



Deutsche Börse Group

Annual report 2020

Excerpt: Risk report

Risk report

Deutsche Börse Group (hereafter also known as “the Group”) includes the following entities which are regulated as credit institutions: Clearstream Banking S.A. and Clearstream Banking AG (hereinafter referred to as “Clearstream”, including Clearstream Holding AG), as well as Eurex Clearing AG. Clearstream Banking AG is also an authorised central securities depository and subject to the Central Securities Depositories Regulation. Eurex Clearing AG and European Commodity Clearing AG continue to be authorised as central counterparties (CCPs) and are subject to the requirements of the European Market Infrastructure Regulation (EMIR). In addition, other Group companies hold different licences to provide regulated activities in the financial services sector. As such, these entities are subject to comprehensive statutory requirements, inter alia on risk management (for further information on the regulated entities, please refer to “Regulatory capital requirements and regulatory capital ratios”). Over and above the statutory requirements, including the EU directives (CRD IV and MiFID II) and their implementation into national law, other regulations worth mentioning include primarily EU regulations (CRR, CSDR and EMIR), the national requirements of the Minimum Requirements for Risk Management (MaRisk) issued by the Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin), and circular 12/552 issued by the Financial Supervisory Authority of Luxembourg (Commission de Surveillance du Secteur Financier, CSSF). In this context, significant parts of the risk management are defined in the scope of the so-called second pillar of the Basel III regime for a number of the Group’s companies. Moreover, national regulations implementing the EU Banking Recovery and Resolution Directive (BRRD) apply to Clearstream and Eurex Clearing AG regarding the establishment of recovery plans. Deutsche Börse Group follows international standards in its risk management and also applies these without or in addition to such statutory requirements.

The highest regulatory standards within the Group are applicable to Eurex Clearing AG and Clearstream, given their regulation as credit institutions. Considering this and their economic importance, this risk report focuses on these subsidiaries in particular.

Risk strategy and risk management

Deutsche Börse Group’s risk strategy is aligned with its business model and company strategy. The Group provides the infrastructure for reliable and secure capital markets, assists constructively in their regulation and strives for a leading role in all of the areas in which it does business. Deutsche Börse Group’s risk strategy is based on three core principles:

1. Risk limitation – protecting the company against liquidation and ensuring its continuing operation

“Capital exhaustion should not occur more than once in 5,000 years and an operating loss must not be generated more than once every hundred years.” This means that one goal is to ensure a minimum probability of 99.98 per cent that the total capital will not be lost within the next twelve months. By this approach an economic perspective is taken when evaluating the risks of Deutsche Börse Group. Another objective is to guarantee for a probability of 99.0 per cent or more that Deutsche Börse will at least break even, expressed in terms of its EBITDA. In other words, this principle establishes how much risk the Group must be able to withstand whilst also determining its risk appetite. Ensuring the continuing operation of Deutsche Börse Group additionally demands the fulfilment of regulatory capital requirements, which reflects a normative perspective when evaluating the risks of Deutsche Börse Group.

2. Support for growth in the various business segments

“Risk management supports the business units in developing their business”. With this principle, the Group promotes its growth strategy. As such, risks are identified, and clearly communicated. This principle includes risk from organic growth, M&A activities and the use of transformational technology. The aim is to make well-founded strategic decisions within the boundaries of the defined risk appetite.

3. Appropriate risk/return ratio

“The return on equity should exceed the cost of equity.” Deutsche Börse Group has set itself the goal of ensuring that risk and return should be reasonably balanced, both for specific business areas in general and for individual regions, products and customers.

Internal risk management is based on the Group-wide detection and management of risk, which is focused on its risk appetite, see the chart “Interlocking business strategy and risk strategy”. Deutsche Börse AG’s Executive Board has overall responsibility, and defines the framework for risk management throughout the Group. Under these Group-wide risk management requirements, each business segment and each regulated company is responsible for managing its own risk.

Interlocking business strategy and risk strategy



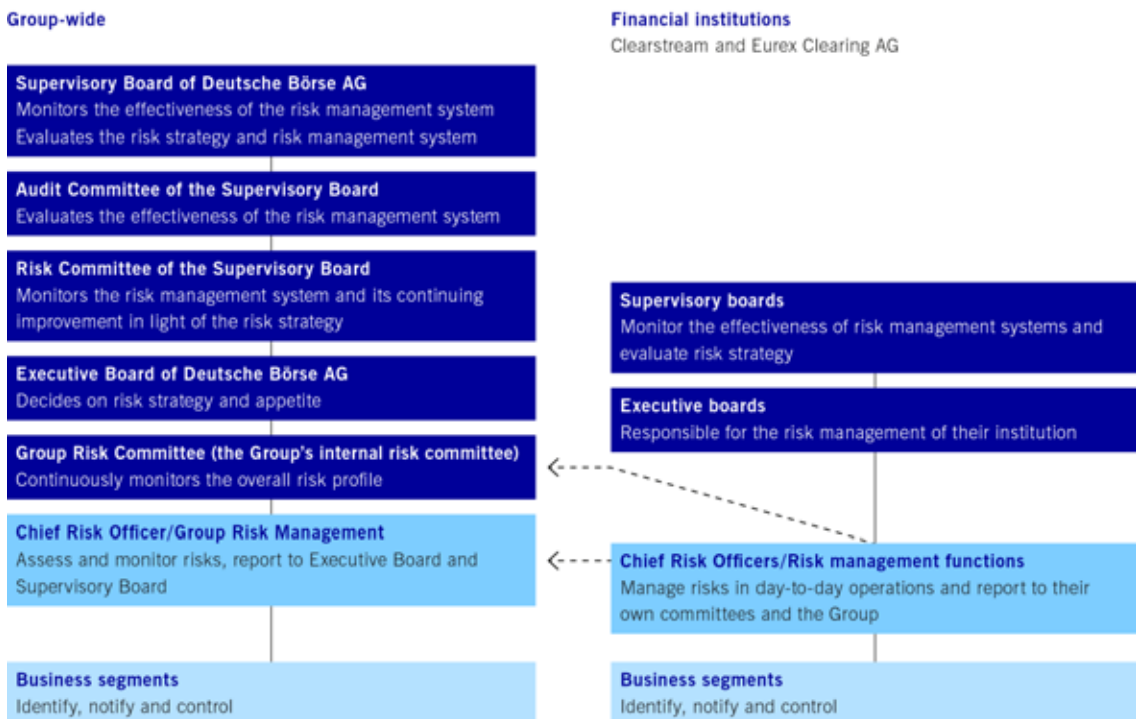
Implementation in the Group’s organisational structure and workflow

The risk strategy applies to the entire Deutsche Börse Group. Risk management functions, processes and responsibilities are binding for all Group employees and organisational units. To ensure that all employees are risk-aware, risk management is firmly anchored in the Group’s organisational structure and workflows. The Executive Board is responsible for risk management overall, whereas within the individual companies it is the responsibility of the respective management. The boards and committees given below receive regular information on the risk situation.

The Supervisory Board of Deutsche Börse AG assesses and monitors the effectiveness of the risk management system and its continuing development. The Supervisory Board has delegated the regular evaluation of the appropriateness and the effectiveness of the risk management system to the Audit Committee. In addition, the Risk Committee examines the risk strategy and risk appetite on an annual basis.

Deutsche Börse AG’s Executive Board determines the Group-wide risk strategy and risk appetite and allocates the latter to the company’s individual business segments and business units, respectively. It ensures that the Group’s risk appetite is and remains compatible with its short- and long-term strategy, business and capital planning, risk-bearing capacity and remuneration systems. The Executive Board of Deutsche Börse AG also determines what parameters are used to assess risks and how risk capital is allocated. It ensures that the requirements for the risk strategy and risk appetite are met.

Risk management – organisational structure and reporting lines



The Group Risk Committee (GRC) reviews the risk position of the Group regularly and involves the Executive Board in all important matters. The GRC is a Group-internal risk committee, chaired by the Chief Financial Officer.

Group Risk Management (GRM), headed by the Chief Risk Officer (CRO), prepares the proposals for the corresponding risk strategy, risk appetite, the approaches and methods for monitoring risk, capital allocation and procedures. GRM continuously analyses and evaluates risks and produces quantitative and qualitative reports. These are submitted regularly to the GRC, once a month or as needed ad hoc to the Executive Board, once a quarter to the Risk Committee of the Supervisory Board and once a year to the Supervisory Board. Likewise, the CRO reports to the Audit Committee on the effectiveness of the risk management system on an annual basis. This system ensures that the responsible bodies can regularly check whether the defined risk limits are being adhered to consistently. In addition, GRM recommends risk management measures with which the risks can be controlled accordingly.

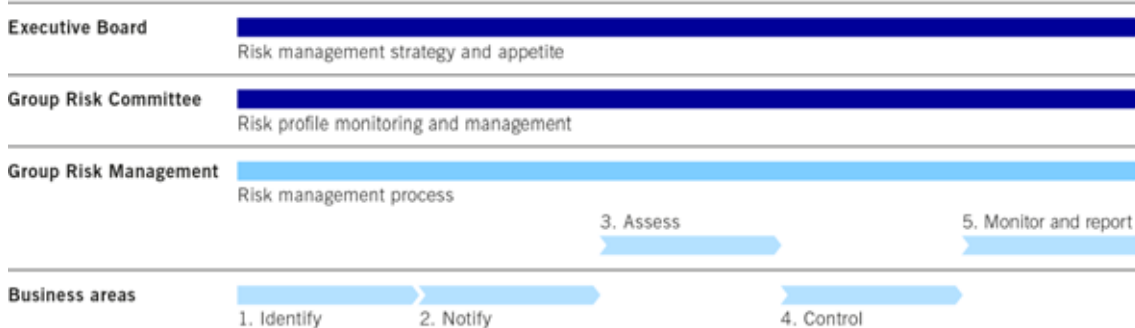
The Group's regulated subsidiaries act in the same way, always ensuring that they meet the requirements of the Group. In particular, they adhere to the risk appetite framework allocated to them by Deutsche Börse Group. The relevant supervisory boards and their committees are involved in the process, as are the executive boards and the corresponding risk management functions. Clearstream and Eurex Clearing AG implement the risk strategy with specific features drawn up for their own businesses. They therefore also use metrics and reporting formats adapted to the overarching Group structure. In general, the management of the respective subsidiary bears the responsibility for its risk management and risk appetite; the observance is monitored by the respective supervisory board.

