Poisson distributed with the parameter $\lambda_{total} = \lambda_1 + \lambda_2$. Depending on data availability one data set could be modelled based on loss data and one based on scenarios and the combination of both data sets could easily be carried out on parameter level.

Since the history of relevant internal loss data will always be very short, application of statistical tests alone does not allow deciding which distribution is the most appropriate one for modelling the frequency. Therefore Q-Q plots should be applied to support the decision on the choice of the distribution. Nevertheless, it can be shown that the choice of the correct frequency distribution is of less importance for the operational risk capital as the choice of the severity distribution. Therefore, in line with many other banks and insurance companies Eurex Clearing decided to apply the Poisson distribution to model the frequency of loss events in order to reduce the complexity of the model as much as possible. The choice does also reduce the requirements on the scenario analysis since the experts only need to estimate the average number of events in a given timeframe. An estimation of the variance of the frequency is not feasible and would introduce an additional level of uncertainty to the model.

Severity Distribution

The impact of an event, i.e. the accumulated loss amount, can assume any value larger than zero and hence need to be modelled with a different approach compared to the frequency. Operational risk losses are usually modelled using a non-symmetric right skewed distribution. Characteristic for operational risk is that the capital requirements are mainly driven by individual high losses. The severity distributions describing the size of the losses are an important part of the OpRisk capital model.

However, modelling the severity is very cumbersome. The main reason is the lack of information about large events. Even with a long and large data history (internal or external loss data), or a sound scenario analysis process, it is always necessary to extrapolate beyond the highest relevant data point. The technique chosen by Eurex Clearing in line with best practice is to fit a parametric distribution to the losses or the scenarios, respectively, and to assume that the parameters also provide a realistic model for potential events beyond the current experience.

As pointed out above operational risk losses are sampled from a population with a heavy tail. Typical – best practice – distributions to model such a population are Log-Normal, Log-Gamma, Weibull, Gamma, Pareto, and Generalized Pareto. The decision, which distribution should be applied can be made based on results of the fitting results and goodness-of-fit tests.

However, statistical tests show in many cases that different distribution families provide acceptable fits to the same data set. Hence, it is required to take other arguments into consideration for choosing the severity model. One important argument for the selection process is stability. While a capital model for risk measurement and management has to be sensitive to changes of the risk profile it is not acceptable to have large swings in the capital estimate from one calculation cycle to the next. For planning and performance measurement purposes, a stable figure is required that changes only slowly due to the real changes of the risk profile. In addition, it is favourable - similar to the estimation of the frequency distribution - to apply a model with a high degree of simplicity. Due to the lack of operational risk information, a complex model would introduce a higher level of uncertainty. Based on these considerations a distribution with two parameters and less heavy tail would be preferred over more complex and heavy tailed distributions.

The overall severity distribution is determined by two types of losses: the high-frequency low-impact losses (HF-LI) that can be represented by internal loss data, and the low-frequency high-impact (LF-HI) losses that are very rare and hardly found in the internal loss

database. The development of these two types of events is usually very different. HF-LI are very process dependent and occur regularly with different outcomes (i.e. losses) each time. LF-HI events usually occur only once due to a severe malfunction of the control or business continuity system. It is not feasible to model both severity ranges with a single distribution. Therefore these two types of events are modelled separately as body (HF-LI) and tail (LF-HI) of the severity distribution.

Modelling Structure

The data is modelled in the following structure:

- Frequency distribution: modelled for each 'cell' individually. Depending on availability of internal data the frequency can be estimated from the historic losses. Otherwise it's based on the results of the scenario analysis or a combination of both, historic losses and the results of the scenario analysis. For a sound estimation of a Poisson frequency, a history of relevant data of at least 12 quarters is required;
- Body severity distribution: modelled for each 'cell' individually. Depending on availability of internal data the body severity is estimated from the historic losses. Otherwise a stochastic model is applied to the results of the scenario analysis. A combination of the usage of both, historic losses and scenario data, is also possible. The stability of the estimation depends significantly on the number of data points. Therefore, it needs to be decided for each 'cell' individually, whether a loss data model, a scenario model or a combined model should be applied;
- Tail severity distribution: The tail is modelled on extreme scenarios as a result of the structured scenario analysis;
- Catenation point x_c: the body and the tail distributions are combined at a catenation point, which is determined by the body distribution for each 'cell'. Therefore, each 'cell' is individually modelled with a combined severity distribution.

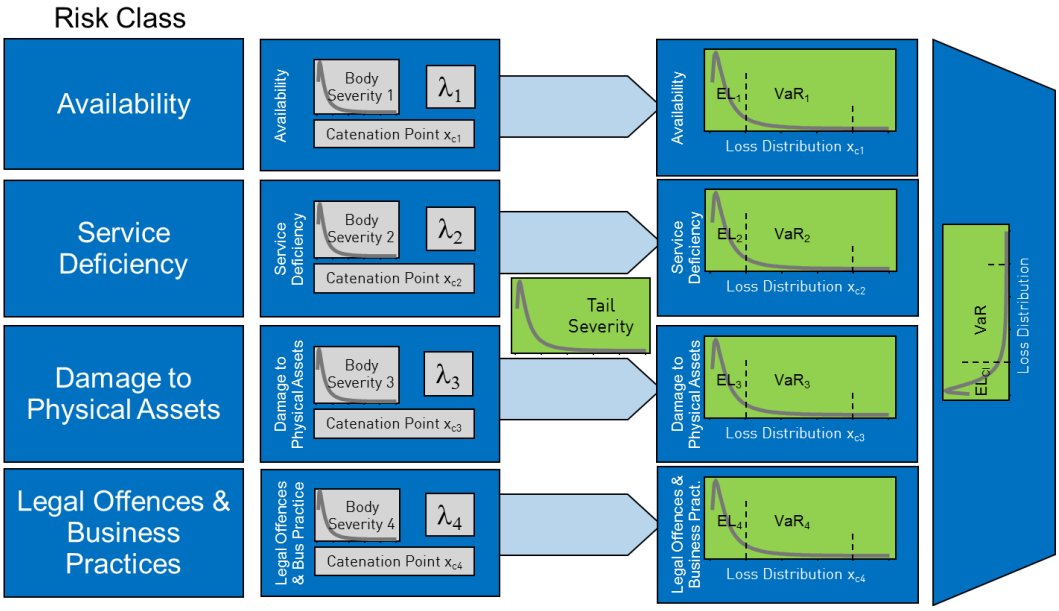


Figure 4-1 Overview of model structure

Figure 4-1 illustrates the model structure as an example. The body severity distribution, the frequency distribution, and the catenation point are determined per risk class ('cell') and

combined with tail severity distribution. An aggregate loss distribution is calculated for each risk class ('cell') and the company.

4.2.2 Parameter estimation

Frequency Distribution

The frequency estimation is either based on internal loss data (if availability to a sufficient degree) or the average number of events per year is estimated as part of the scenario analysis. The frequency model covers the entire severity range and does not differentiate between the body and the tail of the severity.

As outlined above the frequency is modelled using a Poisson distribution with the parameter l. The probability mass function of the Poisson distribution is given by

$$p_k = \frac{e^{-\lambda}\lambda^k}{k!}$$

with Mean = Variance = l

The parameter l is estimated based on a one year time horizon compliant with the regulatory requirement to cover a one-year holding period.

Estimation of l based on scenarios

If the availability of relevant loss data prevents the estimation of the frequency parameter, it needs to be carried out based on scenario analysis.

As part of the scenario analysis the frequency of all events of the examined risk class of an entity modelled in a 'cell' is evaluated as a separate item. Based on the sum of the relative likelihoods of each individual scenario, experts use it as an indicator for the total annual frequency. They provide an independent estimation of the number of events per year. This estimate is set equal to the parameter l of the frequency distribution for that 'cell'.

Severity Distribution

Since internal loss data will never be sufficient to model extreme operational risk events, the tail of the severity distribution is modelled on the basis of scenario data only. For the tail, scenarios for all risk classes with a probability of one or less in twenty years are used and combined in one dataset. The tail distribution is modelled using all relevant data.

The parameters of the fitted distribution are obtained according to the above-described fitting process for the scenarios. Since only scenarios describing very rare events are taken into account for the tail model, it is offset by the lowest bound of the scenarios: hence, the implementation of a truncation on the lower end of the distribution. The relevant appropriate distributions are heavy tailed distributions (Generalised Pareto, Log-Gamma, Weibull etc.).

The body severity and tail severity distributions are taken together to form the combined severity distribution for a risk class. For modelling the body distribution, all scenarios or loss data are taken into account in order to use as much loss information as possible.

However, the fit is focused on the bulk part of the distribution and the part of severe losses is usually underestimated. Therefore, this part of the body distribution is not used for the capital calculation and is substituted by the tail severity distribution.

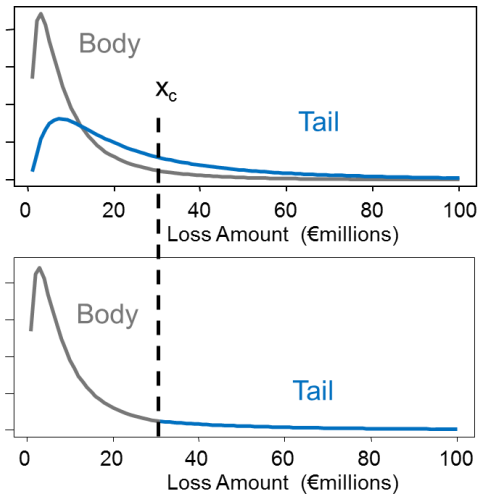


Figure 4-2 Example for substitution of the body distribution by the tail severity distribution

4.2.3 Insurance modelling

Eurex Clearing has insurance cover for different operational risks through multiple insurance policies and this is considered when calculating operational risk capital requirements.

The relevant insurance policies are analysed with respect to the terms and conditions, inclusions, exclusions and clauses. Following this analysis, the insurance policies are mapped to the specific risk classes and a coverage ratio is estimated taking into consideration the possibility of uncovered losses. The objective is to evaluate the likelihood of the losses or scenarios within a risk class being covered by the insurance policies.

