Deutsche Börse Group

Combined management report

as at 31 December 2021

Combined management report

1. What we achieved in 2021

	KPI	Target	Target achievement 2021
Economic situation			
	Net revenue	10% CAGR 2019-2023	9% CAGR 2019-2021
		€3.5 billion in 2021	€3,509.5 million in 2021
	EBITDA	10% CAGR 2019-2023	10% CAGR 2019-2021
		€2.0 billion in 2021	€2,043.1 million in 2021
	Cash EPS	10% CAGR 2019-2023	11% CAGR 2019-2021
	ESG net revenue growth[1]	>10%	210% incl. ISS acquisition
Customers and markets			
	System availability (customer facing IT)	>99.5%	99.9%
Employees			
	Number of employees		10,200
	Employee satisfaction	>71.5%	75%
	Women in leadership positions[2]	>20%	21%
Social environment			
	CO_2 emissions per workspace[3]	Net zero until 2025 (–100% vs. 2019)	–66% vs. 2019
ESG ratings			
	MSCI, S&P, Sustainalytics	>90th percentile	95th percentile

1) ESG net revenue according to the internal definition of Deutsche Börse Group – see “Definition of our ESG net revenue”.
2) Group-wide target in senior management.
3) Unaudited figure.

2. About this report

This combined management report covers both Deutsche Börse Group and Deutsche Börse AG and includes the combined non-financial statement. It follows the requirements of Handelsgesetzbuch (HGB, German Commercial Code) and Deutscher Rechnungslegungs Standard Nr. 20 (DRS 20, German Accounting Standard No. 20). The contents of the combined non-financial statement – with the exception of our carbon footprint, which are marked as unaudited – are subject to PwC's audit.

Integrated reporting on non-financial topics

For the 2021 reporting year, we have integrated our combined management report and our combined non-financial statement in one report for the first time. This enables our most important stakeholders such as clients, employees and shareholders to gain a holistic view of our corporate performance. This includes social and ecological topics as well as economic ones.

While preparing the report, we followed the recommendations of the International Integrated Reporting Council (IIRC) for portraying our value creation process (see chart "Value creation process"). Currently, a highly dynamic environment for company reporting exists due to regulatory developments in the field of non-financial reporting and due to a closer cooperation and coordination between the key standard-setters, Global Reporting Initiative (GRI), Sustainability Accounting Standard Board (SASB), Task Force on Climate-Related Financial Disclosures (TCFD) and IIRC. We will therefore continue to develop our reporting over the next few years.

Contents, structure and materiality

The information about our net assets, financial position and result of operations is based on the requirements of International Financial Reporting Standards (IFRS), and if applicable, German Commercial Code (HGB) and German Financial Reporting Standards (DRS). The combined non-financial statement for Deutsche Börse Group and the parent company Deutsche Börse AG is integrated into the combined management report; it meets the requirements of sections 289b–e and 315b–c HGB and Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment and amending Regulation (EU) 2019/2088 (in the following EU-Taxonomy regulation). In terms of the materiality analysis, description of management approaches and selected KPI it follows the GRI standards ("Core" option). A detailed overview of all GRI indicators (GRI index) is available on our homepage. Further detailed information that is referenced in this report does not form part of the combined management report itself. Provided no explicit statements are made for the parent company, qualitative information within the meaning of the combined management report applies to Deutsche Börse Group and the parent company Deutsche Börse AG. In some cases, quantitative details concerning the parent entity are disclosed separately.

In the course of our materiality analysis, we continuously determine and evaluate the expectations and requirements of relevant internal and external stakeholders. To this effect, we surveyed several internal and external stakeholders in 2021. This process is aimed at identifying the issues required to understand the Group's business performance, operating results, the situation of the company and the impact of its activities on non-financial aspects. This enables us to identify opportunities and risks in our core business activities at an early stage and define concrete action areas on this basis.

The combined non-financial statement describes the targets, activities, applied due diligence processes, involvement of top management and other stakeholders, and the results of our concepts. The reporting on our key topics follows our value creation process, which is explained in the chapter "How we add value". For a schematic representation of the contents in line with the TCFD recommendations we refer to our TCFD index on our homepage. All the topics identified in our materiality analysis are therefore relevant for the further structuring of this report. For an overview of the parts of the non-financial declaration (NFD), please refer to the table "Disclosures on the non-financial declaration pursuant to Section 289b-e or 315b-c HGB".

We present the material topics and the related steering parameters in the sections "How we add value" and "Our strategy and control parameters". This year the aspects "Environmental matters" and "Respect for human rights" were identified as material for the first time. This was due partly to the results of our stakeholder survey and the inclusion of ESG criteria for Executive Board remuneration, as well as regulatory developments (e.g. Supply Chain Act in Germany). Regardless of this, the environment remains a highly relevant topic for the structuring of specific products and services. Activities in this area are described in more detail in the section "Our markets and customers".