Centrally coordinated risk management – a five-stage process

Risk management is implemented in a five-stage process. The objective is to identify all potential losses in good time, to record them centrally and to evaluate them in quantitative terms as far as possible; if necessary, management measures must then be recommended and their implementation monitored (see the chart [“The five-stage risk management system”](#)): The first stage is to identify the risks and the possible causes of losses or operational malfunctions. In the second stage, the business areas regularly – or immediately, in urgent cases – report to GRM the risks that they have identified and quantified. In the third stage, GRM assesses the risk exposure, whilst in the fourth stage, the business areas manage the risks by avoiding, mitigating or transferring them, or by actively accepting them. The fifth and final stage involves, for example, monitoring different risk metrics and, where necessary, informing the responsible Executive Board members and committees of significant risks, their assessment and possible emergency measures. In addition to its regular monthly and quarterly reports, GRM compiles ad hoc reports for members of the executive and supervisory boards. The risk management functions at Clearstream and Eurex Clearing AG submit reports to the respective executive boards and supervisory boards. As an independent unit, Internal Audit reviews the risk controlling functions.

The five-stage risk management system

Responsibility



Approaches and methods for risk monitoring

Deutsche Börse Group uses quantitative and qualitative approaches and methods for risk monitoring, with the objective of providing as complete a picture as possible of its risk situation at all times. To this end, the Group continuously reviews internal events with regard to their risk properties, whilst also considering regional as well as global developments. The Group is thus able to recognise and analyse existing risks; at the same time, it is able to swiftly and adequately respond to emerging risks, as well as to changes in the market or in the business environment.

Existing risks

Deutsche Börse Group employs a range of tools to evaluate and monitor operational, financial and business risk on a continuous basis, applying an economic perspective to quantify and aggregate risks. A normative perspective is also adopted for the credit institutions Clearstream and Eurex Clearing AG. The value at risk (VaR) model is the main tool used for quantification. The purpose of the VaR model is to determine the amount of capital – given a confidence interval defined ex ante – required to cover potential losses incurred within twelve months. Moreover, so-called stress tests are carried out in order to simulate extreme, yet plausible, events and their impact upon the Group's risk-bearing capacity. Another approach to risk monitoring, which serves as an early warning system for quantified and non-quantifiable in-house risks, is complementary risk metrics. These risk metrics are based on IT and security risks, potential losses, credit, liquidity and business risks.

1. Economic perspective: what risk can the capital bear?

The economic perspective measures risk positions arising from regular operations solely on the basis of qualitative and quantitative criteria, and so regardless of the requirements of individual accounting or regulatory models. This perspective defines the minimum amount of required economic capital (REC). Principle 1 of the risk strategy specifies that Deutsche Börse Group should not exhaust its risk-bearing capacity in more than 0.02 per cent of all years.

For Clearstream and Eurex Clearing AG, REC calculated in this manner also complies with the requirements of the second pillar of Basel III. Deutsche Börse Group determines its risk-bearing capacity on the basis of its reported equity in accordance with International Financial Reporting Standards (IFRSs). Clearstream and Eurex Clearing AG determine their risk-bearing capacity on the basis of their regulatory capital (for details, see section [“Regulatory capital requirements and regulatory capital ratios”](#)).

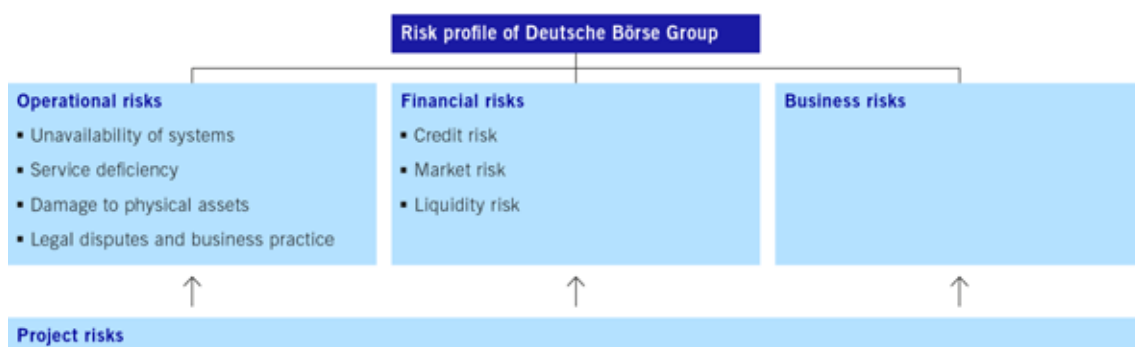
For management purposes, GRM regularly determines the ratio of the REC to the risk-bearing capacity. This indicator is known as the utilisation of risk-bearing capacity and it answers a key risk management question: how much risk can the Group afford and what risk is it currently exposed to? The ratio of REC to risk-bearing capacity remained below the defined maximum throughout the reporting period. If this were not the case, the Group would in a worst-case scenario exhaust its entire risk-bearing capacity and would become insolvent.

2. Normative perspective and other regulatory capital requirements

Clearstream and Eurex Clearing AG must also calculate their capital requirements for various risk types (see the chart [“Deutsche Börse Group’s risk profile”](#)) in line with the Pillar I requirements of Basel III. In addition, Eurex Clearing AG must fulfil EMIR capital requirements whilst Clearstream Banking AG has to comply with CSDR capital requirements as authorisation as CSD was granted by BaFin in January 2020. Clearstream Banking S.A. is currently applying for authorisation according to CSDR. Clearstream and Eurex Clearing AG use the standard approach for analysing and evaluating credit and market risk.

The two institutions have adopted different approaches regarding operational risk: Clearstream uses the considerably more complex advanced measurement approach (AMA) in all business units. This means that it meets the regulatory capital requirements for operational risk set out in the EU’s Capital Requirements Regulation (CRR). According to the method – which has been approved and is regularly audited by BaFin – the required capital is allocated to the regulated entities. In contrast, Eurex Clearing AG employs for operational risk the basic indicator approach in order to calculate regulatory capital requirements (for details, see section [“Regulatory capital requirements and regulatory capital ratios”](#)).

Deutsche Börse Group’s risk profile



3. Stress tests

Stress tests are carried out in order to simulate extreme, yet plausible, events for all material types of risk. Using both hypothetical and historical scenarios, they simulate the occurrence of extreme losses, or an accumulation of large losses, within a single year. Similarly, inverse stress tests are also carried out, which analyse which loss scenarios would exceed the risk-bearing capacity.

4. Risk metrics

Risk metrics are used to quantify the exposure to the most important internal risks against set limits. They are complementary to the VaR approach and serve to monitor other factors as well as non-quantifiable risks. Any breach of these limits serves as an early warning signal, which is reported to the Executive Board on a monthly basis. Furthermore, any such breach immediately triggers the requisite risk mitigation processes.

Emerging risks

With regard to risk management, Deutsche Börse Group pursues a sustainable, long-term strategy by also evaluating risks beyond a twelve-month horizon. For this purpose, the Group has developed so-called risk maps tailored specifically for expected or upcoming regulatory requirements and IT and information security risks. In addition, other operational, business and financial risks are also assessed beyond a twelve-month period. Risk maps classify risks by their probability of occurring and by their financial impact, should they materialise. A review process of Environment Social Governance (ESG) aspects is also carried out as part of the Group Risk Committee.

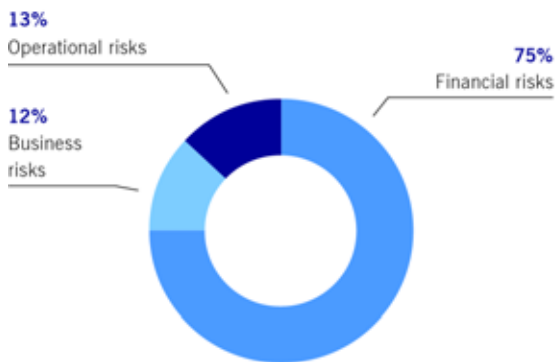
Risk description

The following section describes the types of risk that Deutsche Börse Group generally has to manage and presents the risks it actually faces. It also explains the measures that Deutsche Börse Group uses to attempt to prevent loss events, and to minimise their financial effects.

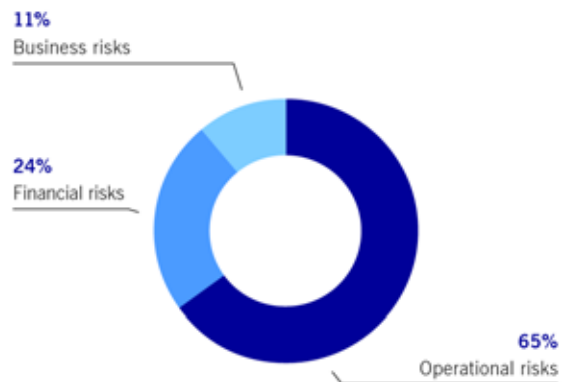
Risk profile

The risk profile of Deutsche Börse Group differs fundamentally from those of other financial services providers. Deutsche Börse Group differentiates between the three standard types of risk: operational risk, financial risk and business risk. Project risk also exists but the Group does not specifically quantify these as their impact is already reflected in the three risk types. The majority of risks are of an operational nature (see the charts below: “Required economic capital for German universal banks by risk type” and “Required economic capital for Deutsche Börse Group by risk type”).