In order to adequately reflect the insurance programme, with respect to limits purchased and deductibles carried as well as aggregate and stop loss conditions, Eurex Clearing has implemented a modelling structure that enables the assessment of the likelihood of insurance payment for "each and every loss", that is, per individual simulated loss.

The insurance coverage calculation uses the obtained coverage ratios. The individual losses per risk class generated in the Monte Carlo simulation are transferred into the insurance model and a Bernoulli trial is used to perform a random check to see whether the loss amount is covered.

4.2.4 Monte Carlo simulation

The distributions discussed so far (that is the annual frequency and combined severity distributions) must be convoluted in order to derive the aggregate loss distribution for a risk class and, based on that, the total loss distribution for operational risk. Eurex Clearing implemented a Monte Carlo simulation, which enables the numerical determination of the loss distribution with high precision.

A single Monte Carlo simulation cycle is carried out in three steps:

- Generate a random number for the number of events for the body with lB and the respective loss amounts from the body severity distribution that is capped at xc;
- Generate a random number for the number of events for the tail with lT and the respective loss amounts from the tail severity distribution truncated from above at xc;
- Sum all loss amounts in order to calculate the total loss amount of one year.

Repeating the Monte Carlo cycles many times gives a loss distribution for a risk class with the required accuracy.

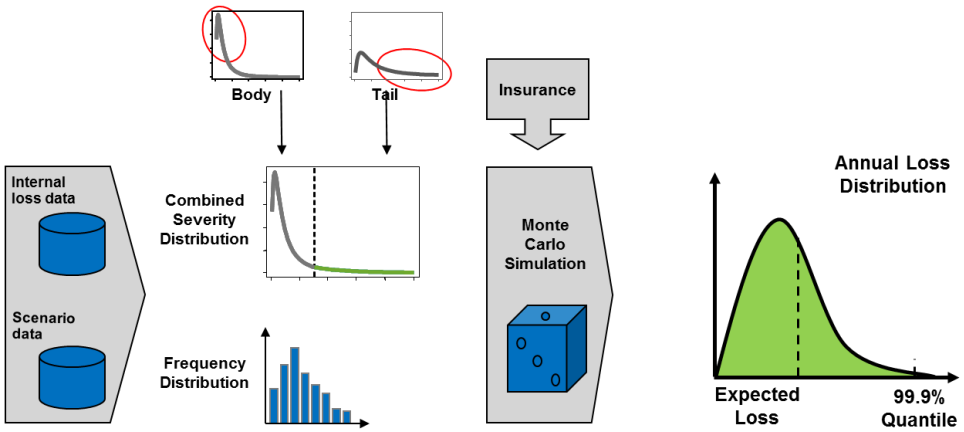


Figure 4-3 Steps of single Monte Carlo simulation

4.2.5 Stress testing of operational risks

In order to achieve a better understanding of the largest risks and to adequately model capital requirements, Enterprise Risk Management runs - once the capital figures are worked out and calculated - an ex post stress test. Aim of the stress testing is to gauge the capital potential vulnerability to exceptional but plausible events. The stress test process is defined as follows:

- All scenarios agreed during the scenario analysis are in general considered when performing the stress test. When a stress test is not passed, it is repeated while excluding the scenario which caused the breach. However, unrealistic scenarios with a frequency rarer than one loss in 1,000 years have to be neglected if they are no artificial spin-off scenarios.
- The risk scenario with the biggest maximum loss is benchmarked with the Available Risk Bearing Capacity (RBC) for operational risk as defined in Eurex Clearing's risk strategy. The allocation of the RBC to each risk category is conducted in order to reflect the specific risk profiles and is based on historic data of each risk category.
- A combined occurrence of several risk scenarios within one particular year is considered. In principle any combination of existing risk scenarios is possible. However, the focus is on plausible events, considering the respective frequency of occurrence per risk scenario. The approach is to combine the two extreme scenarios with the biggest maximum loss and a frequency not lower than one loss in 100 years. In order not focus only on extreme scenarios, also the combination of non-extreme scenarios (scenario that are only used when modelling the body distribution, but not considered when modelling the tail) is assessed. In this respect three non-extreme risk scenarios with the biggest maximum loss are combined, and the total loss amount is benchmarked with the RBC for operational risk.

This stress test is carried out when validating the outcome of the scenario analysis review and documented in a separate document called "OpRisk Scenario Analysis, Model Results and Validation". In case the specific stress tests defined above exceed the Available Risk Bearing Capacity for operational risk the Executive Board is informed. In addition to the stress test defined above Risk Management might test other combinations of scenarios in order to acquaint a better understanding the appropriateness of the calculated capital re-

quirements.

In addition, ad-hoc stress test is performed, if the outcome of the regular or the ad-hoc scenario analysis changes the OpRisk stress test according to the above explained methodology. Theses changes comprise of altering a scenario already included in OpRisk stress test or a changed composition of the stress test, i.e. including a new scenario and excluding one scenario.

In addition, a reverse stress test for operational risk is performed. It assumes that several operational risk scenarios (frequency not rarer than one loss in 1,000 years) materialize. As many operational risk scenarios as needed are chosen so that the losses would exceed the total RBC. Scenarios that already exceeded the RBC in the first stress test are not considered.

4.3 Operational risk mitigation

As laid out in its risk strategy, Eurex Clearing gives considerable attention to its risk mitigation process. The aim is to reduce the frequency and the severity of potential operational risk events. The process comprises several quality and control initiatives whose objective is to ensure that Eurex Clearing's operations have sufficient controls to prevent any fraud or operational service deficiency. If an event of this kind occurs in Eurex Clearing's operations, a thorough analysis is performed in order to be in the position to define measures to reduce the probability of recurrence.

The key preventive measures of risk mitigation consist of strong internal control processes and ongoing initiatives to further reduce errors and omissions. This is supported by a number of measures that will take effect at the time or after an incident, such as Business Continuity Management (BCM) and insurance programs.

4.3.1 Internal Control System

The Executive Management of Eurex Clearing has implemented an internal control system, designed to ensure the effectiveness and profitability of the business operations, prevent or detect financial loss and thus protect all its business assets. Eurex Clearing's internal control system, an integral part of the risk management system, continuously developed and adjusted to reflect changing conditions, comprises both integrated and independent control and safety measures.

Internal Auditing carries out risk-oriented and process-independent controls to assess the effectiveness and appropriateness of the internal control system.

4.3.2 Business Continuity Management

Because the unavailability of core processes and resources represents a substantial risk for Eurex Clearing, and a potential systemic risk to the markets as a whole, Eurex Clearing has implemented a comprehensive Business Continuity Management (BCM) approach as a key mitigator of availability risk.

BCM organisation at Eurex Clearing

The Executive Management is responsible for ensuring the continuity of business at Eurex Clearing. Business continuity plans are developed by the organizational units, who are responsible for the continuity and operational resilience of their respective business activities. CCP Risk Management is responsible for the overall coordination and monitoring of Eurex Clearing's preparedness to deal with incidents and crises.

The organisational roles and responsibilities, and the guiding principles to ensure operational resilience, are documented in a formal BCM policy.

BCM arrangements

The implemented BCM arrangements aim to minimise the impact of the unavailability of key resources, addressing not only the unavailability of systems, workspace and suppliers, but also the loss of significant numbers of staff in order to ensure the continuity of the most critical operations even in cases of catastrophe.

Systems unavailability

Data centres in the main operating locations are distributed to form active centres, acting as backups of each other. Data is mirrored in real time across the data centres. The infrastructure is designed to ensure the online availability and integrity of all transactions at the time of a disruption.

Workspace unavailability

Exclusively dedicated work facilities provide backup office space for mission critical staff in the event that an office location becomes unavailable. These backup facilities are fully equipped and networked to the distributed data centres and are operational at all times. In addition, business transfer plans between Eurex Clearing's different operations locations can be used to mitigate workspace unavailability.

Staff unavailability

Business continuity measures address the loss of significant numbers of staff, covering catastrophe scenarios and potential pandemics. Solutions are designed to ensure that the minimum staff and skills required are available outside the impacted location. Staff dispersal and business transfer plans between Eurex Clearing's different operations locations are employed such that, if one of these locations is impacted, mission critical activities can be continued by staff in other locations.

Supplier unavailability

Eurex Clearing assures itself of the continuous provision of critical supplier services by a number of means, such as regular due diligence review of suppliers' BCM arrangements, provision of services by alternative suppliers if possible and service level agreements, describing the minimum service levels expected from suppliers, and contingency procedure requirements.

Incident and crisis management process

Eurex Clearing has implemented a incident and crisis management process that facilitates coordinated response and rapid reaction to an incident or crisis in a controlled and effective manner. The process aims to minimise business and market impact, as well as enable the speedy return to regular business activity.

Incident Managers have been appointed in their respective business areas in case of incidents and crises. They will also ensure the appropriate escalation up to the Executive Management and notification to customers.

"Real-life" simulation testing

Eurex Clearing adopts a comprehensive and ambitious business continuity testing approach that simulates scenarios as close as possible to real-life situations while reducing associated risks and avoiding customer impacts. BCM plans are tested on a regular basis, at least annually and mostly unannounced.

Three criteria are applied to validate the BCM test results:

- Functional effectiveness: validating all technical functionalities.
- Execution ability: ensuring that members of staff are familiar with and knowledgeable in the execution of BCM procedures.
- Recovery time: confirming that BCM plans can be executed within a defined recovery time objective.

Findings are reported to Executive Management. Customers are regularly invited to participate in Eurex Clearing's BCM tests to validate their own BCM arrangements.

4.3.3 Insurance

An additional tool used by Eurex Clearing to mitigate the impact of operational risk is the transfer of risks above a certain threshold to third parties through a comprehensive insurance programme.

In order to achieve the optimum risk/benefit versus premium ratio, insurance policies are negotiated either through highly reputable brokers or directly with prime rated insurers to purchase tailor-made policies reflecting the specificities of our business.