Disclosures on the non-financial declaration pursuant to Section 289b-e or 315b-c HGB

Required disclosure pursuant § 289b-e or 315b-c HGB	Reference to chapter in our integrated report
Business model	Deutsche Börse: Fundamental information about the Group Our strategy and steering parameters
Involvement of top management	ESG: Commitment and opportunity for Deutsche Börse (+ description in the respective chapters)
Risks	Risk management
Annual and consolidated financial statements	None
Environmental matters	Climate strategy and reporting
Employee matters	Our employees
Social matters	Our Stakeholder Engagement Capital Markets Academy
Respect of human rights	Human rights matters
Combating corruption and bribery	Compliance – including measures against corruption and bribery
Product matters (as additional aspect)	Our customers and markets

3. Deutsche Börse: Fundamental information about the Group

Business operations and Group structure

Deutsche Börse AG was established in 1992 and is a global company based in Frankfurt/Main, Germany. It is the parent company of Deutsche Börse Group. Altogether, we have over 10,000 employees from 109 nations working at 69 sites.

As one of the largest providers of market infrastructure worldwide, we offer our clients a broad range of products and services. These cover the entire financial market transaction process chain: from the ESG business, indices and analytical solutions (pre-trading), trading and clearing services and price and reference data based on them (trading & clearing), and the settlement of transactions right through to the custody of securities and funds, as well as services for liquidity and collateral management (post-trading). We also develop and operate the IT systems that support all these processes. In addition to securities, our platforms are used to trade foreign exchange, commodities and derivatives.

Our business takes place in eight segments, which are organised as Pre-trading, Trading & clearing and Post-trading. This structure is used for the internal Group controlling and forms the basis for our financial reporting.

Pre-trading

Index business

Via our Qontigo subsidiary we offer an innovative range of index and analytics products with global coverage, including STOXX® and DAX®.

Analytics business

The range of Axioma products consists of investment management solutions, including market-leading portfolio and risk analysis software, corporate risk management across asset classes, portfolio construction, performance attribution and regulatory reporting.

ESG business

Via our Institutional Shareholder Services subsidiary (ISS) we offer independent ESG and governance research, proxy voting solutions, ratings and data, as well as market information and editorial content for institutional investors and companies – worldwide. The segment ISS was introduced in 2021 and showed its first full reporting period in the second quarter.

Trading & clearing

Financial derivatives
The Eurex futures exchange is one of the world's largest markets for trading financial derivatives. It offers a wide range of international benchmark products such as interest derivatives (e.g. Euro-Bund Futures) and equity derivatives (e.g. EURO STOXX 50® Index Futures).

Commodities
The EEX Group offers its participants a market platform for energy and commodities products in more than 30 countries around the world. Its product portfolio comprises contracts on power, gas and emission rights, as well as freight and agricultural products.

Foreign exchange trading
Our subsidiary 360T is the leading global provider of web-based trading technology, which enables our customers to trade over-the-counter (OTC) financial instruments, particularly foreign exchange and short-term money market products, as well as foreign exchange and interest rate derivatives.

Securities trading
We operate the Frankfurt Stock Exchange (FWB®). With its Xetra® trading system it operates the global reference market for German equities and is the number one in Europe for exchange-traded funds (ETF).

Post-trading

Post-trading (settlement, custody, collateral and liquidity management)
Clearstream operates the central securities depository in Germany and Luxembourg and one international securities depository. We offer global securities financing and collateral management for secured money market transactions, repo transactions and securities lending.

Investment fund services (IFS)
Clearstream offers services for investment funds based on the security of the assets and the efficiency of distribution. The Vestima® fund processing platform provides access to all fund types, from investment funds to ETF and hedge funds. Clearstream also offers services to support fund distribution for asset managers and fund distribution companies.

For further details, please refer to the segment reporting in the results of operations.

To reduce the complexity of financial reporting and emphasise the Group's growth areas more clearly, we are adjusting our segment reporting in accordance with the internal corporate management as of the first quarter of 2022. The eight existing segments will then be condensed to four: Data & Analytics (including the Qontigo and ISS segments), Trading & Clearing (Eurex, EEX, 360T and Xetra segments), Fund Services (IFS segment) and Securities Services (Clearstream segment).

Deutsche Börse Group's full group of consolidated entities is set out in Note 34 to the consolidated financial statements.

You can find a complete list of our trademark rights on our homepage.

Management
The governing bodies of Deutsche Börse AG, which is a German stock corporation, are the Annual General Meeting, the Supervisory Board and the Executive Board, each of which has its own areas of responsibility.

The Annual General Meeting rules on the appropriation of distributable profit, appoints the shareholder representatives on the Supervisory Board and discharges the Executive Board and the Supervisory Board of liability. In addition, it rules on equity issuance and other matters governed by Aktiengesetz (AktG, German Stock Corporation Act).

The Supervisory Board appoints, supervises and advises the members of the Executive Board, and is directly involved in decisions of fundamental importance to the Group. Additionally, it approves the consolidated financial statements prepared by the Executive Board. Members of the Supervisory Board are appointed for a period of three years, although the Annual General Meeting may determine a shorter term of office when electing members. Members of the Supervisory Board must be appointed in accordance with the provisions of the Mitbestimmungsgesetz (German Co-Determination Act). Deutsche Börse's Supervisory Board comprises eight shareholder representatives and eight employee representatives in order to meet the growing demands placed upon Supervisory Board members in connection with the company's growth and that of the Group as a whole, particularly with regard to the diversity and internationalisation of Supervisory Board work. Further details are provided in the "Corporate governance statement".