Required economic capital for German universal banks by risk type



Required economic capital for Deutsche Börse Group by risk type



Operational risk greater than financial and business risk

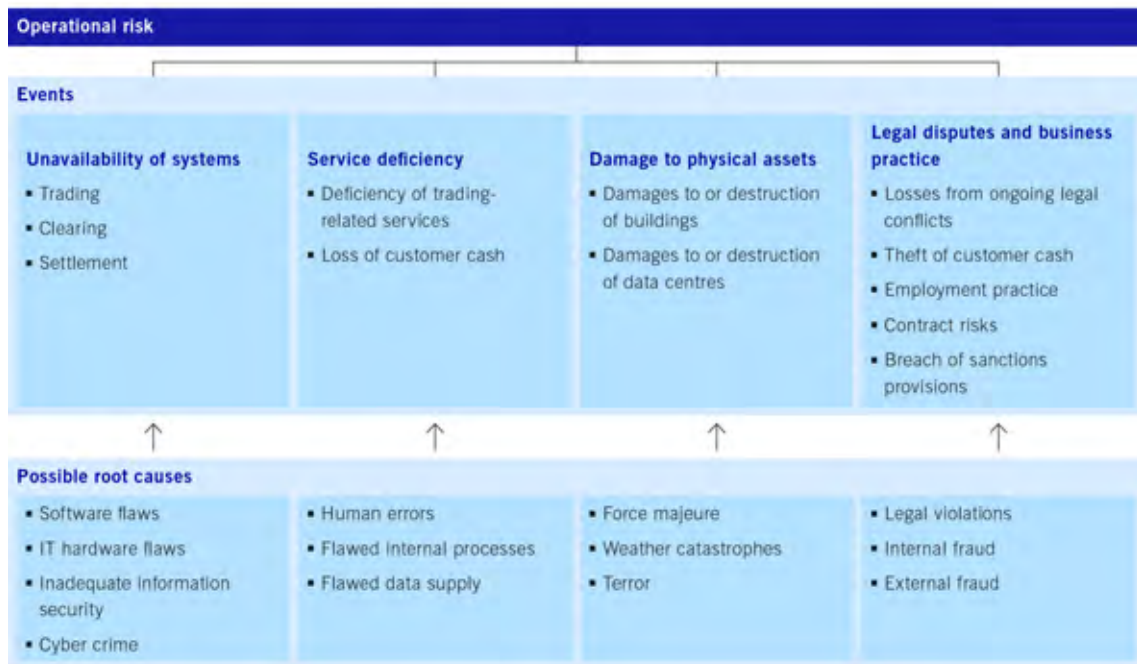
Utilisation of risk-bearing capacity from an economic perspective is used as the primary internal management indicator throughout Deutsche Börse Group (see the section “Approaches and methods for risk monitoring” for an explanation of these terms). In addition to the financial and operational risk already mentioned, business risk is also identified and assessed. This relates in particular to potential threats to revenue such as price pressure or loss in market share as well as cost risks. The economic perspective reveals that financial risk only accounts for around 24 per cent of all risks at Deutsche Börse Group. Business risk accounts for 11 per cent. This makes the third risk type all the more important for Deutsche Börse Group: at 65 per cent, operational risk accounts for two-thirds of the REC. Information on the additional capital requirements of other subsidiaries is provided in section “Regulatory capital requirements and regulatory capital ratios”.

The three risk types applicable to Deutsche Börse Group are described in detail below, in the order of their importance.

Operational risk

For Deutsche Börse Group, operational risks comprise the unavailability of systems, service deficiency, damage to physical assets as well as legal disputes and business practice (see the [chart below: “Operational risk at Deutsche Börse Group”](#)). Human resources risks are quantified just like other operational risks. The share of operational risk of the REC was 65 per cent as at 31 December 2020.

Operational risk at Deutsche Börse Group



Unavailability of systems

Operational resources such as the Xetra® and T7® trading system are essential for the services offered by Deutsche Börse Group. They should never fail in order to ensure that market participants can trade securities or derivatives at any time and without delay. The Group therefore calculates the availability of these systems as an important risk indicator. In line with the Group’s risk strategy, the business areas are responsible for monitoring the indicators.

The longer the downtime for one of these systems, the larger the potential loss. An outage could be caused by software or hardware issues, or in unlikely cases, the availability of the systems could be affected by acts of cybercrime or terrorist attack. In the past, only limited failures have occurred both with Xetra and with T7 and its predecessor system. In practice, there has never been a system failure lasting longer than one day. Deutsche Börse Group has taken a number of measures to further minimise the risk of failure lasting an entire day or longer, for example the redundancy of the network infrastructure. Despite all mitigating measures, however, failures of the IT infrastructure can never be ruled out completely. In 2020, limited instances of T7 system issues exceeding two hours were observed. Timely countermeasures were taken to address these system issues.

In general, availability risk represents the largest operational risk for Deutsche Börse Group and is therefore subject to regular tests that simulate not only what happens when its own systems fail but also when suppliers fail to deliver.

Service deficiency

Risks can also arise if a service provided to a customer is inadequate and this leads to complaints or legal disputes. One example would be errors in the settlement of securities transactions due to defective products and processes or mistakes in manual entries. A second example is handling errors in the collateral liquidation process in the event of the default of a large clearing customer. Such errors have not occurred to date in the rare case of a failure. The related processes are tested at least annually.

Other sources of error may be attributable to suppliers or to product defects; mistakes that may lead to the loss of client assets or mistakes in accounting processes must also be considered. The Group registers all complaints and formal objections as a key indicator of deficient processing risk.

Damage to physical assets

Natural disasters, accidents, terrorism or sabotage also count as operational risks that could, for example, cause the destruction of, or severe damage to, a data centre or office building. Business Continuity Management and Physical Security measures aim at averting significant financial damage (see the [chart Business Continuity Management](#)).

Legal disputes and business practice

Losses can also result from ongoing legal proceedings. These can occur if Deutsche Börse Group breaches laws or other requirements, enters into inadequate contractual agreements or fails to monitor and observe case law to a sufficient degree. Legal risk also includes losses due to fraud and labour law issues. This could entail, for example, losses resulting from insufficient anti-money laundering controls or breaches of competition law or of banking secrecy. Such operational risks can also arise if government sanctions are not observed, e.g. in case of conflicting laws of different jurisdictions, or in the event of breaches of other governmental or overarching regulations.

In its [2012 corporate report](#), Deutsche Börse Group informed about the class action Peterson vs Clearstream Banking S.A., the first Peterson proceeding, targeting turnover of certain customer positions held in Clearstream Banking S.A.'s securities omnibus account with its US depository bank, Citibank NA, and asserting direct claims against Clearstream Banking S.A. for damages of US\$250.0 million. The matter was settled between Clearstream Banking S.A. and the plaintiffs and the direct claims against Clearstream Banking S.A. were abandoned.

In July 2013, the US court ordered turnover of the customer positions to the plaintiffs, ruling that these were owned by Bank Markazi, the Iranian central bank. Bank Markazi appealed, and the decision was affirmed on 9 July 2014 by the Second Circuit Court of Appeals and later by the US Supreme Court on 20 April 2016. Once distribution of the funds to the plaintiffs is complete, a related case, Heiser vs Clearstream Banking S.A., also seeking turnover of the same assets, should also be dismissed.

On 30 December 2013, a number of US plaintiffs from the first Peterson case, as well as other plaintiffs, filed a complaint in the USA targeting restitution of certain assets that Clearstream Banking S.A. holds as a custodian in Luxembourg. In 2014, the defendants in this action, including Clearstream Banking S.A., moved to dismiss the case. On 19 February 2015, the US court issued a decision granting the defendants' motions and dismissing the lawsuit. The plaintiffs lodged an appeal against this ruling at the competent appeals court (Second Circuit Court of Appeals), which on 21 November 2017 confirmed large portions of the decision of the court of first instance. The appeals court referred the case back to the court of first instance regarding another aspect, asking the court to assess whether the assets held in Luxembourg are subject to execution in the USA. Clearstream Banking S.A. filed a petition against this ruling with the US Supreme Court on 8 May 2018. The US Supreme Court decided on 13 January 2020 to refer the second Peterson case back to the appeals court for consideration in the light of new US legislation. The appeals court referred the case back to the court of first instance and on 12 August 2020, the plaintiffs filed a motion for a summary decision with the court of first instance. Alternatively, the plaintiffs have requested a preliminary court decision ordering the transfer to the USA of the disputed assets held in custody by Clearstream Banking S.A.

On 14 October 2016, a number of plaintiffs filed a complaint in the USA naming Clearstream Banking S.A. and other entities as defendants. The complaint in this proceeding, Havlish vs Clearstream Banking S.A. is based on similar assets and allegations as in the Peterson proceedings. The complaint seeks turnover of certain assets that Clearstream Banking S.A. holds as a custodian in Luxembourg. The complaint also asserts direct claims against Clearstream Banking S.A. and other defendants and purports to seek damages of up to approximately US\$6.6 billion plus punitive damages and interest. On 12 October 2020, an amendment to the complaint was filed in this case with the aim of including additional plaintiffs in the proceedings. In connection with this, also further direct claims for damages of approximately US\$3.3 billion (plus punitive damages and interest) are asserted against Clearstream Banking S.A. and the other defendants.

On 2 April 2014, Clearstream Banking S.A. was informed that the United States Attorney for the Southern District of New York has opened a grand jury investigation against Clearstream Banking S.A. due to Clearstream Banking S.A.'s conduct with respect to Iran and other countries subject to US sanction laws. Clearstream Banking S.A. is cooperating with the US attorney.

In the context of the ongoing disputes regarding assets of Bank Markazi, Clearstream Banking S.A. was served with a complaint of Bank Markazi on 17 January 2018 naming Banca UBAE S.p.A. and Clearstream Banking S.A. as defendants. The complaint filed before the Luxembourg courts primarily seeks the restitution of assets of Bank Markazi which the complaint alleges are held on accounts of Banca UBAE S.p.A. and Bank Markazi with Clearstream Banking S.A., totalling approximately US\$4.9 billion plus interest. Alternatively, Bank Markazi seeks damages of the same amount. The assets sought include assets that were previously transferred by Clearstream Banking S.A. to Banca UBAE S.p.A. Furthermore, the complaint by Bank Markazi concerns assets of approximately US\$1.9 billion that were turned over to US plaintiffs pursuant to a 2013 binding and enforceable US court order in a proceeding to which Bank Markazi was a party. The lawsuit also concerns client assets of approximately US\$2.0 billion, which includes assets held by Clearstream Banking S.A. that are currently subject to litigation in the USA and Luxembourg brought by US plaintiffs. In view of this, Bank Markazi by way of further proceedings pending in Luxembourg is seeking the declaration that Clearstream Banking S.A. shall, subject to penalties, be prohibited from transferring relevant assets to the USA. Until a decision in these proceedings, Clearstream Banking S.A., due to a preliminary injunction obtained by Bank Markazi, is prohibited under penalty from transferring relevant assets to the USA. Clearstream Banking S.A. has filed a recourse with the Luxembourg Court of Cassation against the preliminary injunction.