Each major insurance cover is reviewed annually following the evolution of Eurex Clearing's operational risk profile. This review involves all relevant parties and is coordinated by Enterprise Risk Management.

4.4 Monitoring and reporting

The reporting approach laid out in 3.1.6 Risk reporting and 3.5 Risk reporting and monitoring also applies to the management of operational risk. A supplementary risk report is also produced annually with the aim of providing the management with additional background information pertaining to Eurex Clearing's risk management.

This report includes additional summary statistics and trend analyses of operational risk events, but also a summary of major changes to the operational risk model, concept and methodology, and quality improvements in operational risk management.

4.5 Determination of Pillar I capital requirement

In order to determine the capital requirement for operational risk under Pillar I the Basic Indicator Approach based on the gross revenues is applied.

5. Management of credit risk

5.1 Strategy, process, structure and organisation

Eurex Clearing's general risk management structure, organisation and process, as well as the risk strategy, is specified in Chapter 3. Risk Management overview. The present status and the business direction for credit risk are stated in the risk strategy. The Executive Management periodically examines and adjusts the risk strategy as necessary. The risk strategy is set in accordance with the Risk Management Policy and is reported annually to the Supervisory Board.

The Credit section is responsible for controlling the credit risk of Eurex Clearing. It assesses the creditworthiness of potential new counterparts and the creditworthiness of issuers of collateral accepted by ECAG. Beside this the Credit section reviews the creditworthiness of existing counterparts and approvals Treasury counterparts credit limits.

Eurex Clearing takes into account its overall credit risk exposures to individual counterparty from different types of relationships the counterparty may have with Eurex Clearing:

- Credit risk related to pure CCP business;
- Credit risk related to other business activities of Eurex Clearing.

5.1.1 Credit risk related to pure CCP business

Within the pure CCP business, Eurex Clearing acts from a legal perspective as a principle. However, economically Eurex Clearing as a CCP is not involved in the transactions and the transaction related risks. As such, the CCP positions are not recognised in the balance sheet and do not form part of the risk positions under CRR Pillar I. Also any securities collateral is not taken into account for the Pillar I purposes of CRR. In contrast, cash collateral taken and placed in the markets results in on-balance sheet items and is therefore included for Pillar I purposes. The related positions from cash margins and their investments are not considered in this caption but are in scope of the risks form other business activities. Having said this, there is remaining credit risk from the CCP business which is not captured with the current CRR Pillar I approach and is therefore dealt with under Pillar II as described below.

For the credit risk arising from its CCP activities, Eurex Clearing mitigates the risk by margining. Margining encompasses the entire process of measuring, calculating of a clearing member's risk exposure. The provision of collateral is intended to ensure that all financial commitments related to the open positions of a clearing member can be offset within a very short period of time.

Throughout this process, intraday all positions are mark-to-market on a near to real-time basis. The profits and losses are calculated due to changes in market prices or positions and result in margin credits and margin debits. Besides this backward looking component Eurex Clearing estimates potential future price risks which must be covered with sufficient and eligible collateral so that no shortfall arises. The calculation of this future risk exposure assumes worst case price changes within the assumed liquidation period on a given confidence level.

Moreover, Eurex Clearing has established prudent clearing membership requirements and admission criteria which needs to be met prior to admission of a clearing member and which will be monitored on a regular basis by performing internal credit risk assessments of all clearing members.

If a participant defaults and if its collateral (margin collateral and clearing fund collateral) is not sufficient to cover all of its obligations, Eurex Clearing maintains sufficient financial resources to enable Eurex Clearing to cover losses resulting from defaults by applying the following default risk protection mechanism:

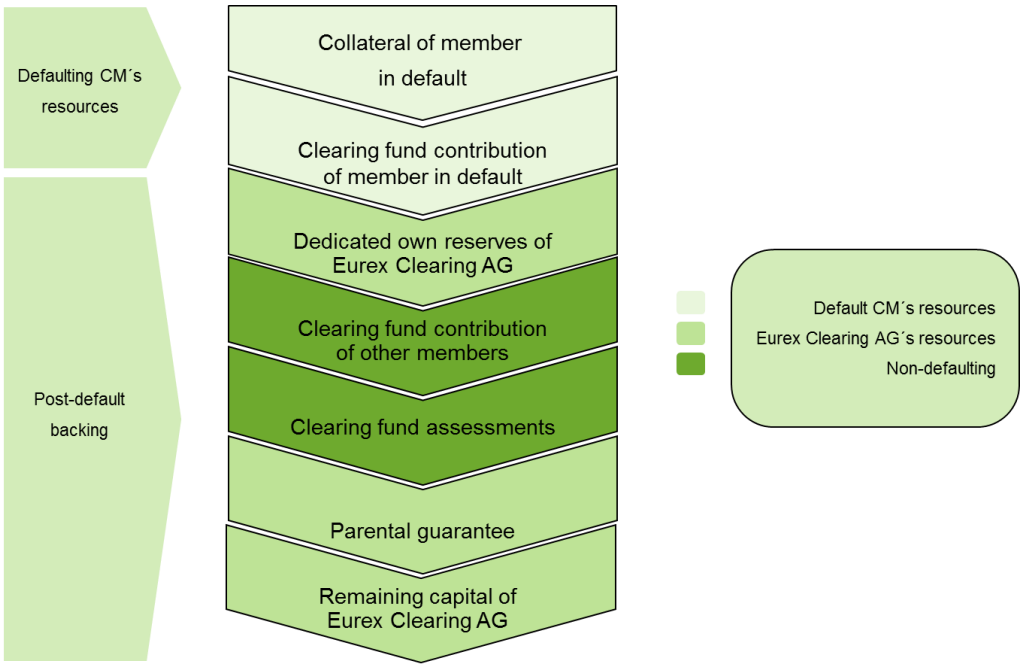


Figure 5-1 Default risk protection mechanism

5.1.2 Credit risk related to other business activities of Eurex Clearing

For the credit risk arising from other business activities, Eurex Clearing defines limits per counterparty based on different exposure types, such as notional amounts, secured exposures and unsecured exposures. These credit risk exposures can exist against individual counterparties from different types of relationships the counterparties may have with Eurex Clearing:

- Part of payment infrastructure: late margin call payments, variation payments and option premium payments in non-EUR and non-CHF are facilitated by payment banks and nostro agents (cash balances);
- Part of settlement infrastructure;
- Part of Treasury activities, such as investments, repos and derivatives.

The monitoring of credit risk is performed by the Credit section. The Credit section as an independent function is responsible for issuing monthly credit reports to the Executive Management and to Enterprise Risk Management. The monitoring of the treasury limits is performed by Treasury Middle Office that is responsible for issuing monthly financial investment reports to the Executive Management and to ERM.

5.2 Credit risk exposures under Pillar I

5.2.1 Application of the standardised approach

As described in 5.1 Strategy, process, structure and organisation the credit risk under Pillar I does not include the pure CCP business of Eurex Clearing.

For the purpose of Pillar I credit risk capital charges, Eurex Clearing uses for the central governments and central banks exposure class the credit assessments by OECD[31]. In addition, Eurex Clearing nominated the External Credit Assessment Institution (ECAI) Standard & Poor's for the same exposure class as OECD ceased to assess so-called "high income countries" in 2013. For regional governments or local authorities, public sector entities and institutions (credit institutions, investment firms and other dedicated financial counterparties) exposure classes, the dedicated risk weight is derived from that of the respective country of residence. The use of these credit assessments by OECD and Standard & Poor's ratings has been notified to the German supervisors.

The exposures of Eurex Clearing belong mainly to the exposure classes of central governments and central banks and to institutions. As per year end 2015 (and also year end 2014) all exposures to central governments and central banks are risk-weighted by 0%. The exposures to institutions have only a short maturity of less than or equal to three months, thus, pursuant to Article 120 paragraph 2 CRR the risk weight is 20%.

All other exposures in the different exposure classes mostly achieve the prescribed risk weighting of an unrated position ("unrated" implies that no ECAI was nominated).

Eurex Clearing complies with the risk weighting as defined in Section 2 of Chapter 2 of Part Three, Title II of the CRR.

The following table shows the respective total credit risk exposure values in the standardised approach, before and after applying credit risk mitigation techniques, that have been allocated to each exposure class, as well as credit quality step prescribed in Chapter 2 of Part Three, Title II of the CRR.

31 December 2015 (€' 000)			
Exposure class	**Risk weight class**	**Exposure value**	**Exposure value after CRM* and Credit Conversion Factor (CCF)**
Central governments and central banks	0%	25,857,085	25,857,085
	Total	25,857,085	25,857,085
Institutions (banks)	20%	928,800	928,800
	Total	928,800	928,800
Corporates	100%	7,005	5,005
	Total	7,005	5,005
Other (including equity holding)	100%	22,070	22,070
	250%	75	75
	Total	22,145	22,145
Total 2015		**26,815,035**	**26,813,035**
Total 2014		**22,408,879**	**14,271,097**

* CRM (Credit Risk Mitigation techniques) is described in detail in 5.3 Credit risk mitigation.

Table 5-1 Total credit risk exposure values

[31] Country Risk Classification: http://www.oecd.org/tad/xcred/crc.htm.

5.2.2 Detailed information and distribution of credit risk exposures

Value adjustments and provisions

The geographical allocation of credit risk exposures is as follows:

31 December 2015 (€'000)	Geographical areas				
Exposure class	European Union	Rest of Europe	North America	Rest of World	Total
Central governments and central banks	14,380,343	11,471,715	0	0	25,852,058
Regional governments, local authorities and other public bodies	5,027	0	0	0	5,027
Institutions (banks)	115,446	5,917	807,397	40	928,800
Corporates	6,738	0	0	267	7,005
Other (including equity holding)	18,656	3,371	0	117	22,145
Total 2015	**14,526,210**	**11,481,004**	**807,397**	**424**	**26,815,035**
Total 2014	**8,529,693**	**13,859,192**	**19,574**	**420**	**22,408,879**

Table 5-2 Geographical allocation of credit risk exposures

The following table provides information about the residual contract maturity, broken down by exposure classes. Most exposures are short-term with a significant part being overnight exposures.