The Executive Board is responsible for the management of the company, whereby the Chief Executive Officer (CEO) coordinates the activities of the Executive Board members. In the 2021 financial year, the Executive Board of Deutsche Börse AG comprised six members. The remuneration system and the remuneration paid to individual members is explained in more detail in the "Remuneration report".

Organisational structure

Our organisation is divided into six Executive Board areas as follows:

Executive Board areas

CEO T. Weimer	CFO G. Pottmeyer	CIO/COO C. Böhm	Trading & Clearing T. Book	HR & Compliance H. Eckert	Pre & Post-Trading S. Leithner
Group Strategy/ Mergers & Acquisitions/Chief of Staff/ESG Strategy	Financial Account-ing & Controlling	Derivatives, Cash & Energy Trading IT	Business Analytics & Stategy	Group Compliance	Clearstream – Strategy & Governance
Group Communi-cations & Marketing	Investor Relations	Clearing & Risk IT	Derivatives Markets Trading	Findings Program Management	Clearstream – Global RM, Sales & Services
Group Regulatory Strategy	Treasury	Group Security	Clearing	Human Resources – Global HR Business Partner	Clearstream – Investor Services & Financing
Group Audit	Group Risk Management	IT Governance & Location Prague	Cash Market	Human Resources Strategy & Initiatives	Clearstream – Issuer Services & New Digital Markets
Group Legal	Group Organisational Services	Corporate IT	Market Data & Services	Human Resources Global Services	Clearstream – Investment Funds Services
	Group Tax	Group Chief Technology Officer	FX/360T		Clearstream – Global Operations
		Post Trade IT	European Energy Exchange (EEX)		Regulatory Strategy & Compliance
		Information Security Compliance Program	Quantitative Brokers		ISS
		IT Strategy/ Chief of Staff	Crypto Finance		Qontigo
		IT Infrastructure & Operations			

4. ESG: Commitment and opportunity for Deutsche Börse

Sustainability is more than an obligation for our own business model; for us it also represents an important guiding principle for shaping capital markets. In this sense, we view sustainability from two perspectives: on the one hand, we establish sustainability as a priority for our internal processes. On the other hand, as a provider of market infrastructure, we offer our customers solutions that enable them to make their own businesses more sustainable. This duality is also expressed in our sustainability strategy, which we updated in 2021 following a wide-ranging stakeholder survey. Our sustainability strategy reflects the topic of sustainability both in our Group strategy and across our business areas. It can be summarised in four ambitions.

1. **Lead by example.** By integrating four ESG targets (employee satisfaction, ESG net revenue[1], carbon neutrality and ESG ratings) into our Executive Board remuneration we assume our corporate responsibility in a holistic way. Our integrated report as well as the fact that our report is almost[2] completely audited with reasonable assurance underlines our ambition to lead by example.
2. **Increase transparency.** Our exchanges and reporting standards (Prime Standard and guidelines) create market clarity and provide orientation for private and institutional investors. For further information see our chapter "Transparent markets".
3. **Provide solutions.** With our products we enable our customers in the financial and real economy to carry out their green transformation economically and efficiently. We earned around seven per cent of our net revenue with ESG products in 2021.[1] For further information see chapter "Definition of our ESG net revenue".
4. **Measure impact.** We systematically review all our sustainability activities for effectiveness. To underline their importance for the Group as a whole, sustainability indicators became part of our steering parameters with effect from financial year 2021. In the following chapter "How we add value" we elaborate on our value creation process.

As of 2021 our Executive Board is informed frequently of relevant market and sales performance with regard to ESG and determines the strategic course on this basis. It is mainly monitored and managed by our CEO and CFO, as well as via the segments: As part of the CEO division the Group ESG Strategy team is responsible for the ESG activities within the Group and the reporting. It executes our climate strategy, conducts market trend analysis and works closely with the business areas in implementing their product strategies. The Group Sustainability Board oversees the implementation of our ESG strategy. The Board convenes four times a year and in 2021 its members comprised one representative from each of the Executive Board divisions, plus the Head of Group ESG Strategy and one Executive Board member (2021: CFO). The individual business areas are responsible for the concrete implementation of the ESG business strategy. In addition to the individual product areas, our risk management function is also involved with ESG topics.