On 15 June 2018, Banca UBAE S.p.A. filed a complaint against Clearstream Banking S.A. with the Luxembourg courts. This complaint is a recourse action related to the complaint filed by Bank Markazi against Clearstream Banking S.A. and Banca UBAE S.p.A. and asks that Banca UBAE S.p.A. be indemnified and held harmless by Clearstream Banking S.A. in the event that Banca UBAE S.p.A. loses the legal dispute brought by Bank Markazi and is ordered by the court to pay damages to Bank Markazi.

The plaintiffs in the above-mentioned Havlish case on 24 September 2020 made a formal intervention concerning the complaint by Bank Markazi of 17 January 2018. With this, the plaintiffs, amongst others, request that Clearstream Banking S.A. be ordered to pay an amount equivalent to US judgments obtained by the plaintiffs against Iran and Bank Markazi in the amount of approx. US\$6.6 billion (plus interest).

On 24 November 2020, the plaintiffs in the Havlish case also sued Clearstream Banking S.A. and other legal entities in Luxembourg. The lawsuit is essentially based on similar allegations to those in the Havlish case pending in the USA, and amongst other things asserts direct claims of around US\$5.5 billion (plus interest) against Clearstream Banking S.A.

On 26 December 2018, two US plaintiffs filed a complaint naming Clearstream Banking S.A. and other entities as defendants. The plaintiffs have claims against Iran and Iranian authorities and persons amounting to approximately US\$28.8 million. The complaint in this case (Levin vs. Clearstream Banking S.A.) is based on similar assets and allegations as in the second Peterson case, and the Havlish case. The complaint seeks turnover of certain assets that Clearstream Banking S.A. holds as a custodian in Luxembourg. The complaint also asserts direct claims against Clearstream Banking S.A. and other defendants and seeks damages of up to approximately US\$28.8 million, plus punitive damages and interest.

On 4 December 2019, several US plaintiffs from the aforementioned Heiser vs Clearstream Banking S.A. case filed a new complaint naming Clearstream Banking S.A. and other entities as defendants. The plaintiffs hold claims against Iran and Iranian authorities and persons in excess of US\$500.0 million, and are seeking turnover of Iranian assets.

On 26 August 2020, further judgment creditors of Iran (the “Ofisi plaintiffs”) filed a complaint in the USA in which Clearstream Banking S.A. is also named as a defendant. The Ofisi plaintiffs obtained a US judgment against Iran and others in 2014 awarding them damages of approximately US\$8.7 billion as a result of terrorist attacks attributed, amongst others, to Iran. On this basis the Ofisi plaintiffs are seeking the turnover of assets attributed to Bank Markazi which are already the subject of other actions brought against Clearstream Banking S.A. Furthermore, the Ofisi plaintiffs are claiming damages and punitive damages equivalent to the amount of their damage award directly from Clearstream Banking S.A.

Starting on 16 July 2010, the insolvency administrators of Fairfield Sentry Ltd. and Fairfield Sigma Ltd., two funds domiciled on the British Virgin Islands, filed complaints in the US Bankruptcy Court for the Southern District of New York, asserting claims against more than 300 financial institutions for restitution of amounts paid to investors in the funds for redemption of units prior to December 2008. On 14 January 2011, the funds’ insolvency administrators filed litigation against Clearstream Banking S.A. for the restitution of US\$13.5 million in payments made for redemption of fund units, which the funds made to investors via the settlement system of Clearstream Banking S.A. The proceedings, which were suspended for several years, are ongoing.

Amongst other legal disputes in connection with the bankruptcy of the Puerto Rico case under PROMESA legislation, the legal committee of the Puerto Rican government initiated legal action in 2019 to recover interest payments made from 2014 to 2017 to holders of government bonds (ERS and GO bonds) and company pension bonds. Clearstream Banking S.A. is named in this US litigation and two lawsuits have been filed against Clearstream Banking S.A. itself: one of the two lawsuits relates to payments in connection with the GO bond, the other to payments in connection with the ERS bond. The Puerto Rican government is claiming US\$3.9 million for the GO bond and less than US\$16,000 for the ERS bond. Both lawsuits (and all other similar litigation) have been suspended since July 2019.

On 24 August 2020, Clearstream Banking S.A. was summoned in legal proceedings in Indonesia between PT Kapuas Prima Coal TBK and the principal defendant Horizonte Opportunities Fund SPC. Clearstream Banking S.A. is cited as a co-defendant in the proceedings. PT Kapuas Prima Coal TBK claims a breach of contract by ZINC shareholders and is seeking the return by means of blocking and seizure of ZINC shares issued by it that are currently deposited with the co-defendant’s custodians (including Clearstream Banking S.A.). At the first hearing in November 2020, the court noted it could dismiss the claim if the plaintiff was again not present at a hearing scheduled for April 2021.

Legal disputes have arisen regarding a bond issued by MBB Clean Energy AG (MBB), which is held in custody by Clearstream Banking AG. MBB issued the first tranche of the bond in April 2013 and the second tranche of the bond in December 2013. The global certificates for the two tranches were delivered to Clearstream Banking AG by the paying agent of the issuer. The legal disputes relate to the non-payment of the bond and the purported lack of validity of the bond. Clearstream Banking AG's role in the context of the purported lack of validity of the MBB bond is primarily to safekeep the global certificate as national central securities depository. Insolvency proceedings have meanwhile been opened in respect of the issuer, MBB.

A buyer of an MBB Clean Energy AG (MBB) bond, which is held in custody by Clearstream Banking AG and was listed on the Frankfurt Stock Exchange, filed a lawsuit at a Dutch court concerning claims for damages against Clearstream Banking AG, Deutsche Börse AG and other partners. The lawsuit was dismissed at first instance in October 2020; the plaintiff filed an appeal against the judgment.

On 6 February 2020, a plaintiff filed a complaint naming Clearstream Banking AG and one other entity as defendants. The complaint, which was filed before the courts in Frankfurt, primarily seeks rights to information and the turnover of dividends in the amount of approximately €4.1 million plus interest. The alleged claim relates to dividends from securities that Clearstream Banking AG holds as a custodian.

In September 2017, Clearstream Banking AG and Clearstream Banking S.A. were made aware that the Public Prosecutor's Office in Cologne had initiated proceedings for tax evasion against an employee of Clearstream Banking AG for his alleged involvement in the settlement of transactions of market participants over the dividend date (cum/ex transactions). On 22 January 2018, the Public Prosecutor's Office in Cologne addressed to Clearstream Banking AG a notification of hearing Clearstream Banking AG and Clearstream Banking S.A. as potential secondary participants (Nebenbeteiligte). Starting on 27 August 2019, together with other supporting authorities, the Public Prosecutor's Office in Cologne conducted searches of the offices of Clearstream Banking AG, Clearstream Banking S.A., as well as other Deutsche Börse Group companies and sites. In the course of these measures, Deutsche Börse Group entities were made aware that the Public Prosecutor's Office in Cologne has extended the group of accused persons (Beschuldigte) to include current and former employees of Deutsche Börse Group companies as well as executive board members of subsidiaries of Deutsche Börse AG. In 2020, Deutsche Börse became aware of a further extension of the group of accused persons among current and former employees of Deutsche Börse AG's subsidiaries. Due to the still early stage of the proceedings, it is still not possible to predict timing, scope or consequences of a potential decision. The companies concerned are cooperating with the competent authorities. They do not expect that they could be successfully held liable.

In November 2018, a customer of a trading participant of the Frankfurt Stock Exchange filed a lawsuit at the District Court (Landgericht) of Frankfurt/Main against Deutsche Börse AG. The plaintiff is claiming damages of approximately €2.6 million from Deutsche Börse AG. The alleged damages are said to have arisen (1) on 7 July 2016, from Deutsche Börse AG's publication of an inaccurate ex-dividend date relating to a financial instrument via the Xetra system and (2) due to the fact that a client of the plaintiff relied on this inaccurate information to conclude transactions. The court dismissed the complaint in its final ruling of 6 November 2020.

On 19 December 2018, the German Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin) sent Deutsche Börse AG a formal hearing notification in a penalty proceeding, which refers to an allegation of a supposed lack of self-exemption or, alternatively, an allegedly omitted ad hoc announcement. Specifically, in the search for a successor for Carsten Kengeter, Deutsche Börse AG had omitted to qualify as a price-relevant intermediate step the fact that a few days before the appointment of Theodor Weimer in November 2017, two suitable and interested CEO candidates had been identified and a decision about the appointment was planned. Even after consulting with external experts, Deutsche Börse AG believes this allegation is unfounded.

Despite the ongoing proceedings described before, the Executive Board is not aware of any material changes to the Group's risk situation.

As of 31 December 2020 in the opinion of Executive Board and based on the information available, there was no provision requirement for litigation in any of the cases.

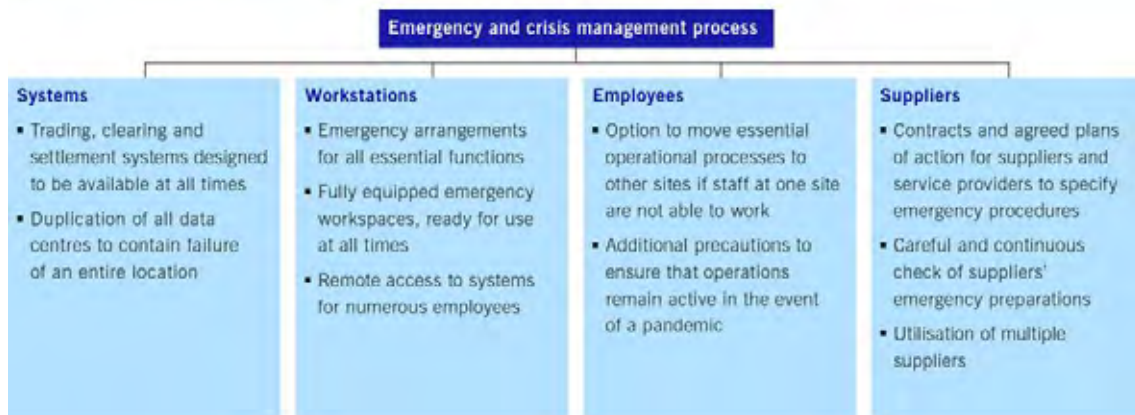
Measures to mitigate operational risk

Deutsche Börse Group takes specific measures to reduce its operational risk. Amongst them are emergency and contingency plans, measures to ensure information security and the physical safety of employees and buildings as well as compliance rules and procedures. In addition, Deutsche Börse Group has insurance policies that partly cover the potential financial consequences of operational incidents.