31 December 2015 (€'000)	Maturity			
Exposure class	Not more than three months	Up to one year	Over one year	Total
Central governments and central banks	25.852.059	0	0	25.852.058
Regional governments, local authorities and other public bodies	5.027	0	0	5.027
Institutions (banks)	928.800	0	0	928.800
Corporates	7.005	0	0	7.005
Other (including equity holding)	14.910	3.661	3.573	22.145
Total 2015	**26.807.800**	**3.661**	**3.573**	**26.815.035**
Total 2014	**22.401.873**	**3.425**	**3.581**	**22.408.879**

Table 5-3 Residual contract maturity

According to the policies of Eurex Clearing and in line with sound banking practices and regulations, Eurex Clearing makes value adjustments and provisions, when necessary and due to individual decisions. Eurex Clearing does not have any value adjustments and provisions for credit risk exposures at present, because it does not have any impaired assets.

Past due items and default or non-performing exposures

Pursuant to the below stated definitions, Eurex Clearing has had no past due item or default or non-performing exposure in its books at the reporting date or during the year under review.

Definition of past due

An exposure is classified by the CRR as "past due" where a counterparty has failed to make a payment when contractually due, when the debtor has exceeded an external limit communicated to him as well as when the debtor has utilised credit without prior consent.

Definition of default or non-performing

According to Article 178 CRR a debtor is in default when either or both of the following conditions apply:

- The institution has material reason to consider that the obligor is unlikely to pay its (credit) obligations in full, without recourse by the institution to actions such as realising collateral (if held).
- The obligor is past due more than 90 successive calendar days on any material part of its overall credit obligation to the institution.

The Eurex Clearing internal definition of "impairment" according to German GAAP (HGB) is compliant with the definition of "default" outlined in Article 178 CRR.

Credit risk mainly arises in the short-term and with credit institutions or governmental counterparties. Treasury counterparties are selected based on a high degree of creditworthiness and operational reliability.

5.3 Credit risk mitigation

The exposure values of Eurex Clearing exist mainly in the investment of cash collateral deposited by clearing members.

ECAG places the financial resources to the extent possible on a collateralised basis with a term of up to one month. Reverse repo is the preferred instrument. In general, repo transactions must be governed by a repurchase agreement (Global Master Repurchase Agreement or "Deutscher Rahmenvertrag für Finanzgeschäfte") and are only maintained with authorised credit institutions that have low credit risk based upon an internal assessment by Eurex Clearing.

Repo transactions are, in accordance with EMIR, settled via operators of a securities settlement system that ensures the full protection of those instruments.

Securities accepted as collateral need to fulfil all of the strict conditions of highly liquid financial instruments as required by EMIR. In particular, securities accepted as collateral need to be:

- Debt instruments issued or guaranteed by high quality obligors (mainly 0% risk-weight);
- Issued or guaranteed by governments, central banks, multilateral development banks, the European Financial Stability Facility (EFSF) or the European Stability Mechanism (ESM);
- Freely transferable and without any regulatory constraint or third party claims that impair liquidation. In addition subordinated securities are not eligible;
- Have an active outright sale or repurchase agreement market and reliable price data on these instruments are published on a regular basis.

Transactions in which the securities given as collateral are issued by or correlated to the counterparty are not allowed.

Furthermore, Eurex Clearing applies haircuts on the securities accepted as collateral. According to the underlying repurchase agreement, Eurex Clearing may also issue a margin call that requires the counterparty to post additional collateral in case the market value of the collateral initially provided decreases to predefined levels. Cross currency collateralisation is, in principle, possible in triparty transactions and requires additional haircuts.

In general, Eurex Clearing applies credit risk mitigation (CRM) techniques. Currently, these CRM techniques are only relevant for the exposure class "institutions".

ECAG uses the comprehensive method for financial collateral according to Article 223 CRR for the purposes of credit risk mitigation.

For solvency purposes, according to Article 227 CRR the application of zero volatility adjustments is possible. Where the conditions of the regulation stated above are not fulfilled, supervisory haircuts as laid down in Article 224 CRR apply. In cases of FX mismatch, further cross-currency haircuts are to be applied.

Counterparty Institutions	31 December 2015 (€' 000)	31 December 2014 (€' 000)
Exposure - book value	928,800	8,185,268
Collateral - market value	0	8,245,454
RWA	185,760	9,497

Table 5-4 Placements from Eurex Clearing

As of 31 December 2015 Eurex Clearing did not enter into repo transactions as shown in Table 5-4. In addition, it is shown that the risk weighted assets (RWA) rose compared to the previous year, mainly as a result of outstanding receivables of one customer at the reference date. These exposures are generally collateralised but the collaterals are not considered for solvency purposes calculating capital requirements.

5.4 Monitoring and reporting

The Credit section reports new credit lines and changes of credit lines (increases as well as reductions), changes of the internal rating for customers and credit exposures to the Enterprise Risk Management section. Besides that, limit breaches - if any - are reported to the Executive Management and to Enterprise Risk Management.

The reporting approach as described in 3.1.6 Risk reporting also applies to the management of credit risk. On this basis, Enterprise Risk Management assesses the credit risk and reports VaR results as well as risk issues to the Executive Management. Besides the assessment of the VaR, Enterprise Risk Management also measures credit risk concentration and performs stress test calculations on credit risk (see 5.8 Stress testing of credit risk).

5.5 Disclosures on derivative credit risk

EMIR the EU Commission delegated regulations supplementing EMIR (EMIR Technical Standards) allow CCPs to execute transactions in derivative instruments only for limited purposes. Consequently, ECAG uses derivatives only for the following purposes:

(a) Hedging the portfolio of a defaulted clearing member as part of the CCP's default management procedure;

(b) Hedging currency risk arising from Eurex Clearing's CCP business;

(c) Hedging currency risk arising from Eurex Clearing's general corporate business; including outright sales for trust assets (no derivatives).

Derivative transactions are only executed under counterparty limits approved by the Executive Board. Counterparts are reviewed at least annually by the Credit section. In case of a deterioration of counterpart's credit worthiness, the Credit section recommends whether to reduce the limits or replace the counterpart. Treasury Back Office monitors compliance with counterparty limits daily and reports limit violations ad-hoc to CCP Risk Management and monthly to Eurex Clearing's Executive Board.

As of 31 December 2015 and as of 31 December 2014 Eurex Clearing did not have any exposure outstanding in derivatives instruments.

5.6 Disclosures on equities in the non-trading book

Equities held in the non-trading book concern strategic participations in companies with business related to the business of Eurex Clearing. Due to the strategic alignment, no participation is held in order to make short-term profits (no trading intent).

Currently, ECAG holds a 100% participation in Eurex Clearing Security Trustee GmbH. The purpose of the company is related to dedicated tasks in case of a default of certain UK clearing members or clients in order to comply with the UK CASS rules.

5.6.1 Equities in the non-trading book

In the following the participation in Eurex Clearing Security Trustee GmbH is included in the equities in the non-trading book of ECAG.

	31 December 2015 (€' 000)	31 December 2014 (€' 000)
Fair value of investments	78	77
Balance sheet value	75	75
Total unrealised gains (losses)	3	2
thereof total revaluation gains (losses)	3	2
Amounts included in the original or additional own funds	0	0

Table 5-5 Equities in the non-trading book

5.6.2 Valuation and accounting of equities in the non-trading book

For valuation and accounting purposes German GAAP (HGB) defines equities in the non-trading book as long-term financial assets.

According to § 340e HGB in connection with §§ 252 and 253 HGB, such assets may not be recognised at an amount higher than their purchase price, reduced by depreciation, amortisation and write-downs in accordance with particular requirements for fixed assets. Items of fixed assets may be written down in order to carry them at the lower of cost or market value at the balance-sheet date. Impairment losses shall be recognised if impairment is expected to be permanent.

5.7 Asset encumbrance

The disclosure of information on asset encumbrance pursuant to Article 443 CRR was specified by EBA with the EBA guidelines on the disclosure of encumbered and unencumbered assets on 26 June 2014[32]. Based on this guideline, the below disclosures are made. The disclosed figures are median values based on the reported quarter-end figures as required.

The overall level of encumbrance is zero as shown in Table 5-6. Unencumbered assets in column 60 are mainly related to the following positions:

- Investment in Eurex Clearing Security Trustee GmbH (row 030);
- Investments in debt securities (row 040);
- Other assets like exposures to institutions, corporates and balances at central banks (row 120).

		Carrying amount of encumbered assets	Fair value of encumbered assets	Carrying amount of unencumbered assets	Fair value of unencumbered assets
		010	040	060	090
010	**Assets of the reporting institution**	**0**		**30,267,805**	
030	Equity instruments	0	0	75	75
040	Debt securities	0	0	2,513	2,513
120	Other assets	0		113,268	

* Figures are median values based on the reported quarter-end figures.

Table 5-6 Encumbered and unencumbered assets

In Table 5-7 the fair value of the non-encumbered collaterals from collateralised placings is shown:

		Fair value of encumbered collateral received or own debt securities issued	Fair value of collateral received or own debt securities issued available for encumbrance
		010	040
130	**Collateral received by the reporting institution**	**0**	**5,021,571**
150	Equity instruments	0	0
160	Debt securities	0	5,021,571
230	Other collateral received	0	0
240	**Own debt securities issued other than own covered bonds or ABSs**	0	0

* Figures are median values based on the reported quarter-end figures.

Table 5-7 Collateral received

[32] Guidelines on disclosure of encumbered and unencumbered assets: http://www.eba.europa.eu/documents/10180/741903/EBA-GL-2014-03+Guidelines+on+the+disclosure+of+asset+encumbrance.pdf/c65a7f66-9fa5-435b-b843-3476a8b58d66.

As there were no matching liabilities to the only source of encumbrance, no sources can be shown in the following table.