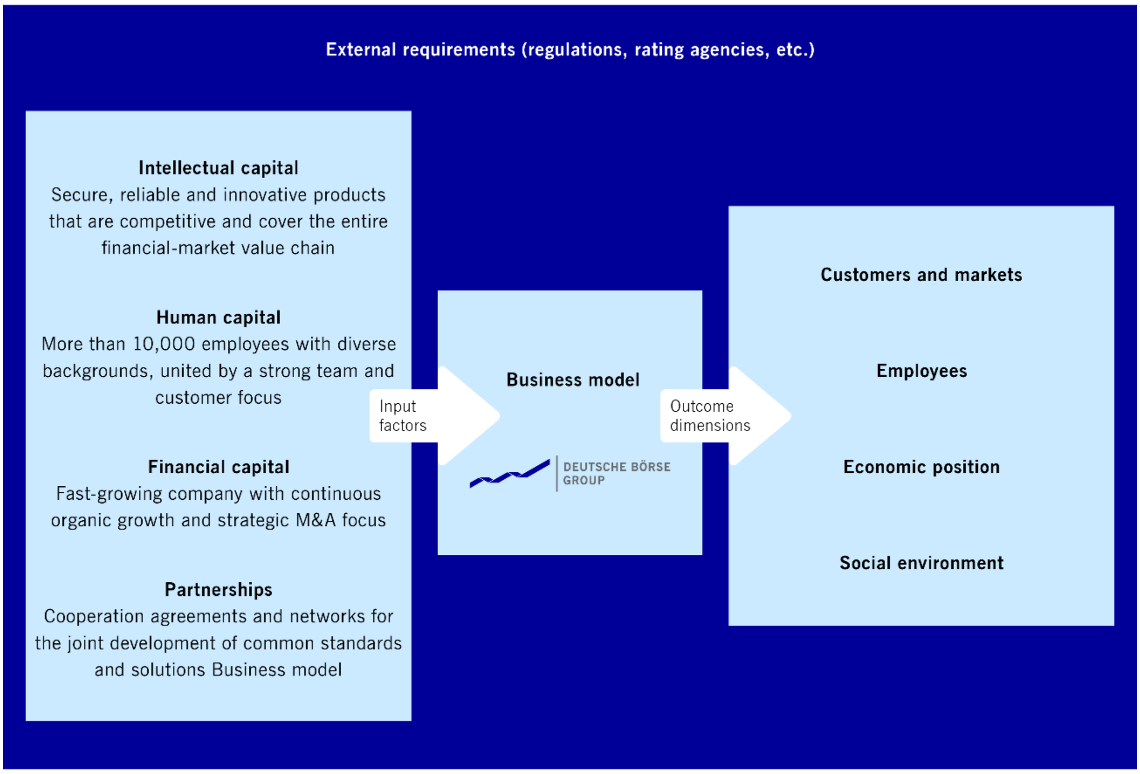
At the Supervisory Board level it is mainly the newly formed Strategy and Sustainability Committee that deals with ESG, advising the Executive Board on matters of strategic importance. These include sustainable corporate governance and our ESG business activities.

[1] ESG net revenue according to the internal definition of Deutsche Börse Group – see "Definition of our ESG net revenue".
[2] Only exception are the CO_2-figures. These are unaudited.

5. How we add value

Our purpose is “We at Deutsche Börse create trust in the markets of today and tomorrow”. Trust is essential for functioning markets and sustainable economies. We provide fair and transparent, reliable and stable infrastructures that ensure safe and efficient markets around the globe. By providing market infrastructure, we foster growth and thus contribute to the prosperity of future generations. This takes place using a combination of several input factors of our value creation, which we describe below using the IIRC framework.

Our value creation process



According to IIRC terminology, we essentially need four capitals (input factors) to implement our business model. We deploy these capitals within a binding regulatory framework: intellectual capital, human capital, financial capital and partnerships. They enable us to create short, medium and long-term value with our business model. Our result can be allocated to the following four outcome-dimensions:

Customers and markets: Our products and services contribute to increase transparency for market participants and to enable them to price in and integrate market developments, changes and transformations. In this way we enable better-informed decisions.

Employees: As an employer we take wide-ranging measures to use the full potential of our human capital. Furthermore, we strengthen our employee satisfaction and loyalty. All this helps to build an employer brand that illustrates what makes us unique and why talents should decide to work for us.

Economic situation: As a fast-growing company we create financial value, substance and returns on which our investors, employees, customers and society can build on.

Social environment: Our value creation reaches far beyond what impacts us directly as a company – for example including our own carbon emissions, human rights issues in the supply chain or our involvement in financial market initiatives.

This stylised value creation process forms the basis for the other chapters in this combined management report and for our management and steering parameters using various KPI, which we describe in the next chapter.

6. Our strategy and steering parameters

We secure our good market position and continued viability by means of our medium-term growth strategy Compass 2023, which defines the strategic direction and targets for the years ahead. Among the most important secular growth drivers are the trend from over-the-counter (OTC) to on-exchange trading, the higher demand for ESG services, the increasing importance of the buy-side, passive investments and the digitisation of the financial sector. Inorganic growth will also play an important role. We are aiming for overall growth in net revenue of 10 per cent p.a. on average until 2023. Secular initiatives and M&A are each intended to contribute growth of around 5 per cent. Furthermore, earnings before interest, tax, depreciation and amortisation (EBITDA) as well as the earnings per share before purchase price allocations (Cash EPS) are planned to grow by around 10 per cent p.a. on average.

We have made significant progress with the implementation of this strategy in the course of last year. Significant milestones and further information can be found on our homepage.