Emergency and contingency plans

It is essential for Deutsche Börse Group to provide its products and services as reliably as possible. The Group has to maintain its business operations and safeguard against emergencies, failures and crises. If its core processes and resources are not available, this represents not only a substantial risk for the entire Group but also even a potential systemic risk for the financial markets in general. As a result, Deutsche Börse Group has set up a system of emergency and crisis plans covering the entire Group (business continuity management, BCM). This covers all processes designed to ensure continuity of operations in the event of a crisis and significantly reduces unavailability risk. Measures include precautions relating to all important resources (systems, workstations, employees, suppliers), including the redundant design of essential IT systems and the technical infrastructure, as well as emergency measures designed to mitigate the unavailability of employees or workspaces in core functions at all important locations. This includes unavailability due to pandemic based events, like the recent coronavirus outbreak. This situation is being handled in accordance with the Deutsche Börse Group Incident and Crisis Management Process. Activities are centrally coordinated to ensure continuity of Deutsche Börse Group's critical operations as well as employees' health and safety. Back-up locations are subject to regular tests and remote access is also available. Examples of such emergency and contingency measures are listed in the "[Business continuity management](#)" chart.

Business continuity management



Preparations for emergencies and crises

The Group has introduced and tested a management process for emergencies and crises that enables it to respond quickly and in a coordinated manner. This is intended to minimise the effects on business processes and on the market and to enable a quick return to regular operations. All business segments have appointed emergency managers to act as central contacts and take responsibility during emergencies and crises. The emergency managers inform the Executive Board or raise the alarm with them in the case of severe incidents. In the event of a crisis, the Executive Board member responsible for the affected business area acts as the crisis manager or delegates this role. The emergency and contingency plans are tested regularly by realistically simulating critical situations. Such tests are generally carried out unannounced. The test results are evaluated based on the following criteria:

- Functionally effective: the measures must be technically successful.
- Executable: the employees must be familiar with the emergency procedure and be able to execute it.
- Timely: emergency measures must ensure that operations restart within the intended time period, namely the recovery time objective (RTO).

Information security

Attacks on information technology systems and their data – especially due to cybercrime – represent operational risks for Deutsche Börse Group, which is continuously confronted with rising threats in this respect, as are other financial services providers and the entire sector. Unauthorised access, change and loss of information, as well as non-availability of information and services, may all arise as a result of such attacks (such as phishing, DDoS and ransomware attacks). There was no successful attack on Deutsche Börse Group's core systems in 2020.

In order to maintain the Group's integrity as a transaction services provider, and in order to reduce and control the risks, Deutsche Börse is continuously implementing measures to increase information security. The aim is to proactively boost the robustness of procedures, applications and technologies against cybercrime in such a way that they are adjusted to the threatening situation and regulatory requirements at an early stage. The foundation for this is formed by a set of core processes together with specific control measures based on the international information security standard ISO/IEC 27001.

The information security function checks that the information security and information security risk management requirements are adhered to; it also monitors the systemic integration of (and adherence to) security standards, within the scope of product and application development.

The Group operates a situation centre (Computer Emergency Response Team, CERT), which detects and assesses threats from cybercrime at an early stage, and coordinates risk mitigation measures in cooperation with the business units.

The Information Security function operates a Group-wide programme designed to raise staff awareness for the responsible handling of information, and to improve staff conduct in this aspect. All in all, Deutsche Börse Group's security approach includes overall measures in accordance with ISO/IEC 27001 covering both the development phase and the operational phase.

Furthermore, Deutsche Börse Group has been a full member of national associations (Cyber Security Sharing and Analytics, CSSA), trade associations (World Federation of Exchanges) and international networks (Financial Services Information Sharing and Analysis Center, FS-ISAC) which contribute significantly towards a forward-looking stance vis-à-vis cyber threats, and the development of strategies to fend off such threats.

Physical security

Deutsche Börse Group places great importance on physical security issues due to the constantly changing global security risks and threats. Corporate Security has developed an integral security concept to protect the company, its employees and values from internal and external attacks and threats – in a proactive as well as reactive manner. Analysts are continuously assessing the security situation at Deutsche Börse Group's locations and are in close contact with authorities (Federal Criminal Police Office – BKA, Federal Office for the Protection of the Constitution – BfV, etc.), security services providers, and security departments of other companies. Multi-level security processes and controls ensure physical safety at the Group's locations. Physical access to buildings and values is monitored permanently; it is based on the access principle of 'least privilege' (need-to-have basis). Penetration tests, inter alia, are carried out on a regular basis to verify the efficiency and effectiveness as well as the quality of the security processes at the locations.

In an increasingly competitive global market environment, access to know-how and confidential company information bears the potential of a major financial advantage to outsiders or competitors. Deutsche Börse applies state-of-the-art technology to prevent its knowledge from being obtained illegally, e.g. through wiretapping.

Furthermore, Corporate Security is tasked with providing support to employees whilst they are travelling or on foreign assignment, i.e. protecting them from risks in the areas of crime, civil unrest, terrorism and natural disasters. In this context, a worldwide travel security programme was established which guarantees a risk assessment before, during and after travelling, supported by a travel-tracking system and a central 24/7 emergency telephone number.

Insurance contracts

Operational risks that Deutsche Börse Group cannot or does not wish to bear itself are transferred to insurance companies, if this is possible at a reasonable price. The insurance policies are checked individually and are approved by Deutsche Börse AG's Chief Financial Officer.

Financial risk

Deutsche Börse Group divides its financial risk into credit, market and liquidity risk (see the “Financial risk at Deutsche Börse Group” chart below). At Group level, these risks account for about 24 per cent of the REC (this information only includes credit and market risk; liquidity risk is not quantified as part of the REC; see [note 23 to the consolidated financial statements](#)). They apply primarily to the Group’s credit institutions. As a result, the following comments focus on Clearstream and Eurex Clearing AG.

Financial risk at Deutsche Börse Group



Credit risk

Credit risk or counterparty credit risk describes the danger that a counterparty might not meet its contractual obligations, or not meet them in full. Measurement criteria include the credit rating of the counterparty, the degree to which a credit line has been utilised, the collateral deposited and concentration risk. Although Clearstream and Eurex Clearing AG often have short-term exposures against counterparties totalling several billion euros overall, these are generally secured by collateral deposited by the market participants. However, Clearstream may have short-term unsecured exposures with correspondence banks in the course of settling securities transactions. Moreover, the Group regularly evaluates the reliability of its recovery plans at Clearstream and Eurex Clearing AG in various scenarios (including client defaults), and the resulting credit risk.

Clearstream grants loans to its clients in order to make the securities settlement more efficient. This type of credit business is, however, fundamentally different from the classic lending business. On the one hand, credit is extended solely for less than a day, and it is generally collateralised and granted to clients with a high credit rating on the other. Furthermore, the credit lines granted can be revoked at any time.

Furthermore, Clearstream Banking S.A. is exposed to credit risk arising from its strategic securities lending transactions (ASLplus). Only selected banks act as borrowers. All borrowing transactions are fully collateralised and only selected bonds with a high credit rating are permitted for use as collateral.

Under its terms and conditions, Eurex Clearing AG only enters into transactions with its clearing members. Clearing mainly relates to defined securities, subscription rights and derivatives that are traded on specific stock exchanges. Eurex Clearing AG also offers this service for over-the-counter (OTC) products such as interest rate swaps and forward rate agreements. As a central counterparty, it intervenes between the parties to a transaction. By offsetting reciprocal claims and requiring clearing members to post collateral, Eurex Clearing AG mitigates the credit risk exposure.

To date, no default by a client with a secured credit line has resulted in financial losses. Deutsche Börse Group therefore considers the risk of client default resulting in material losses for the Group to be low. Credit risk can also arise from cash investments. The Treasury department is responsible here, and has Group-wide authority. Treasury largely makes collateralised investments of funds belonging to Group companies as well as cash provided by Clearstream and Eurex Clearing AG customers. The Group has not incurred any losses from such investment activity to date.

Clearstream and Eurex Clearing AG run stress tests to analyse scenarios, such as the default of their largest client. The figures determined in this way are compared with the limits defined as part of the companies' risk-bearing capacity. In addition, the impact of several clearing members defaulting at the same time is calculated for Eurex Clearing AG. Moreover, inverse stress tests are run to determine the number of counterparties that would have to default for losses to exceed the risk cover amount. Extended stress scenarios were drawn up in 2020, especially in view of the coronavirus pandemic and the potential future defaults at banks. The results are analysed continuously and included in the calculation of risk-bearing capacity.

Deutsche Börse Group generally tracks a variety of risk indicators in addition to its risk measures (REC, regulatory capital requirements and the stress tests performed for credit risk). These include the extent to which individual clients utilise their credit lines and where credit is concentrated.

Reducing credit risk

Clearstream and Eurex Clearing AG assess the creditworthiness of potential customers or counterparties to an investment before entering into a business relationship with them. The companies do this in the same way: they determine the size of individual customers' credit lines based on requirements and regular creditworthiness checks, which they supplement with ad hoc analyses if necessary. They define safety margins for the collateral depending on the risk involved and review them continuously.

Deutsche Börse Group reduces its risk when investing funds belonging to Group companies and client funds by distributing investments across multiple counterparties, all with a high credit quality, by defining investment limits for each counterparty and by investing funds primarily in the short term and in collateralised form if possible. Investment limits are established for each counterparty on the basis of at least annual credit checks and using ad hoc analyses, as necessary. Since extending its licence as an investment and credit institution under Kreditwesengesetz (German Banking Act), Eurex Clearing AG can also use the permanent facilities at Deutsche Bundesbank and the Swiss National Bank; it is thus in a position to manage the majority of client funds in a central bank environment.

Investment losses on currencies for which Eurex Clearing AG has no access to the respective central banks will be borne, on a pro-rata basis, by Eurex Clearing AG and by those clearing members active in the currency where losses were incurred. The maximum amount which each clearing member will have to contribute in this manner is the total amount such clearing member has pledged with Eurex Clearing AG as cash collateral in this currency. The maximum amount to be borne by Eurex Clearing AG is €50 million.