		Matching liabilities, contingent liabilities or securities lent	Assets, collateral received and own debt securities issued other than covered bonds and ABSs encumbered
		010	030
010	Carrying amount of selected financial liabilities*	0	0

* Figures are median values based on the reported quarter-end figures.

Table 5-8 Encumbered assets/collateral received and associated liabilities

5.8 Stress testing of credit risk

Eurex Clearing performs stress tests and reverse stress test to ensure the adequateness of its financial resources in case of simultaneous default of multiple key market participants, and to identify potentially dangerous market conditions.

The term "stress test" comprises the entirety of qualitative and quantitative analysis methods of rare but plausible events. The following stress tests are performed for credit risk:

- The "Default of the Largest Counterparty Group Stress Test", where the default of the counterparty group with the largest unsecured exposure is simulated on a monthly basis, after utilisation of all respective collateral and after taking the recovery rate into account.
- The "Economic Deterioration Stress Test", where the impact of a deterioration of the economic environment on Eurex Clearing is simulated on a monthly basis. To capture the worsening of the economy, certain credit risk model parameters are adjusted compared to the standard VaR simulation.

The results of the "Default of the Largest Counterparty Group Stress Test" and the "Economic Deterioration Stress Test" are compared to limits, which are defined as a fraction of the available Risk Bearing Capacity. The stress test results are reported to the Executive Management on a quarterly basis and to the Supervisory Board on a semi-annual basis.

In addition, a credit stress test is performed on a daily basis to check, whether the current clearing fund is sufficient or not to cover a default of two largest counterparties under market stress. As soon as the potential consumption of the clearing fund by any clearing member breaches a defined threshold, Eurex Clearing board decides to take risk mitigating actions. Risk mitigating actions include member-specific actions, e.g. extra margin requirements, or member-wide actions, e.g. an increase of the size of the clearing fund by increasing the clearing fund contribution by all.

In addition to the stress tests defined above, a "Reverse Credit Stress Test" is being performed, whose aim is to analyse how many clearing members could default before Eurex Clearing becomes insolvent.

In the year under review, the stress tests did not reveal any risks that endanger the going concern of the business of Eurex Clearing.

6. Management of market risk, including interest rate risk of exposures on positions not included in the trading book

6.1 Strategy, process, structure and organisation

Eurex Clearing's general structure, organisation and process of risk management as well as the risk strategy is described in Chapter 3. Risk Management overview. With regard to market risk, risk control measures are applied to protect the clearing house from financial risks. The risk strategy is translated into a limit system, which is monitored on a daily basis.

As regards to the non-trading book, ECAG treasury activities are governed by the Treasury Policy including limits and responsibilities.

In general, Eurex Clearing is not involved in proprietary trading activities and hence is not required to maintain a trading book according to prudential banking regulation. Thus, Eurex Clearing's investment activities, i.e. the placement of clearing members' cash collateral and the investment of Eurex Clearing's own liquidity, are allocated to the non-trading book in accordance with the CRR.

6.1.1 Investment of clearing members' cash collateral

6.1.1.1 Investment policy

As a principle, clearing members' cash collateral is placed with counterparties of adequate creditworthiness on a secured basis to the largest possible extent. Reverse repo is the preferred instrument. As required by EMIR only highly liquid financial instruments of high quality obligors, bearing minimal credit and market risk, are eligible as collateral. Accordingly, highly liquid financial instruments need to be issued or guaranteed by a government, a central bank, a multilateral development bank, the EFSF or the ESM. In addition, they need to be freely transferable and without any regulatory constraint or third party claims that impair liquidation.

In currencies where Eurex Clearing holds an account with the national central bank (EUR and CHF), uninvested cash is deposited with the central bank. If no access to a central bank's account has been granted, Eurex Clearing places uninvested funds among several financial institutions to avoid concentration and large exposure.

Securitisation	Placement via
Secured	Reverse Repo
Unsecured	Central Bank or Central Government
	Deposit
	Nostro

Figure 6-1 Hierarchy of preferred investments

In principle, clearing members' cash collateral is placed on a short-term basis. Unsecured placements are limited to overnight only, whereas a limited portion of secured money market transactions may also be placed with a tenor greater than overnight up to a maximum of one month.

6.1.1.2 Market risk measurement

As Eurex Clearing forwards the interest rate that it earns on placements to its clearing members while retaining a fixed margin, Eurex Clearing bears no material interest rate risk out of the placement of clearing member's cash collateral.

Currency risks may occur through placements in foreign currencies. The placed funds primarily consist of clearing members' cash collateral, where Eurex Clearing is obliged to repay in the same currency. To avoid foreign exchange risk, placements are generally made in the currency provided by the clearing members. Thus the foreign exchange exposure is limited to the net interest earned in the respective currency. Due to the limited amounts, no active foreign exchange management is foreseen.

6.1.2 Investment of Eurex Clearing's other liquidity

6.1.2.1 Investment policy

As a principle, Eurex Clearing's liquidity not resulting from clearing members' cash collateral is invested applying the same mechanisms as the placement of clearing member funds.

In addition, Eurex Clearing may invest liquidity through direct securities purchases of debt instruments, such as floating rate notes or fixed coupon bonds. Securities are eligible if they fulfil the regulatory requirements for highly liquid financial instruments as required by EMIR and described in 6.1.1.1 Investment policy related to clearing members' cash collateral. In general, Eurex Clearing has the intention to hold the securities until maturity. The average time to maturity of the securities portfolio may not exceed two years. The maximum remaining time to maturity of the individual securities may not exceed five years.

6.1.2.2 Market risk measurement

The portfolio is marked-to-market on a daily basis and controlled against predefined limits, among which interest rate risk, country risk and issuer risk is considered, that are in line with Eurex Clearing's overall risk strategy and the principles of capital preservation and liquidity maximisation.

With regards to the interest rate risk, besides the overall risk appetite calculated via VaR (see 3.2 Risk management methodology), Eurex Clearing applies a parallel shift of the yield curve of min. 1% and assesses the resulting effect on the net present value of the portfolio on a daily basis.

6.2 Monitoring and reporting

Eurex Clearing controls its liquidity via the liquidity management function. Trades are executed by Treasury Front Office, if required with the assistance of a third party.

Settlement and market risk control is performed by Treasury Back/ Middle Office, a function independent of the Treasury Front Office department. Treasury Back/ Middle Office is responsible for monitoring compliance with limits and issues monthly reports to Executive Management and to Enterprise Risk Management. Limit excesses are monitored daily and are reported immediately to Executive Management, ERM and Treasury.

6.3 Specific disclosures for market risk

Market risk stemming from foreign exchange transactions

Eurex Clearing places cash in the same currency in which clearing members cash contributions are denominated. Thus, no active foreign exchange risk management is attributable to Eurex Clearing's investment activities.

However, Eurex Clearing may enter into FX transactions to hedge or close out open positions stemming from its CCP business, including the physical delivery of FX Futures and Options in its FX Continuous Linked Settlement (FX CLS) service offering. If Eurex Clearing holds a FX position because a clearing member has not fulfilled its obligation to settle a CCP transaction, Treasury may enter into FX transactions to close that position.

In addition, Eurex Clearing may enter into FX transactions to hedge or close out open positions stemming from its corporate business (other than EUR).

Foreign exchange risk measurement

As member cash deposits in foreign currencies are in principle placed in the same currency, open positions in non-EUR currencies may exist to a small extent due to interest margin earned as well as expenses or income in foreign currencies. These small positions are captured in the general ledger and reported to Treasury.

6.4 Specific disclosures on interest rate risk on positions not included in the trading book

6.4.1 Allocation of interest rate risk positions

Eurex Clearing allocates all interest rate risk sensitive positions to the non-trading book. The same is true in the exceptional case of derivative contracts.

6.4.2 Interest rate risk situation of Eurex Clearing

Eurex Clearing identifies and measures interest rate risk on a regular basis.

Quarterly, in accordance with the BaFin circular 11/2011 (BA)[33] Eurex Clearing computes and reports to BaFin the level of interest rate risk in its non-trading book and demonstrates that its regulatory capital is sufficient to withstand an unexpected parallel shift in the interest rate yield curve of ± 200 basis points. If this standard shock results in a potential decline of the net present value of its own investments by more than 20% of the regulatory capital, the Supervisory Authority will take appropriate actions. As of 31 December 2015 and as well as of 31 December 2014 Eurex Clearing has not reached this threshold by far.

[33] BaFin Circular (BA) -Interest rate risk in the banking book: https://www.bafin.de/SharedDocs/Veroeffentlichungen/DE/Rundschreiben/rs_1111_ba_zinsaenderungsrisiken_anlagebuch.html

Interest rate risk on positions not included in the trading book	31 December 2015	31 December 2014
IRR as percentage of own funds	0.01%	0.04%
Threshold of reporting to BaFin	20.00%	20.00%

Table 6-1 Interest rate risk on positions not included in the trading book

Additionally, for its securities portfolio Eurex Clearing has established an interest rate risk limit system (IRR). Daily, Eurex Clearing measures the interest rate risk related to the securities which have been purchased directly (FRNs and FCBs) with the clearing houses own liquid funds. IRR is calculated on the basis of the net present value of a predefined yield change which depends on the remaining time to maturity. For securities with a remaining time to maturity or coupon reset of less than or equal to a year a 1% yield parameter is used, for securities with maturities of one year onwards a 2% yield parameter is used.

As per 31 December 2015 the market value of Eurex Clearing's investment portfolio was EUR 5mn (2014: EUR 0mn).

7. Management of liquidity risk

7.1 Strategy, process, structure and organisation

Eurex Clearing measures, monitors, and manages liquidity risk in accordance and compliance with CRR Articles 411 et seq. as well as Articles 43 (other financial resources) and 44 (Liquidity risk controls) EMIR and Articles 32 to 34 (Liquidity risk controls) of delegated Regulation (EU) No 153/2013. The liquidity risk management framework was approved by the Board after consultation with the Risk Committee and is updated on a regular basis involving the Risk Committee and the Board.