In a continuous process, we review our organic growth initiatives, which we rely on particularly for expansion in secular growth markets and asset classes. As far as external growth opportunities are concerned, the focus is on strengthening existing high-growth areas, and on exploring new asset classes and services. Key initiatives and growth drivers are described in the “Report on opportunities”. Additionally, also the remuneration system for the Executive Board and executive staff has created a number of incentives for growth in the individual business divisions. The “Remuneration report” provides a detailed description of all targets. In 2021, we also integrated ESG targets into the remuneration system for the Executive Board for the first time – such as climate neutrality of Deutsche Börse Group, good ESG ratings, employee satisfaction and growth in net revenue from ESG products.

We have translated our targets into key performance indicators (KPI), which we assign to our four value creation categories:

Overview of chapters and KPI

Chapter of integrated report	KPI	Target	2021
Our customers and markets			
	System availability (customer facing IT)*	>99.5%	99.9%
Our employees			
	Employee satisfaction*	>71.5%	75%
	Women in leadership positions[1,*]	>20%	21%
Economic situation			
	Net revenue*	10% CAGR 2019-2023	9% CAGR 2019-2021
		€3.5 billion in 2021	€3,509.5 million in 2021
	EBITDA*	10% CAGR 2019-2023	10% CAGR 2019-2021
		€2.0 billion in 2021	€2,043.1 million in 2021
	Cash EPS	10% CAGR 2019-2023	11% CAGR 2019-2021
	ESG net revenue[2,*]	>10%	210% incl. ISS acquisition
Our social environment			
	CO_2 emissions per workspace[3]	Net zero by 2025 (−100% vs. 2019)	−66% vs. 2019

1) Group-wide target in senior management.
2) ESG net revenue according to the internal definition of Deutsche Börse Group – see “Definition of our ESG net revenue”.
3) Unaudited figure.
* Our most significant financial and non-financial key performance indicators.

Steering parameters for our customers and markets

As a provider of market infrastructure we maintain impartial, transparent and secure marketplaces. In this context we use our systems availability as a key performance indicator. A value of more than 99.5 per cent is the target for our systems availability (customer facing IT) (for further information see “Our customers and markets”).

Steering parameters for our employees

We use two key performance indicators for measuring employee-related factors: The first indicator is used to measure employee satisfaction on an annual basis and to take action based on the results. The second indicator is used to calculate the percentage of women in leadership positions on an annual basis. In terms of employee satisfaction we have defined a result of more than 71.5 per cent approval in the annual employee survey as the target. For the proportion of women in leadership positions the goal was set to reach over 20 per cent in senior management. On 31 December 2021 the proportion of women in senior management was 21per cent. For 2022, we have made a voluntary commitment that exceeds the requirements of section 76 (4) AktG. We want to have a percentage of women in leadership positions of 22 per cent in senior management and of 30 per cent in lower management (see “Our employees”).

Steering parameters for our economic situation

The most important key performance indicators for the management of our economic situation are net revenue and EBITDA, since these are vital for the successful execution of our growth strategy and set incentives for profitable growth. The basis is net revenue in the consolidated financial statements. This consists of sales revenue plus the treasury result from banking and similar business as well as other operating income, less volume-related costs. The strategic focus on growth means that net revenue is very important for our Group. One of the most important pillars of the corporate strategy, in addition to absolute growth, is the profitability of this growth. To indicate this strategic relevance, EBITDA is one of the core metrics for controlling our Group and implementing the corporate strategy. EBITDA stands for earnings before interest, tax, depreciation and amortisation and as such reflects our profitability. It is a common indicator for measuring profitability. Another key financial control criterion is earnings per share before purchase price allocations (Cash EPS), since all profit and loss effects are reflected in this indicator and it can therefore be used to measure the successful implementation of the growth strategy.

ESG net revenue[3] is the indicator for the ESG business in the context of our growth strategy. The aim is to keep expanding the ESG business and continue our growth in this area. Therefore, we are aiming for annual growth of 10 per cent in our net revenue from ESG products. (see chapter "Our economic situation").

Steering parameters for our social environment

Our objective is to become climate-neutral on a net basis by 2025. All our efforts will be reviewed by the Science Based Target initiative (SBTi) by the end of 2023. We ensure the climate-neutrality of our Group by avoiding at least 70 per cent of our CO_2 emissions per workspace by 2022 and compensate for the remaining emissions by means of emissions reduction projects (see chapter "Our social environment").

Outside-in steering parameters: Ratings

We also include the results of our credit and ESG rating agencies as additional steering parameters. This outside-in view serves as an external evaluation of our actions as well as our results and plans. Therefore, the outside-in view is an important steering function for us.

In terms of credit ratings, we aim at Group level for a net debt/EBITDA ratio not exceeding 1.75 and free funds from operations (FFO) relative to net debt greater than or equal to 50 per cent, in order to achieve the "minimum financial risk profile" consistent with the current AA rating in accordance with S&P Global Ratings methodology. In addition, an interest coverage ratio of at least 14 is targeted for Deutsche Börse Group using this methodology. For further information see credit ratings.

In terms of ESG ratings, our aim is to achieve a place in the 90th percentile in three leading independent ESG ratings (S&P, Sustainalytics, MSCI). In addition to the actual ESG rating, we therefore monitor the development of our ESG ratings very closely, in order to systematically identify and realise potential for improvements over the years. For further information see our stakeholder engagement.