Given the size and volatility of its clients' liabilities, Eurex Clearing AG has developed a leading-edge margining system, which is described in detail in the following section.

Safety for participants and the clearing house

Each clearing member must prove that it has liable capital (or, in the case of investment funds, assets under management) equal to at least the amounts that Eurex Clearing AG has defined for the different markets. The amount of liable capital (or assets under management) for which evidence must be provided depends on the risk. To mitigate Eurex Clearing AG's risk that clearing members might default before settling open transactions, members are obliged to deposit collateral in the form of cash or securities (margins) on a daily basis and, if required, to meet additional intraday margin calls.

Eurex Clearing AG only permits securities with a high credit quality and liquidity to be used as collateral to cover margin requirements. Internal evaluations and external ratings are used to determine the credit quality. On the basis of these consolidated ratings, only collateral that is classified at least as investment grade is permitted. The limits for bank bonds are raised to at least "A–" due to the potential wrong-way risks. The admission criteria are reviewed continually and market risk is covered by haircuts with a confidence level of at least 99.9 per cent. Hence, securities of issuers with lesser credit quality are subject to higher haircuts than those applied to securities with higher credit quality. Eligible collateral that no longer meets the high credit rating requirements at a later point in time (e.g. due to a new consolidated rating) is excluded. Risk inputs are checked monthly and the haircuts are recalculated daily for each security. In addition, a minimum haircut applies to all securities.

Margins are calculated separately for clearing member accounts and client accounts. Gains and losses resulting from intraday changes to the value of financial instruments are either settled in cash by the counterparties (variation margin) or deposited with Eurex Clearing AG as collateral by the seller due to the change in the equivalent value of the item (premium margin). In the case of bond, repo or equity transactions, the margin is collected from either the buyer or the seller (current liquidating margin), depending on how the transaction price performs compared to the current value of the financial instruments. The purpose of these margins is to offset accumulated gains and losses.

In addition, Eurex Clearing AG uses additional collateral to protect itself in the case of default by a clearing member against any risk that the value of the positions in the member's account will deteriorate in the period before the contained positions are closed and the account is settled. This additional collateral is known as the initial margin. The target confidence level here is at least 99.0 per cent (with a minimum two-day holding period) for exchange-traded transactions, or 99.5 per cent (with a minimum five-day holding period) for OTC transactions. Eurex Clearing AG checks daily whether the margins match the requested confidence level: the initial margin is currently calculated using both the standard risk-based margining method and the Eurex Clearing Prisma method.

The Eurex Clearing Prisma method is available for all traded derivatives contracts and takes the clearing member's entire portfolio – as well as historical and stress scenarios – into account when calculating margin requirements. The objective is to cover market fluctuations for the entire liquidation period until the account is settled. At present, the risk-based margining method is still used for cash market products and physical deliveries, as well as for securities lending and repo transactions.

In addition to the margins for current transactions, each clearing member contributes to a default fund, with the contributions based on its individual risk profile. This fund is jointly liable for the financial consequences of a default by a clearing member to the extent that this cannot be covered by the member's individual margin, and its own and Eurex Clearing AG's contributions to the default fund. Eurex Clearing AG uses daily stress tests to check whether its default fund is adequate enough to absorb a default of its two largest clearing members. This involves subjecting all current transactions and their collateral to market price fluctuations at a confidence level of at least 99.9 per cent. In order to be able to determine potential losses in excess of a clearing member's individual margins, the impact on the default fund of a potential default is simulated. Eurex Clearing AG has defined limits which, when exceeded, trigger an immediate adjustment to the size of the default fund if necessary. The following lines of defence are available in case a clearing member is unable to meet its obligations to Eurex Clearing AG due to a delay in performance or a default:

- First, Eurex Clearing AG may net the relevant clearing member's outstanding positions and transactions and/or close them – in terms of the risk involved – by entering into appropriate back-to-back transactions, or settle them in cash. Clients' segregation models are taken into account accordingly.
- Any potential shortfall that might be incurred in connection with such a closing or cash settlement, as well as the associated costs, would be covered in the first instance by the collateral provided by the clearing member concerned. As at 31 December 2020, collateral amounting to €66,598 million had been provided for the benefit of Eurex Clearing AG (after haircuts).
- After this, the relevant clearing member's contribution to the default fund would be used to cover the open amount. Contributions ranged from €1 million to €487.3million as of 31 December 2020.
- Any remaining shortfall would initially be covered by a contribution to the default fund by Eurex Clearing AG. Eurex Clearing AG's contribution amounted to €200.0 million as of 31 December 2020.
- Only then would the other clearing members' contributions to the default fund be used proportionately. As at 31 December 2020, aggregate default fund contribution requirements for all clearing members of Eurex Clearing AG amounted to €4,536 million. After the contributions have been used in full, Eurex Clearing AG can request additional contributions from each clearing member, which can be at most twice as high as their original default fund contributions. In parallel to these additional contributions, Eurex Clearing AG provides additional funds of up to €300.0 million, provided via a letter of comfort from Deutsche Börse AG (see below). These additional funds will be used together with the additional clearing member contributions, on a pro-rata basis.
- Next, the portion of Eurex Clearing AG's equity which exceeds the minimum regulatory capital requirements would be realised.
- Finally, the remaining equity of Eurex Clearing AG would be drawn upon.

- Deutsche Börse AG has issued a letter of comfort in favour of Eurex Clearing AG. With this letter of comfort, Deutsche Börse AG commits to provide Eurex Clearing AG with the funds required to meet its obligations – including the obligation to provide additional funds of up to €300.0 million, as mentioned before. The maximum amount to be provided under the comfort letter amounts to €600.0 million, including payments already made. Third parties are not entitled to any rights under the comfort letter.

In the event of default by a clearing member, Eurex Clearing AG carries out a Default Management Process (DMP), with the objective of closing out all positions assumed as a result of the default. Within the scope of the DMP, any costs incurred in connection with such close-out are covered using collateral from Eurex Clearing AG's lines of defence. Essentially, within the DMP framework, products which share similar risk characteristics are assigned to liquidation groups that are liquidated using the same process. Within a liquidation group, Eurex Clearing AG will balance its position by transferring defaulted positions to other clearing members, either via an auction or by way of bilateral independent sales. Potential claims against Eurex Clearing AG, arising from the settlement of positions assumed from the defaulted clearing members, are covered by the collateral from the multiple lines of defence. Whenever necessary, these collateral items are disposed of in the market by way of bilateral independent sales, in order to cover the outstanding claims from settling the open positions. The DMP will therefore not only contribute to the security and integrity of capital markets, but will also protect non-defaulted clearing members from any negative effects resulting from the default.

In the past, the DMP of Eurex Clearing AG has been used four times, involving the defaults of Gontard & MetallBank (2002), Lehman Brothers (2008), MF Global (2011) and Maple Bank (2016). In all of the cases mentioned before, the funds pledged as collateral by the defaulted clearing member were sufficient to cover losses incurred upon closing out positions – in fact, a significant portion of resources was returned to the defaulted clearing member.

Market risk

Market risk include risks of an adverse development of interest rates, exchange rates or other market prices. Deutsche Börse Group measures these risks using Monte Carlo simulations based on historical price data, as well as corresponding stress tests.

Clearstream and Eurex Clearing AG invest parts of their equity in securities with the highest credit quality. The majority of these securities have a variable interest rate, interest rate risk is low. The Group avoids open currency positions whenever possible. Furthermore, market risk could result from Deutsche Börse Group's ring-fenced pension plan assets (Contractual Trust Arrangement (CTA), Clearstream's pension fund in Luxembourg). The Group reduced its risk of extreme losses by deciding to invest the bulk of the CTA on the basis of a value preservation mechanism.

Liquidity risk

Liquidity risk arises if a Deutsche Börse Group company is unable to meet its daily payment obligations or if it can only do so at a higher refinancing cost. Operational liquidity requirements are met primarily internally by retaining funds generated with a view towards maintaining sufficient liquidity in order to be able to meet all of the Group's payment obligations when due.

An intra-Group cash pool is used to pool surplus cash from subsidiaries on a Deutsche Börse AG level, as far as regulatory and legal provisions allow. Liquid funds are invested in the short term in order to ensure that they are available. Short-term investments are also largely secured by liquid bonds from first-class issuers. Deutsche Börse AG has access to short-term external sources of financing, such as agreed credit lines with individual banks or consortia, and a commercial paper programme. In recent years, Deutsche Börse Group has leveraged its access to the capital markets to issue corporate bonds in order to meet its structural financing needs.

Since Clearstream's investment strategy aims to be able to repay customer deposits at all times, maturity limits are set carefully. In addition, extensive sources of financing are available at all times, such as ongoing access to the liquidity facilities at Deutsche Bundesbank and Banque centrale du Luxembourg.

Due to its role as a central counterparty, Eurex Clearing AG has strict liquidity guidelines and its investment policy is correspondingly conservative. Regular analyses ensure the appropriateness of the liquidity guidelines. In addition, Eurex Clearing AG can use Deutsche Bundesbank's permanent facilities.

Deutsche Börse Group can also be exposed to liquidity risk in case of a customer default. If a clearing member of Eurex Clearing AG defaults, its member position is liquidated. If a Clearstream customer defaults, the – generally collateralised and intraday – credit line granted to increase settlement efficiency would be called, and the collateral provided by the client could then be liquidated. A decline in market liquidity, following a market disruption, would increase Deutsche Börse Group's liquidity risk exposure. By means of stress tests, Clearstream and Eurex Clearing AG calculate for each day of the month – and report on a monthly basis – the liquidity needs that would result if the two largest counterparties were to default, and maintain sufficient liquidity in order to cover this liquidity requirement. Potential risks that are identified in the course of stress tests are analysed and corresponding risk-reduction measures initiated. During the 2020 reporting year, Eurex Clearing AG and Clearstream continuously held sufficient liquidity to fulfil both regulatory requirements as well as the liquidity needs determined through stress tests.