Eurex Clearing's Liquidity Risk Management Framework is designed to cover all payment obligations at any time in order to avoid a potential liquidity shortfall. It addresses potential sources of liquidity risk and describes measures for mitigation. Requirements for monitoring, managing and reporting liquidity are outlined; moreover the framework gives guidance on defined stress tests and describes the coverage of liquidity shortage in contingency events. Furthermore, within the framework settlement and funding flows are analysed in all relevant currencies.

For Eurex Clearing, liquidity risks mainly stem from its function as a CCP and related prefinancing activities conducted to ensure settlement efficiency ("business-as-usual"). A further source of liquidity risk is related to a default of one or more clearing members. Thus, in accordance with Article 44 EMIR (Liquidity risk controls), Eurex Clearing aims to have at all times access to liquidity covering the liquidity needs generated by the default of the two clearing members to which Eurex Clearing has the largest exposure ("Cover 2").

Within Eurex Clearing, the liquidity management function is performed by Treasury. Treasury controls the liquid assets and ensures 1.) to have access to and control of Eurex Clearing's liquid assets at all times, 2.) diversification of the liquidity buffer and 3.) the avoidance of an excessive currency mismatch. Moreover, Treasury monitors the Liquidity Coverage Ratio on a daily basis and reviews measures, i.e. maximising the amount of high quality liquid assets, to keep the ratio in compliance with the regulatory requirements.

7.2 Measurement

7.2.1 Liquidity risk stemming from business-as-usual

Eurex Clearing conducts liquidity stress tests that enable the clearing house to assess the potential impact of extreme but plausible stress scenarios on its liquidity positions in its day-to-day business. Thereby, Eurex Clearing has established predefined scenarios (i.e. in a base scenario, market disruption scenario, and market disruption/ idiosyncratic scenario), which are based on historical data calculated on a confidence interval of at least 99%. The expected result should be that sufficient liquidity is available to cover stressed scenarios at all times. In addition, Eurex Clearing performs reverse stress tests to assess and identify scenarios which would lead to severe liquidity constraints.

The stress testing results are reported to Eurex Clearing's Executive Board. In this process, all figures and assumptions are discussed and revised internally to adjust to market shifts if necessary.

As of 31 December 2015 sufficient liquidity was available to cover all stress tests scenarios.

7.2.2 Liquidity risk stemming from a clearing member default

For the daily monitoring of the liquidity requirement generated by a simultaneous default of the two clearing members to which Eurex Clearing has the largest exposure, a Management Information System (MIS) has been established, in which available liquidity sources are compared to required financing needs. Within this analysis, all exposures towards a clearing member in all relevant relationships with Eurex Clearing, i.e. clearing member, settlement bank or nostro agent, are taken into account.

As of 31 December 2015 Eurex Clearing's available liquidity sources exceeded the potential liquidity need caused by the simultaneous default of the two largest clearing members by far.

7.3 Liquidity risk mitigation

7.3.1 Risk stemming from business-as-usual

Eurex Clearing monitors and manages a liquidity buffer in order to face potential liquidity risks stemming from pre-financing activities in the day-to-day business.

In reference to CEBS "Guidelines on Liquidity Buffers & Survival Periods" (9 December 2009) a liquidity buffer is defined as the excess liquidity available to be used in liquidity stress situations within a given short-term period. It is the availability of liquidity, which obviates the need to take any extraordinary measures, i.e. adjustments of the business model.

The minimum target buffer is derived from the liquidity stress tests, applying the market disruption stress scenario. The buffer is adjusted according to the most recent results of the stress tests.

For Eurex Clearing, a contingency situation could be caused by high intraday cash outflows not being refunded during the day, potentially resulting in an overnight liquidity shortage. In order to identify a contingency situation, an early warning trigger (required liquidity plus a mark-up of 40%) and a recovery limit (required liquidity plus mark-up of 10%) have been established to detect potential liquidity shortfalls in advance. Daily, Eurex Clearing compares the available liquidity buffer to the defined thresholds.

7.3.2 Risk stemming from a clearing member default

The indicator that limits the Clearing business's liquidity risk follows the EMIR requirements. Clearing liquidity has therefore been designated to exceed the required liquidity to cover a simultaneous default of the two largest clearing members plus a mark-up of 10% (recovery trigger).

The early warning trigger is equivalent to the definition of the recovery limit, but it sets a higher buffer with 40% above the regulatory threshold. Both thresholds are monitored by Eurex Clearing on a daily basis. If there is a limit breach, the communication process as stipulated in Eurex Clearing's Recovery Plan is initiated.

7.3.4 Options to strengthen the liquidity position

Eurex Clearing monitors the previously described thresholds daily. In case a threshold is breached, the designated owner/sponsor of the liquidity strengthening measure is responsible for the implementation of the applicable option and the further communication process. Measures identified are, e.g.

- Intragroup funding;
- Changing the margin composition;
- Exchange of securities obtained in reverse repo transactions for central bank money;
- Increase of committed standby facilities

and are defined in detail in Eurex Clearing's Recovery Plan.

7.4 Monitoring and reporting

Eurex Clearing's liquidity risk exposure and breaches of limits are controlled and reported by the Treasury Back-/Middle Office. Reports are performed daily, weekly and monthly to Eurex Clearing's Executive Board, the Chief Risk Officer and Head of Treasury.

7.5 Liquidity Coverage Ratio

With the implementation of the CRR the Liquidity Coverage Ratio (LCR) was introduced in 2014. As of 1 October 2015 the percentage of required liquidity cover was introduced at 60%, reaching its full implementation as of 1 January 2018.

The institutions need to hold a liquidity buffer of high quality liquid assets (HQLA) to cover their net cash outflows in stressed conditions over a thirty-day period. The HQLA at Eurex Clearing consists of deposits held with central banks and securities received in reverse repo transactions. As at 31 December 2015 Eurex Clearing had a LCR of 100%.

8. Capital structure, capital ratio and Leverage Ratio

8.1 Capital components

8.1.1 Overview

The following table summarises the total amount of Eurex Clearing regulatory capital:

			31 December 2015 (€' 000)	31 December 2014 (€' 000)
Tier 1:	Eligible Capital	Paid up capital	25,000	25,000
		Share premium	0	0
	Eligible Reserves	Reserves	289,813	264,813
		Interim profits	0	0
	Deductions:		0	0
Tier 2:	Core additional own funds	Revaluation reserves	0	0
		Subordinated Loan Capital	0	0
		Fixed-term cumulative	0	0
	Deductions:		0	0
Eligible own funds:			314,813	289,813

Table 8-1 Regulatory capital components

Tier 1 capital represents the eligible own funds of Eurex Clearing and only consists of subscribed capital and reserves.

The following subsections disclose the information as required by Article 437 paragraph 1 CRR and details set out in Commission Implementing Regulation (EU) No 1423/2013[34].

8.1.2 Reconciliation of own funds items to audited financial statements

A full reconciliation of own funds to audited financial statements pursuant to point (a) of Article 437 paragraph 1 CRR has to be applied by institutions as laid out in the Implementing Regulation (EU) No 1423/2013. The balance sheet reconciliation for Eurex Clearing is shown in Table 8-2.

[34] Implementing Regulation (EU) No 1423/2013: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:355:0060:0088:EN:PDF

Balance Sheet Reconciliation	31 December 2015 (€' 000)	31 December 2014 (€' 000)
Own Funds elements in the Annual Financial Statements		
Subscribed Capital	25,000	25,000
Share premium	0	0
Capital Reserve	280,313	255,313
Legal Reserve	2,500	2,500
Other reserves and retained earnings	7,000	7,000
Total Own Funds Elements in Audited Financial Statements	314,813	289,813
Profits allocated to legal or other reserves with the approval of financial statements (i.e. after reporting of Own Funds)	0	0
Eligible Capital (CET1) before regulatory adjustments	314,813	289,813
Regulatory adjustments	0	0
Deduction other intangible assets	0	0
Other CET 1 capital adjustments	0	0
Common Equity Tier 1 Capital/Total Eligible Own Funds	314,813	289,813

Table 8-2 Balance Sheet Reconciliation

8.1.3 Description of the main features of capital instruments

Disclosures under point (b) of Article 437 CRR are shown in the next tables for Eurex Clearing in line with the disclosure templates set out in the Implementing Regulation (EU) No 1423/2013.

Capital Instruments' main features [1]		
	Features	**Instrument**
1	Issuer	Eurex Clearing AG
2	Unique identifier (e.g. ISIN, etc.)	N/A
3	Governing law(s) of the instrument	German Stock Corporation Act (AktG)
	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
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)	€ 25 Mn
9	Nominal amount of instrument (in million, in currency of issuance)	€ 25 Mn
9a	Issue price	€ 25 Mn
9b	Redemption price	N/A
10	Accounting classification	Shareholders' equity
11	Original date of issuance	09/03/1998
12	Perpetual or dated	perpetual
13	Original maturity date	N/A
14	Issuer call subject to prior supervisory approval	No
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)	N/A
20b	Fully discretionary, partially discretionary or mandatory (in terms of amount)	N/A
21	Existence of step up or other incentive to redeem	No
22	Noncumulative or cumulative	Noncumulative
23	Convertible or non-convertible	Nonconvertible
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, specify instrument type convertible into	N/A
29	If convertible, specify 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 hierarchy in liquidation (specify instrument type immediately senior to instrument)	N/A
36	Non-compliant transitioned features	No
37	If yes, specify non-compliant features	N/A