[3] ESG net revenue according to the internal definition of Deutsche Börse Group – see "Definition of our ESG net revenue".

7. Our customers and markets

As a provider of market infrastructure we consider that it is our fundamental responsibility to support the stability and economic success of capital markets. We fulfil this responsibility in part by keeping our systems available and secure, and meet the expectations of our clients, who trust us to provide stable secure trading platforms. Furthermore, we ensure that markets are transparent by means of our data and analytics services, along with our listing rules and guidelines. In this area, we make a distinction between mandatory requirements and non-binding guidelines for issuers. This chapter reports on these aspects and refers to individual ESG products where appropriate.

Selected information about our markets

		2021	2020
Total assets under management in ETFs based on Qontigo indices	€bn	117.9	100.4
Assets under management in ETFs based on Qontigo ESG indices	€m	1,383.6	399.3
Number of calculated indices	Number	11,161	13,000
thereof ESG	Number	2,051	1,605
Listed companies	Number	490	498
thereof in Prime Standard	Number	316	313
Total issue proceeds for bonds	€bn	48,138	41,128
Issue proceeds for green bonds	€m	225	257
System availability (customer facing IT)	%	99.9	99.9

Our market infrastructure

As an international exchange operator and innovative provider of market infrastructure, we cover the finance sector's entire value chain with our products, services and technologies. Our business units offer the entire range of index and ESG data, analytics and research solutions, trading and clearing of investment instruments, settlement and custody of securities and other financial instruments, securities and collateral management, and investment fund services.

Our products enable market participants to make better-informed decisions and to price in, and put a price on, ESG-characteristics. We describe our products and the financial results that we achieve with these products in the segment reporting in "Results of operations".

For further information on our (ESG) products we refer to our homepage.

Stable and secure markets

In order to be a reliable partner for our customers, we attach great importance to system stability and availability, information security and data protection. We therefore test the security of our systems continuously and update them regularly in close coordination with the governing bodies and the Executive Board.

System stability and availability

The availability of our client-focused trading systems is an important indicator of the overall quality that we achieve when developing and operating our systems. Deutsche Börse AG operates its trading systems for the cash and derivatives markets as redundant server installations, distributed across two geographically separated, secure data centres. Should a trading system fail, it would be operated from the second data centre. Together with clients, Deutsche Börse successfully simulated this scenario in 2021 – as well as the impact of local disruptions – within the scope of the FIA Test (the annual disaster recovery exercise conducted by the Futures Industry Association). As of the reporting year, this kind of disaster recovery test is carried out after every larger software release. Other disruptions, such as workstation malfunctions or personnel failures, were also tested. The COVID-19 pandemic has also meant that the emergency workstations have been permanently in use since March 2020.

Our multiple testing of software, its verified roll-out and the seamless monitoring of servers, network and applications has brought availability back up to 99.9 per cent. For 2022, we plan additional steps to even further increase our fault tolerance.

Information security

Our approach to avoiding attacks on IT systems and their data is based on a model with three lines of defence. The first line of defence is located in the IT organisation and the business units, the second is in the risk management function. This division of responsibility enables effective control mechanisms and avoids conflicts of interest when managing information security. The internal audit function is the third line of defence and independently monitors the two forward lines (see "Risk management").

In the course of their mandates and responsibilities, the managers responsible for the first and second lines of defence report to the relevant Executive Board members and governing bodies, such as the Group Risk Committee (at least quarterly). At least once a year both lines of defence report to the entire Executive Board and to the Risk and Technology Committee of the Supervisory Board.

In order to maintain the integrity of our Group's data, and in order to mitigate and control the risks, we are continuously implementing measures to increase information security. They include regular threat analysis, for example, and the systematic testing of our applications for vulnerabilities. The aim is proactively to make procedures, applications and technologies against cybercrime and other potential attacks more robust by adapting them to the current threats and regulatory requirements. The foundation for this is a set of policies and processes together with specific control measures based on the international information security standard ISO/IEC 27001.

The information security function checks that the requirements with regard to information security and information security risk management are adhered to; it also monitors the systemic integration of and compliance with security policies in the context 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. Across the Group we also operate a programme to sensitise our employees to the responsible handling of information, raise their awareness of information security aspects and report security incidents promptly to the CERT. All in all, our security approach includes overall measures in accordance with ISO/IEC 27001 covering both the development phase and the operational phase.

Furthermore, we are 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.

For a description of the risks we refer to "Information technology risks".

Data protection/protection of personal data

Deutsche Börse Group has exposure to a plethora of sensitive information during the course of its business activities. We again took steps to comply with data protection legislation in 2021, particularly in terms of appropriate and transparent processing of personal data, and continuously developed our processes. The Executive Board has appointed a data protection officer and established the Group data protection function, which helps to ensure compliance with the data protection framework, itself based on the EU General Data Protection Regulation. To this end, the data protection function informs and advises the individual legal entities on the minimum standards for data protection. The data protection function also serves as a contact for data protection authorities, and supports the business units in their assessments of the data protection risks. It supports a stronger culture of data protection at Deutsche Börse Group by raising awareness and providing training on data protection in the context of the Group's business activities and ongoing legal developments.