Business risk

Business risk reflects the fact that the Group depends on macroeconomic and geopolitical developments and is influenced by other external events, such as changes in the competitive environment or regulatory initiatives. It therefore expresses the risks associated with the Group's business environment and sector. It also includes business strategy risk, i.e. the impact of risks on the business strategy and possible adjustments to it. These business risks are represented as variance analyses of planned and actual EBITDA, and are monitored constantly by the divisions. They account for about 11 per cent of the Group's REC. Business risk may result in revenues lagging budget projections or in costs being higher.

Business risk includes the risk that competitors, such as the exchanges Euronext, Singapore Exchange (SGX), ICE Futures Europe and Mercado Español de Futuros Financieros (MEFF), as operators of derivatives markets, might increase their market shares on the European trading markets (both on- and off-exchange).

Additional business risk may arise from regulatory requirements, or from the geopolitical or economic environment – for example, in the event of an inner-European crisis affecting the monetary union, the impact of negative interest rates or a tariff conflict, having adverse effects on trading activity.

In recent years Deutsche Börse Group has taken steps to reduce the direct risks associated with “Brexit” – the departure of the United Kingdom (UK) from the European Union (EU). They focus on customer access to the Group’s systems, on market access to the UK for the Group’s business units and on establishing an alternative pool of liquidity within the EU 27 for clearing interest rate swaps denominated in euros. Despite this, it will be necessary to keep a close eye on how the relationship evolves in the future. These relations are expected to have an impact on issues of general market access and on the development of the regulatory frameworks in the respective markets. In the medium to long term, the latter could diverge and so jeopardise market access or result in higher operating costs. It could also result in different competition rules, which may lead to uncertainty, additional costs and lost revenue for the Group and for market participants.

In terms of political tax discussions, the financial transaction tax (FTT) to which some European states still aspire represents a variable which could have an adverse effect on the Group’s business. Steps to introduce a digital tax or a Union-wide taxation of financial services could also have a negative impact on the Group, depending on how the scope of application is defined.

Other regulatory risks exist in connection with the forthcoming review of the directive and regulation on markets in financial instruments (MiFID II/MiFIR). In terms of trading, the main risks for volumes at the Eurex Exchange and the Group’s spot market would be if any competitive disadvantages caused trading activities to move to alternative venues. Furthermore, rules on non-discriminatory access to clearing and trading in financial instruments could have an adverse impact on trading volumes and revenue. Finally, it should be noted that ideas and initiatives concerning a consolidated data storage system, particularly in combination with stricter regulation of pricing for market data, could result in business risks for the Group’s market data business.

In connection with the review of the Central Securities Depository Regulation (CDSR) there are also risks for the business of Eurex Securities Transaction Services if the conditions for mandatory buy-in transactions, which are linked to the rules on settlement discipline, are changed. In addition, there are a number of risks for the securities depositories in the Group, which may also entail changes to their organisational structure. A review of the framework could also lead to restrictive practices and so represent a risk to revenue. Finally, the Group’s securities depositories could also be exposed to revenue risk as a result of the work carried out by the contact group for the primary market at the European Central Bank.

In its clearing business there are some risks for the Group concerning the final structure of the framework for the recovery and resolution of central counterparties, as well as from the ongoing development of global standards. The former relate particularly to the liability and capital requirements of operators of central counterparties in relation to market participants and so could represent a revenue and cost risk for the Group. In addition, further implementation of the European Market Infrastructure Regulation 2.2 (EMIR 2.2) on the work of the Supervisory Committee for Central Counterparties could affect the ongoing development of the Eurex Clearing Partnership Programme in the field of interest rate derivatives.

The ongoing review of the European Market Infrastructure 2.1 (EMIR 2.1) could also distort competition due to changes affecting risk-mitigation services in post-trading and so cause a loss of revenue.

Other business risks exist in the medium term from legislative initiatives from the European Commission on the Digital Finance Package. To encourage the use of distributed ledger technology (DLT) in financial markets the European Commission is proposing limited and experimental DLT pilot regimes to introduce DLT multilateral trading facilities (MTF) as novel DLT market infrastructures. They would be admitted for trading securities that are transferred via DLT, which are not recorded with a central depository but rather in a distributed ledger of the same DLT MTF. This potentially poses risks to existing business models in the Group, to the extent that the proposed exceptions are established within the existing regulatory framework. Another proposal by the European Commission, the Digital Operational Resilience Act (DORA), provides for the EU-wide harmonisation of the requirements for the digital operational resilience of all financial market participants in terms of information and communications technologies (ICT). The proposal also includes a new prudential regime for third-party ICT providers and critical ICT services, including cloud services. DORA creates a risk of higher costs and increasing complexity and inflexibility for the operation of the Group's IT infrastructure. Furthermore, the proposal could have an adverse impact on the Group's multi-cloud strategy by making it more difficult to use cloud services in the financial industry.

Similar risks could also arise from the implementation in Germany of the EU Directive on the Security of Network and Information Systems (NIS Directive). The provisions of the current draft of the Second Act to Increase the Security of Information Systems (IT-SiG 2.0) must be considered to be significant for the companies concerned. Alongside new standards and specifications, new responsibilities, technical access rights and powers are defined for the German Federal Office for IT Security (BSI), and the German Federal Ministry of the Interior, Building and Community (BMI) is given the right to issue orders. The current situation is that the Group would be classified in the legislation as an entity of "particular public interest", which could potentially result in new liability risks, duties and additional costs.

In the field of ongoing environmental, social and governance (ESG) regulation there are also a number of risks for the Group's market data and index business. A strict and prescriptive regulatory approach to environmental standards in the finance sector could also cause disruption in the Group's traditional business areas and so raise questions in terms of market quality, market depth, pricing and risk management. These business risks could be supported by further regulatory initiatives in the field of sustainable corporate governance and so represent revenue risks.

BaFin is assessing on a regular basis whether Deutsche Börse AG could potentially be classified as a financial holding company. Currently, Deutsche Börse AG is not classified as a financial holding company. On the basis of the business portfolio and the criteria which are, to the knowledge of Deutsche Börse AG, applied by BaFin when classifying a company as a financial holding company, the Executive Board of Deutsche Börse AG is not of the opinion that Deutsche Börse AG qualifies as a financial holding company. Such qualification could, inter alia, have an impact on the capital base of Deutsche Börse AG.

Regulatory capital requirements and regulatory capital ratios

As in the past, Clearstream Banking S.A., Clearstream Banking AG and Eurex Clearing AG, in their capacity as credit institutions, are subject to solvency supervision by the German or Luxembourg banking supervisory authorities (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin, and Commission de Surveillance du Secteur Financier, CSSF, respectively). The same applies to the Clearstream Holding at a regulatory group level. Eurex Repo GmbH and 360 Treasury Systems AG are also subject to specific provisions applicable to certain investment firms under BaFin prudential supervision.

Since the authorisation of both Eurex Clearing AG and European Commodity Clearing AG as central counterparties in 2014, these companies have been subject to the capital requirements defined in Article 16 EMIR. These requirements apply to Eurex Clearing AG as an authorised central counterparty in parallel to the prudential supervision requirements; the higher requirement applies. Irrespective of its status as an other credit institution according to German law, European Commodity Clearing AG is only subject to EMIR capital requirements.

Since Clearstream Banking AG was authorised as a central securities depository on 21 January 2020, it has been subject to the capital requirements defined in Article 47 CSDR. These requirements apply to Clearstream Banking AG at the same time as the prudential supervision requirements; the higher requirement applies.

The applications filed for Clearstream Banking AG (pursuant to Article 54 CSDR) and Clearstream Banking S.A. are currently being reviewed by the respective supervisory authorities. In addition to the above mentioned capital requirements, Clearstream Banking AG and Clearstream Banking S.A. will also be subject to a capital surcharge for the provision of intra-day credit risk pursuant to Article 54 (3) d) CSDR.

Nodal Clear, LLC is a Derivatives Clearing Organisation (DCO) subject to regulation by the US Commodity Futures Trading Commission (CFTC).

REGIS-TR S.A., as a trade repository according to EMIR, is subject to supervision exercised by the European Securities and Markets Authority (ESMA).

None of the Deutsche Börse Group entities are trading book institutions. Market risk exposures consist only of relatively small open foreign currency positions. The companies concerned uniformly apply the standardised approach for credit risk. As a result of the specific business of the central securities depositories and central counterparties belonging to Deutsche Börse Group, their recognised assets are subject to wide fluctuations. This leads to correspondingly volatile total capital ratios especially at the Clearstream companies. The volatility of the ratio is subject to major fluctuations on a day-to-day basis in the course of the year. Due to a high degree of secured or zero-weighted cash investments, the own funds requirements for credit exposures of Eurex Clearing AG and European Commodity Clearing AG are relatively stable despite volatile total assets in the course of the year.

To calculate operational risk, Eurex Clearing AG and European Commodity Clearing AG use the basic indicator approach, whilst the Clearstream companies apply the advanced measurement approach.

Due to the specific arrangements for the investment firms Eurex Repo GmbH, 360 Treasury Systems AG and Eurex Securities Transactions Services GmbH, no explicit own funds requirements for operational risk are determined in accordance with Article 95 CRR. Instead, the total own funds requirement is determined either as the own funds requirement amount for credit and market risk or as 25 per cent of fixed overhead costs, depending on which is higher. Since credit and market risks are low, the relevant criterion for these companies is the own funds requirement on the basis of overhead costs.

None of the Group companies subject to prudential supervision has either Additional Tier 1 or Tier 2 capital.

A minimum total capital ratio of 8 per cent generally applies to institutions subject to the CRR. In addition, CRD IV introduced various capital buffers, which the supervised (credit) institutions generally have to meet on top of the minimum total capital ratio of 8 per cent, although they may temporarily fall below these levels. The current capital conservation buffer is 2.5 per cent.

As at 31 December 2020, the bank-specific countercyclical buffer requirement amounted to 0.04 per cent of risk-weighted assets for Clearstream Banking S.A, to 0.045 per cent for Clearstream Banking AG and to 0.09 per cent for Clearstream Holding Group whereas Eurex Clearing AG has to hold 0.25 per cent. As at 31 December 2020, the systemic risk buffer was not required by the authorities in Luxembourg or Germany. None of the Group companies has been defined as of global systemically important institution. Clearstream Banking S.A. has been defined by CSSF No 20-07 as an “other systemically important institution” (O-SII) since 1 January 2018 and requires an additional buffer of 0.5 per cent.