[1] 'N/A' inserted if the question is not applicable

Table 8-3 Capital Instruments of Eurex Clearing

8.1.4 Disclosure of additional information during the transitional period

	Common Equity Tier 1 capital: instruments and reserves	(A) Amounts at 31.12.2014 (€'000)	(B) REGULATION (EU) No. 575/2013 ARTICLE REFERENCE	(C) AMOUNTS SUBJECT TO PRE-REGULATION (EU) No. 575/2013 TREATMENT OR PRESCRIBED RESIDUAL AMOUNT OF REGULATION (EU) 575/2013 (€'000)
1	Capital Instruments and Share premium	25,000	26 (1), 27, 28, 29, EBA list 26 (3)	
	of which: Subscribed capital	25,000	EBA list 26 (3)	
	of which: Share premium	0	EBA list 26 (3)	
2	Retained Earnings	9,500	26 (1) (c)	
3	Accumulated other comprehensive income (and other reserves, to include unrealised gains and losses under the applicable accounting standards)	280,313	26 (1)	
3a	Funds for general banking risk	0	26 (1) (f)	
4	Amount of qualifying items referred to in Article 484 (3) and the related share premium accounts subject to phase out from CET1	0	486 (2)	
	Public sector capital injections grandfathered until 1 January 2018	0	483 (2)	
5	Minority interests (amount allowed in consolidated CET1)	0	84, 479, 480	
5a	Independently reviewed interim profits net of any foreseeable charge or dividend	0	26 (2)	
6	**Common Equity Tier 1 (CET1) capital before regulatory adjustments**	**314,813**		
Common Equity Tier 1 (CET1) capital: regulatory adjustments				
8	Intangible assets (net of related tax liability) (negative amount)	0	36 (1) (b), 37, 472 (4)	
26	Regulatory adjustments applied to Common Equity Tier 1 in respect of amounts subject to pre-CRR treatment	0		
26b	Amount to be deducted from or added to Common Equity Tier 1 capital with regard to additional filters and deductions required pre CRR	0	481	
	of which: Intangible assets	0		
27	Qualifying AT1 deductions that exceeds the AT1 capital of the institution (negative amount)	0	36 (1) (j)	
28	**Total regulatory adjustments to Common Equity Tier 1 (CET1)**	**0**		
29	**Common Equity Tier 1 (CET1) capital**	**314,813**		
Additional Tier 1 (AT1) capital: instruments				
36	**Additional Tier 1 (AT 1) capital before regulatory adjustments**	**0**		
Additional Tier 1 Capital (CET1) capital: regulatory adjustments				
41	Regulatory adjustments applied to additional tier 1 capital in respect of amounts subject to pre-CRR treatment subject to phase out as prescribed in Regulation (EU) No 575/2013 (i.e. CRR residual amounts)	0		
41a	Residual amounts deducted from Additional Tier 1 capital with regard to deduction from Common Equity Tier 1 capital during the transitional period pursuant to article 472 of Regulation (EU) No 575/2013	0	472, 472(3)(a), 472 (4), 472 (6), 472 (8) (a), 472 (9), 472 (10) (a), 472 (11) (a)	
	of which: Intangible assets	0		
	Excess of deduction from AT1 items over AT1 Capital (deducted in CET1)	0		
43	**Total regulatory adjustments to Additional Tier 1 (AT1) capital**	**0**		
44	**Additional Tier 1 (AT 1) capital**	**0**		
45	**Tier 1 capital (T1 = CET1 + AT1)**	**314,813**		

Table 8-4 Own Funds details

8.2 Internal management of capital (Risk Bearing Capacity)

Available Risk Bearing Capacity (RBC) serves as a buffer to absorb potential (unexpected) losses resulting from the risks Eurex Clearing faces in its various activities. It is the internal view on the amount of capital and, therefore, the maximum loss that the Executive Management is willing to assume in one year, the tolerance in the light of the risk as well as the desired performance levels (risk appetite is determined in the risk strategy).

The concept regarding RBC is to ensure that emerging risks can be absorbed and thus to safeguard the continued existence (as going concerns) of Eurex Clearing.

The risk appetite corresponds to the amount of risk that Eurex Clearing is prepared to run to carry out its business. The risk appetite is set by the Executive Management per risk confidence level and risk type:

- For the 99% risk confidence level, the RBC is 10% of the planned EBIT of the Eurex Clearing segment for the current business year.
- For the 99.98% risk confidence level, the RBC is defined as the regulatory own funds, which are updated according to the regulatory reporting frequency.
- The RBC for individual risk types (operational, financial, and business) is defined as a fraction of the overall RBC. Through this allocation, the members of the Executive Management ensure that risk is limited regarding each risk type.

The risk limits as defined above are monitored all in parallel and on a monthly basis. Eurex Clearing must comply with the regulations regarding the adequacy of regulatory own funds, the solvency ratio is monitored in parall

8.3 Capital levels

8.3.1 Regulatory capital levels

Capital requirements for credit risk positions

The following table shows the capital requirements for credit risk exposures. Eurex Clearing uses the Standardised Approach to calculate the capital requirements:

Capital requirements for counterparty risk for portfolios calculated using the Credit Risk Standardised Approach (CRSA)		
	31 December 2015 (€' 000)	31 December 2014 (€' 000)
Institutions (banks)	14,861	8,773
Corporates	400	269
Other (including equity holding)	1,781	1,842
Total	17,042	10,884

Table 8-5 Capital requirements for credit risk

Capital requirements for market risk positions

To calculate the capital requirements for market risk exposures Eurex Clearing uses the Standardised Approach. The calculated capital amount is showing in the following table:

Capital requirements for market risk		
	31 December 2015 (€' 000)	31 December 2014 (€' 000)
Foreign Exchange risk (total)	2,440	1,496

Table 8-6 Capital requirements for market risk

Capital requirements for operational risk positions

The capital requirements for backing operational risk according to the Basis Indicator Approach amounted to a capital charge as follows. They are calculated via the relevant risk indicator. The relevant risk indicator is the average of gross income of the last three audited financial years plus an additional portion of the collected fees. As such, the average income of 2010 – 2012 is relevant for the capital charge as of 31 December 2013 while the average income of 2011 – 2013 determines the capital charge as of 31 December 2014:

	Basic Indicator Approach	
Basis of calculation	2012 - 2014	2011 - 2013
Relevant risk indicator according to Regulation (EU) No 575/2013 (as of 1 January 2014)	438,729	465,149
	31 December 2015 (€' 000)	31 December 2014 (€' 000)
Resulting capital requirement for the subsequent year (relevant as of the final approval of the last year of the underlying three year period)	65,809	69,772

Table 8-7 Capital requirements for operational risk

8.3.2 Capital ratio

	Capital ratio	
Basis of calculation	31 December 2015	31 December 2014
Regulation (EU) No 575/2013	29.53%	28.22%

Table 8-8 Capital ratios

8.4 Leverage Ratio

The Leverage Ratio as a binding minimum ratio could become potentially mandatory as of 2018. Nevertheless, delegated regulation on disclosure of the leverage ratio (EU) No 1423/2013 requires disclosure of detailed information which is shown in the following tables:

	31 December 2015 (€' 000)
Total consolidated assets as per published financial statements	26,901,700
Adjustment for investments in banking, financial, insurance or commercial entities that are consolidated for accounting purposes but outside the scope of regulatory consolidation	0
Adjustment for fiduciary assets recognised on the balance sheet pursuant to the operative accounting framework but excluded from the Leverage Ratio exposure measure	-75,327
Adjustments for derivative financial instruments	0
Adjustment for securities financing transactions (ie repos and similar secured lending)	0
Adjustment for off-balance sheet items (ie conversion to credit equivalent amounts of off-balance sheet exposures)	4,000
(Adjustment for intragroup exposures excluded from the Leverage Ratio total exposure measure in accordance with Article 429 (7) CRR)	0
(Adjustment for exposures excluded from the Leverage Ratio total exposure measure in accordance with Article 429 (14) CRR)	0
Other adjustments	-15,338
Leverage Ratio exposure	**26,815,035**

Table 8-9 Summary reconciliation of accounting assets and Leverage Ratio exposures (LRSum)

CRR Leverage Ratio exposures	31 December 2015 (€' 000)
On-balance sheet items (excluding derivatives, STFs and fiduciary assets, but including collateral)	26,811,035
(Asset amounts deducted in determining Tier 1 capital)	0
On-balance sheet exposures	**26,811,035**
Replacement cost associated with all derivatives transactions (ie net of eligible cash variation margin)	0
Add-on amounts for PFE associated with all derivatives transactions (mark-to-market method)	0
Gross-up for derivatives collateral provided where deducted from the balance sheet assets pursuant to the applicable accounting framework	0
(Deductions of receivables assets for cash variation margin provided in derivatives transactions)	0
(Exempted CCP leg of client-cleared trade exposures)	0
Adjusted effective notional amount of written credit derivatives	0
(Adjusted effective notional offsets and add-on deductions for written credit derivatives)	0
Total derivative exposures	**0**
Gross SFT assets (with no recognition of netting), after adjusting for sale accounting transactions	0
(Netted amounts of cash payables and cash receivables of gross SFT assets)	0
Counterparty credit risk exposure for SFT assets	0
Derogation for SFTs: Counterparty credit risk exposure in accordance with Articles 429b (4) and 222 CRR	0
Agent transaction exposures	0
(Exempted CCP leg of client-cleared SFT exposure)	0
Total securities financing transaction exposures	**0**
Off-balance sheet exposure at gross notional amount	4,000
(Adjustments for conversion to credit equivalent amounts)	0
Off-balance sheet items	**4,000**
(Intragroup exposures (solo basis) exempted in accordance with Article 429 (7) CRR (on and off balance sheet))	0
(Exposures exempted in accordance with Article 429 (14) CRR (on and off balance sheet)	0
Tier 1 capital	314,813
Total exposures (sum of on-balance, derivative, SFT and off-balance exposures)	26,815,035
Leverage Ratio	**1.17%**
Choice on transitional arrangements for the definition of the capital measure	Fully phased-in according to Article 499 (1)(a) CRR
Amount of derecognised fiduciary items in accordance with Article 429 (11) of Regulation (EU) No 575/2013	75,327

Table 8-10 Leverage Ratio common disclosure template (LRCom)

CRR Leverage Ratio exposures	31 December 2015 (€' 000)
Total on-balance sheet exposures (excluding derivatives, SFTs, and exempted exposures), of which:	26,811,035
Trading book exposures	0
Banking book exposures, of which:	26,811,035
Covered bonds	0
Exposures treated as sovereigns	25,857,085
Exposures to regional governments, MDB, international organisations and PSE **not** treated as sovereigns	0
Institutions	928,800
Secured by mortgages of immovable properties	0
Retail exposures	0
Corporate	3,005
Exposures in default	0
Other exposures (eg equity, securitisations, and other non-credit obligation assets)	22,145

Table 8-11 Split-up of on balance sheet exposures (excluding derivatives, SFTs and exempted exposures; LRSpl)

	31 December 2015
Desciption of processes used to manage the risk of excessive leverage	ECAG as CCP has a highly volatile balance sheet volume depending on the clients' cash behaviour. The balance sheet varies sharply within short timeframes depending on the cash collateral supply. The cash received is reinvested in line with EMIR. Although this investment restriction leads to a short term investment tenor with low levels of credit and market risk this position affects the Leverage Ratio exposure measure to a high degree. Thus, a direct management of leverage is only feasible in a limited nature.
Desciption of the factors that had an impact on the Leverage Ratio during the period to which the disclosed Leverage Ratio refers	Beside the highly volatile Leverage Ratio exposure measure described above the Leverage ratio exposure measure at year-end shown in Table 8-9 was adjusted by 15,338 k€ due to different FX rates used for accounting and reporting purposes at year-end.