The data protection function's monitoring framework is incorporated into the structure of our compliance safeguards and controls, as a second line of defence on data protection. The data protection officer informs the Executive Board annually and as needed on the status of data protection within the company and the measures to expand the data protection framework.

Transparent markets

On our markets prices, volumes and expectations become evident via supply and demand. Our goal is to increase the transparency of our market participants from an issuer perspective while remaining a neutral provider of market infrastructure.

To this end, we are pursuing the following measures:

- Provide binding and non-binding transparency requirements
- Incentives for companies to publish ESG information

For further information on our ESG products we refer to our homepage.

Mandatory transparency requirements
Section 42 (1) Börsengesetz (BörsG, German Exchange Act) authorises exchanges to impose additional admission requirements and further notification duties upon equity issuers, for parts of the regulated market. Frankfurter Wertpapierbörse (FWB®, the Frankfurt Stock Exchange) used this authorisation in its Exchange Rules (section IV, sub-section 2) to create the “Prime Standard” in 2003. One feature of the Prime Standard is the special post-admission obligations, which are monitored by FWB, with any breaches penalised by the exchange’s Sanctions Committee.

Over and above statutory requirements under the Wertpapierhandelsgesetz (WpHG, German Securities Trading Act), Prime Standard issuers must submit their financial reports (annual and half-yearly reports), as well as their quarterly statements for the first and third quarter, to FWB, in German and/or English and within set deadlines. Annual financial reports for reporting periods beginning on or after 1 January 2020 also have to be sent to FWB in the European Single Electronic Format (ESEF). Moreover, Prime Standard issuers must submit their calendars of material corporate events to FWB, hold an analysts’ conference at least once a year and publish any inside information in English as well as German. All submissions to FWB must be carried out via the Exchange Reporting System (ERS®). This electronic interface allows for efficient sorting and display of data, helping to spot any impending failure to meet a deadline. This allows FWB to support issuers to fulfil their transparency duties in the best possible manner by sending out e-mail reminders prior to each deadline. The FWB continues to rely on the recommendations for action already developed in 2020 to address difficulties that occur in relation to the impact of the COVID-19 pandemic on the issuer and have an impact on meeting deadlines for the publication of financial reports.

FWB continues to use the recommendations developed in 2020 in the event of difficulties affecting issuers in connection with the impact of the COVID-19 pandemic on compliance with the deadlines for the publication of financial reporting. All reports and data submitted to FWB are subsequently available at www.boerse-frankfurt.de/en, the exchange’s website, under the respective issuer’s name. Information is thus accessible to interested investors in a compact, easy-to-find manner, creating a particular level of market transparency within the Prime Standard segment. Submission via ERS allows for monitoring fulfilment of transparency requirements – seamlessly and without delay.

Deutsche Börse Group also considers that it has an obligation to strengthen trust in the capital markets. We have therefore decided to subject our regulations to an in-depth review and revision process involving the various regulators. In this context, for instance, it was explicitly stipulated in the FWB Exchange Rules that an issuer may not have applied for or be in insolvency proceedings when its shares or certificates representing its shares are admitted to the Prime Standard. An issuer whose shares or certificate representing its shares are admitted to the Prime Standard is therefore obliged to notify the management of FWB without undue delay if any application is made to open insolvency proceedings for its assets or any insolvency proceedings are opened. FWB management was also explicitly authorised to revoke the admission to the Prime Standard of shares or certificates representing shares of an issuer whose assets are subject to an application for insolvency proceedings or the insolvency proceedings themselves.

Furthermore, on 1 July 2021 a legal basis was also created by legislation that enables the management of FWB to make public on the exchange website decisions on measures and sanctions against issuers and others pursuant to section 22 (2) sentence 1 and 2 and section 42 (2) sentence 1 Börsengesetz (BörsG, German Exchange Act). Eight announcements about sanctions imposed on issuers were published on the exchange website up to 31 December 2021.

Our activities and proposals to promote the transparency of capital markets aim to speed up penalty proceedings, increase fines for infringements and to provide investors with transparent information about the issuers concerned and the steps and sanctions that have been taken against them.

Deutsche Börse Group launched a segment for green bonds – bonds issued to raise capital for projects with climate and environmental benefits – on the Frankfurt Stock Exchange in November 2018. This segment currently comprises 315 bonds that meet international standards such as the Green Bond Principles of the International Capital Market Association. They include the use of issue proceeds, the project selection process, management and ongoing reporting. The new segment caters to the demand for sustainable financing, which is rising all over the world. Investors who care not only about the economic, but also the ecological return of their investments can find bonds with the right strategy at www.boerse-frankfurt.de > Bonds > Green Bonds. The bonds included in Deutsche Börse's segment are admitted for trading at various European stock exchanges, including the Frankfurt Stock Exchange.

ESG Best Practice Guide

In connection with the adoption of national policies for implementing the EU Directive on Corporate Sustainability Reporting in effect since 2017, we took the opportunities offered by various meetings and forums with representatives from politics, business and society to position our ESG Best Practice Guide as a manual for companies affected by the legislation. The guide compiles internationally accepted reporting methods, including examples of best practice, and its seven recommendations provide a structured guide on how to deal intelligently and above all, efficiently, with the subject of sustainability in capital market communications. It is therefore particularly suitable for small and medium-sized enterprises and for reporting beginners.