The individual companies' capital resources sufficiently reflect the fluctuation in risk-weighted assets. In addition, buffers are taken into account for the calculation of the recovery indicators specified in the recovery plans. The objective of these indicators is to prevent triggering recovery events. The capital requirements determined in this way will be used for the mid-term capital planning.

The own funds requirements of Clearstream Group increased slightly in the reporting period. The capital requirements for Clearstream Banking AG increased, whilst for Clearstream Banking S.A. they decreased. Changes occurred regarding own funds requirements for operational risks as well as credit and market risks, both at the single-entity and Group levels.

In the medium to long term, the Clearstream Group expects increasing own funds requirements at a regulatory group level for the following reasons:

- The future applicability of own funds requirements based on CSDR (already applicable to CBF)
- The establishment of own funds requirements resulting from the introduction of minimum requirements for equity and eligible liabilities (MREL) as a result of Directive 2014/59/EU
- The implementation of the so-called CRR II package and other amendments under Basel III

Eurex Clearing AG's own funds requirements increased compared with the previous year. Given the increase in revenues in the past years, own funds requirements for operational risk rose according to the model, whilst own funds requirements for credit and market remained stable.

The own funds requirements for operational risk calculated with Eurex Clearing AG's internal risk model are higher than the own funds requirements derived from the basic indicator approach, which is based on the profit and loss statement as prescribed by CRR. Hence, Eurex Clearing AG always applies additional capital buffers for such risks, surpassing regulatory minimum requirements. Against this background, banking supervisors requested in 2011 that Eurex Clearing AG increase the basis for the calculation of regulatory own funds requirements by considering an appropriate share of clearing-related fees received for the account of operating entities. The own funds requirements for operational risk are calculated once a year based on a three-year average of historical income, including the assumed clearing fees, and are therefore not subject to daily fluctuations.

Compliance with the minimum regulatory ratio is maintained at all times due to the sufficient capital buffer for uncollateralised cash investments.

Composition of own funds requirements

	Own funds requirements for operational risk		Own funds requirements for credit and market risk		Total capital requirements	
	31 Dec 2020 €m	31 Dec 2019 €m	31 Dec 2020 €m	31 Dec 2019 €m	31 Dec 2020 €m	31 Dec 2019 €m
Clearstream Holding Group	452.6	450.6	83.5	63.2	536.1	513.8
Clearstream Banking S.A.	307.4	324.5	56.5	53.2	363.9	377.7
Clearstream Banking AG	145.2	126.2	5.1	6.5	150.3	132.7
Eurex Clearing AG	88.0	80.6	16.2	16.2	104.2	96.8

In 2020, the parent company Clearstream Holding AG made a contribution of €50.0 million to the capital reserve of Clearstream Banking AG. Eurex Clearing AG received contributions to its capital reserve of €135.0 million in 2020 from the parent company Eurex Frankfurt AG. Further contributions are scheduled for the coming years, in order to strengthen their capital base.

Regulatory capital ratios according to CRR

	Own funds requirements		Regulatory equity		Total capital ratio	
	31 Dec 2020 €m	31 Dec 2019 €m	31 Dec 2020 €m	31 Dec 2019 €m	31 Dec 2020 %	31 Dec 2019 %
Clearstream Holding Group	536.1	513.8	1,677.7	1,559.5	25.0	24.3
Clearstream Banking S.A.	363.9	377.7	1,209.9	1,149.2	26.6	24.4
Clearstream Banking AG	150.3	132.7	419.9	369.7	22.4	22.3
Eurex Clearing AG	104.2	96.8	749.8	614.8	57.6	50.8

Clearstream Banking AG's capital requirements according to CSDR are currently significantly above CRR and CRD IV capital requirements. The capital requirements under Article 47 CSDR do not stipulate a specific ratio. Instead, the regulatory capital are compared with the capital requirements and has to be at least the same.

Capital adequacy requirements under CSDR

	Clearstream Banking AG	
	31 Dec 2020 €m	31 Dec 2019 €m
Own funds requirement for operational, credit and market risk	150.3	n/a
Other CSDR capital requirements	161.1	n/a
Total CSDR capital requirements under Article 47 CSDR	311.4	n/a
CSDR capital	419.9	n/a

Eurex Clearing AG's capital requirements according to EMIR are currently significantly above CRR and CRD IV capital requirements. As with the CSDR, the capital requirements under Article 16 EMIR do not stipulate a specific ratio. For both Eurex Clearing AG and European Commodity Clearing AG, this means that EMIR capital coverage of at least 100 per cent is required. A reporting requirement to the competent authority – in this case BaFin – is triggered when this ratio falls below 110 per cent.

The capital resources of Eurex Clearing AG and European Commodity Clearing AG are currently well above the regulatory requirements. As at the reporting date, total equity for both entities as disclosed in the financial statements was fully available to cover the risks according to Article 16 of EMIR as this equity fulfils the liquidity requirement. Eurex Clearing AG's own contribution to the default fund is €200.0 million. The own contribution to the default fund of European Commodity Clearing AG was also constant at €15.0 million and so also above the regulatory minimum.

Capital adequacy requirements under EMIR

	Eurex Clearing AG		European Commodity Clearing AG	
	31 Dec 2020 €m	31 Dec 2019 €m	31 Dec 2020 €m	31 Dec 2019 €m
Own funds requirement for operational, credit and market risk	104.2	96.8	28.8	25.2
Other EMIR capital requirements	86.6	76.2	56.1	41.9
Total EMIR capital requirements under Article 16 EMIR	190.8	173.0	84.9	67.1
Equity	749.8	614.8	131.9	118.9
EMIR deductions	0	0	0	0
Own contribution to default fund	– 200.0	– 200.0	– 15.0	– 15.0
EMIR capital	549.8	414.8	116.9	103.9

According to Article 95 CRR, Eurex Repo GmbH and 360 Treasury Systems AG must hold equity of at least 25.0 per cent of the fixed overhead costs of the previous year.

Composition of own funds/capital requirements

	Own funds requirements for credit and market risk		Own funds requirements on the basis of fixed overheads		Own funds requirements to be met	
	31 Dec 2020 €m	31 Dec 2019 €m	31 Dec 2020 €m	31 Dec 2019 €m	31 Dec 2020 €m	31 Dec 2019 €m
Eurex Repo GmbH	0.7	0.6	1.6	1.8	2.3	2.4
360 Treasury Systems AG	6.3	5.2	3.9	4.3	10.2	9.5

Compliance with own funds requirements

	Own funds requirements		Regulatory equity		total capital ratio	
	31 Dec 2020 €m	31 Dec 2019 €m	31 Dec 2020 €m	31 Dec 2019 €m	31 Dec 2020 %	31 Dec 2019 %
Eurex Repo GmbH	2.3	2.4	27.6	21.9	94.9	72.5
360 Treasury Systems AG	10.2	9.5	39.9	32.8	31.2	27.5

According to Article 21 (b) of the Delegated Regulation (EU) No 150/2013, REGIS-TR S.A. is required to maintain equity in the amount of at least 50 per cent of annual operating costs.

According to the MAS, EEX Asia Pte. Limited is required to maintain own funds at the rate of either 18 per cent of annual operating revenue or 50 per cent of annual operating costs, depending on which is higher. Regulatory requirements were met throughout the year. Regarding the anticipated upswing in the business development of EEX Asia Pte. Limited, we expect slightly increasing own funds requirements. Its capital base will be adjusted, if required.

Pursuant to Section 39.11 of the Code for Federal Regulation (CFR), Nodal Clear, LLC is obliged to maintain sufficient financial resources to cover all current costs for a minimum period of twelve months, whereby highly liquid assets must cover all current costs for at least six months. Regulatory minimum requirements were met throughout the year.

Compliance with own funds requirements

	Own funds requirements		Regulatory equity		Equity ratio	
	31 Dec 2020 €m	31 Dec 2019 €m	31 Dec 2020 €m	31 Dec 2019 €m	31 Dec 2020 %	31 Dec 2019 %
REGIS-TR S.A.	6.5	5.7	10.7	9.3	164.6%	163.2%
EEX Asia Pte. Limited	0.5	0.6	1.8	1.5	360.0%	250.0%
Nodal Clear LLC	24.5	24.5	31.9	31.1	130.2%	126.9%

The regulatory minimum requirements were complied with at all times by all companies during the reporting period and in the period up to the preparation of the consolidated financial statements.

Overall assessment of the risk situation by the Executive Board

Deutsche Börse AG's Executive Board is responsible for risk management throughout the Group and regularly reviews the entire Group's risk situation. The Executive Board of Deutsche Börse AG confirms the effectiveness of the risk management system.

Summary

The risk profile of Deutsche Börse Group did not change significantly in the 2020 financial year. Deutsche Börse Group's aggregated risks across all risk types (operational, financial and business risks) were covered by sufficient risk-bearing capacity on a Group level at all times.

As at 31 December 2020, the Group's REC amounted to €3,157 million, an almost 17 per cent increase year-on-year (31 December 2019: €2,696 million).

Outlook

Deutsche Börse Group continually assesses its risk situation. Based on the calculated REC in stress tests and based on the risk management system, Deutsche Börse AG's Executive Board concludes that the available risk cover amount is sufficient. Furthermore, it cannot identify any risk that would endanger the Group's existence as a going concern.

In 2021, the Group intends to continue strengthening and expanding its risk management and internal control system. This includes, for example, further expansion of information security management, methodological improvements in risk management and the ICS, as well as a closer coordination between control functions, also by means of a Group-wide governance, risk and compliance tool.

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The annual report 2020 of Deutsche Börse Group is available as pdf on the internet:

www.deutsche-boerse.com/annual_report

Contact

Investor Relations

E-Mail ir@deutsche-boerse.com
Phone +49-(0) 69-2 11-1 16 70
Fax +49-(0) 69-2 11-1 46 08
www.deutsche-boerse.com/ir_e

Group Sustainability

E-Mail group-sustainability@deutsche-boerse.com
Phone +49-(0) 69-2 11-1 42 26
Fax +49-(0) 69-2 11-61 42 26
www.deutsche-boerse.com/sustainability

Financial Accounting & Controlling

E-Mail corporate.report@deutsche-boerse.com
Phone +49-(0) 69-2 11-1 79 80
Fax +49-(0) 69-2 11-61 79 80

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