Table 8-12 Description of qualitative items (LRQua)

Due to ECAG's dedicated status authorised as CCP under EMIR the standard calculation rules for Leverage Ratio do not lead to useful information. If at all, a more adequate ratio can be calculated by (a) deducting ECAG's own contribution to the CCP default fund from Tier 1 capital and (b) deducting cash collaterals placed by clearing members (member cash deposits) from the leverage ratio exposure measure. The modified Leverage ratio on this basis is derived as follows:

CRR Leverage Ratio exposures	31 December 2015 (€' 000)	
	Standard calculation	Modified calculation
Tier 1 capital	314,813	314,813
(a) contribution to the CCP default fund	-	-50,000
Adjusted Tier 1 capital	**314,813**	**264,813**
Leverage Ratio exposure	26,815,035	26,815,035
(b) member cash deposits	-	-25,540,243
Adjusted Leverage Ratio exposure	**26,815,035**	**1,274,792**
Leverage Ratio / Adjusted Leverage Ratio	**1.17%**	**20.77%**

Table 8-13 Leverage Ratio standard calculation and CCP modified calculation

9. Governance Arrangements

General Arrangements

Eurex Clearing AG is a stock corporation incorporated in Germany. The German Stock Corporation Act (Aktiengesetz – AktG) requires such a company to set up an Executive Board and a Supervisory Board, §§ 76 et seq. AktG.

Eurex Clearing maintains a comprehensive suitability policy. The objective of this policy is to ensure that members of the Executive Board, the members of the Supervisory Board and key function holders of the company are suitable in terms of reputation, experience and governance criteria, as stipulated in the EBA 'Guidelines on the assessment of the suitability of members of the management body and key function holders' (EBA/GL/2012/06). Eurex Clearing follows a stringent recruitment policy for the selection of members of the Supervisory Board and the Executive Board as described below.

Supervisory Board

Eurex Clearing has established a Supervisory Board to supervise the Executive Board, in accordance with the mandatory provisions of AktG. The members of the Supervisory Board of Eurex Clearing are elected by the shareholders. This in principle takes place during the annual meeting of shareholders. The members are elected for a period of five years.

In general, the Supervisory Board consists of twelve members. According to Article 27 paragraph 2 EMIR at least one third of the members of that Supervisory Board are independent in the meaning of Article 2 paragraph 28 EMIR. As of 31 December 2015, the Supervisory Board consists of twelve members.

The Supervisory Board in its entirety must have the necessary skills, capabilities and experience to supervise and control the Executive Board of Eurex Clearing. In addition, the Supervisory Board must have:

- At least one member (i.e. the chairman of the audit committee) with expertise in the area of accounting and auditing;
- At least one member (i.e. one member of the compensation review and nomination committee) with expertise in the area of risk management and risk controlling in particular regarding the mechanism of the orientation of the remuneration system towards the overall readiness to assume risk and risk strategy (Gesamtrisikobereitschaft und -strategie) as well as towards the own funds (Eigenmittelausstattung) of Eurex Clearing.

According to § 25d (11) number 2 KWG the underrepresented gender in the Supervisory Board has to be considered and the rules of limitation of mandates in accordance with § 25d (3) KWG have to be complied with. Under this definition, as of 31 December 2015 the twelve members of Eurex Clearing's Supervisory Board held a total of twenty-eight directorships.

The Supervisory Board meets as often as business requires, but at least four meetings are scheduled each year, which generally take place every quarter.

The Supervisory Board has installed several committees composed of members of Supervisory Board. In the following the committees of Eurex Clearing are described:

According to § 25d (9) KWG Eurex Clearing has installed an audit committee which supports the Supervisory Board in its function to supervise in particular the adequacy and effectiveness of the risk management system, the compliance system as well as the internal control and auditing system, the reporting and accounting process and examination of the annual

financial statements and the management report. Furthermore, Eurex Clearing has set-up a separate risk committee according to § 25d (8) KWG. Following § 25d (10) KWG both committees were combined to the Audit and Risk Committee (ARC). The ARC consists of three members of the Supervisory Board and meets at least four times a year.

In addition, the Supervisory Board of ECAG has installed a nomination committee according to § 25d (11) KWG, which was combined with the compensation review committee (§ 25d (12) KWG to the Compensation Review and Nomination Committee (CRNC). It supports the Supervisory Board in its duty to establish a policy on diversity and to assess the current and future members of the Executive Board and the Supervisory Board and the composition of both boards as a whole. Beside this the nomination committee promotes the underrepresented gender. The target set by the Supervisory Board to increase the proportion of woman on the Supervisory Board to at least one quarter was reached in 2015.

Executive Board

According to § 33 KWG the Executive Board must consist of at least two members. According to § 25a KWG and MaRisk certain functions and duties in several business areas have to be segregated up to the level of the Executive Board. In addition, all tasks have to be allocated in a clear manner to the responsible areas. Furthermore, the four-eyes principle as well as the role of a deputy should be determined. In order to fulfil the above mentioned organisational requirements and in the light of the systemic importance of Eurex Clearing the Executive Board is assumed to consist of not less than four members.

The Executive Board is inter alia responsible for the proper business organisation (in accordance with § 25c sentence 3 number 1 in connection with § 25a KWG). Provided that consensus is reached between all members of the Executive Board, the Executive Board establishes a business distribution plan which regulates the allocation of tasks between the board members in order to enable a more efficient management of the company.

Meetings of the Executive Board shall be held regularly; further details, including but not limited to the interval between the meetings, shall be determined by the chairperson. Meetings must take place if required for the well-being of Eurex Clearing. In fact, the Executive Board meets biweekly.

The members of the Executive Board must be professionally suitable and reliable for the management of Eurex Clearing and must be able to devote sufficient time to fulfil their tasks. Their professional competence requires sufficient theoretical and practical knowledge of the business of a CCP/ credit institution. In addition, the members of the Executive Board must have:

- An understanding of financial markets, especially within the regulatory framework;
- Experience with credit institutions;
- Sufficient practical and professional experience in managerial positions.

Beside these skills the rules of limitation of mandates in accordance with § 25c (2) KWG have to be complied with. Under this definition, as per 31 December 2015 the five members of Eurex Clearing's Executive Board held a total of eleven directorships.

Other bodies of the company

In 2013, Eurex Clearing has established the EMIR Risk Committee in accordance with Article 28 EMIR. It is composed of two members of the Supervisory Board, and an equal number of representatives of clearing members and representatives of clients. It meets at least four times a year. The task of the committee is to advise the Supervisory Board and the Executive Board of Eurex Clearing on any arrangements that may impact the risk management of the

CCP, such as a significant change in its risk model, the default procedures, the criteria for accepting clearing members, the clearing of new classes of instruments or the outsourcing of functions.

Appendix A. Abbreviations used in this document

AMA	Advanced Measurement Approach
BaFin	Bundesanstalt für Finanzdienstleistungsaufsicht (Federal Financial Supervisory Authority)
BCBS	Basel Committee on Banking Supervision
BIA	Basis Indicator Approach
CCP	Central Counterparty
CRD	Capital Requirements Directive
CRD IV	Capital Requirements Directive IV
CRM	Credit Risk Mitigation
CRR	Capital Requirements Regulation
CVA	Credit Valuation Adjustment
EBA	European Banking Authority
ECAI	External Credit Assessment Institution
ECAG	Eurex Clearing AG
ECB	European Central Bank
EEA	European Economic Area
EFSF	European Financial Stability Facility
EMIR	European Market Infrastructure Regulation
ESM	European Stability Mechanism
EU	European Union
FCB	Fixed Coupon Bonds
FIRB	Foundation Internal Rating Based Approach
FRN	Floating Rate Note
FX	Foreign Exchange
HGB	Handelsgesetzbuch (German Commercial Code)
HQLA	High quality liquid assets
ICAAP	Internal Capital Adequacy Assessment Process
ILAAP	Internal Liquidity Adequacy Assessment Process
IRB	Internal Rating Based Approaches
IRBA	Advanced Internal Rating Based Approach
IRR	Interest Rate Risk
KWG	Gesetz über das Kreditwesen (German Banking Act)
LGD	Loss Given Default
LSI	Less Significant Institution
MEIP	Minimum Export Insurance Premium
OECD	Organisation for Economic Cooperation and Development
PD	Probability of Default
RBC	Risk Bearing Capacity
RWA	Risk-weighted asset
SA	Standardised Approach (in connection with operational risk)
SI	Significant Institution
SIB	Systematically Important Bank
SREP	Supervisory Review and Evaluation Process

SRP	Supervisory Review Process
SSM	Single Supervisory Mechanism
StA	Standardised Approach (in connection with counterparty credit risk)
VaR	Value-at-Risk

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