Product quality and customer satisfaction

Our Group growth strategy Compass 2023 (see "Our strategy and steering parameters") is intended to make us more agile, ambitious and effective, and to sharpen our focus on the customer. By improving our organisation, we aim to better address changing client needs and gradually realise unused potential by means of a Group-wide approach to marketing, sales, innovation and product development.

Internally, we ensure product quality and customer satisfaction by means of functioning internal control processes (see "Risk management") and functioning IT security (see "Stable and secure markets").

We carry our regular customer surveys for external quality assurance. One example is Clearstream's client services survey. This survey aims to identify customer needs and prioritise and address enhancement requests to further improve products and services. The results of this survey are taken up by the Clearstream Management Committee, where concrete actions are taken to address customer needs. In 2020 the surveys at EEX, Eurex, 360T and Clearstream were harmonised; they now also include a standardised Net Promoter Score (NPS). The companies ask their customers how willing they would be to recommend the service provider – with the aim of informing the Executive Board of the respective group company and employees about the results shortly after the survey is completed.

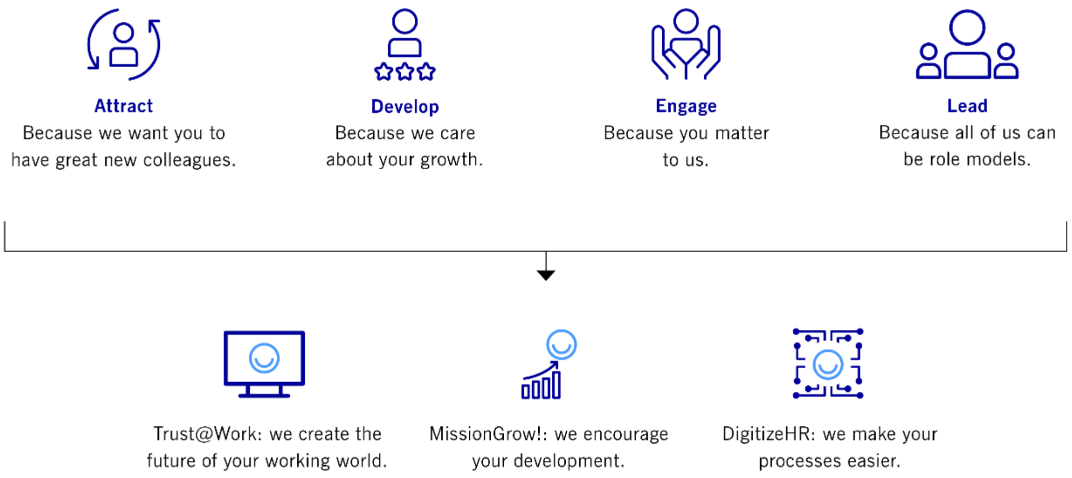
8. Our employees

The commitment and skills of our employees are a vital cornerstone for Deutsche Börse Group. Together with our corporate values of performance, reliability, integrity, openness and responsibility they define our corporate culture and form the basis of our commercial success. For this reason we have an active People strategy, promote diversity and inclusion, and systematically measure how attractive we are as an employer.

People strategy

Working in its four strategic dimensions (Attract, Develop, Engage, Lead), our HR strategy aims to attract talents, to develop them, to enable them to engage effectively and to continue their personal and professional development. These four dimensions form the foundation for three long-term projects. With these projects we aim to create a flexible and sustainable working environment that offers our employees optimal working conditions.

Dimensions of our People Strategy



Trust@Work is intended to create the conditions for effective collaboration in a world of hybrid work across team boundaries and projects. In this context we are working to develop a flexible working environment, which will transform our offices into a space for collaboration, creativity and innovation. This process is backed up by DigitizeHR, a project to fully digitise our operating HR processes. MissionGrow! is our project for optimising development opportunities for our employees. We continue to bank on transparency, equal opportunities and a culture of continuous feedback.

In order to create the right framework to implement the strategic objectives of our projects, we have reorganised the HR department. A business partner team as well as a strategic concept and project team have been added. We have also set up a global HR services team that is being expanded continuously.

Employer attractiveness

We can only achieve lasting success if we attract top talents to Deutsche Börse Group and ensure they are enthusiastic about working for us over the long term. In this spirit, we have redefined our employer brand and defined our employer value proposition in the formula “Share value”. It conveys the message that with us new talents become part of an international team that drives positive change and is characterised by curiosity and an open mind. We welcome people from all different origins, age groups and personal backgrounds, and want to give them the opportunity to grow with us. We achieve this with a series of apprenticeships and training programmes. Internal courses – on cloud computing, agile development methods and digitalisation, for example – are the logical continuation of these apprenticeships and are supplemented by mentoring programmes and personality-based courses, on communication, assuming responsibility and becoming a team player, for instance.

We expanded our existing range of specific training courses for our managers in 2021. These programmes aim to support them in their role as providers of feedback and in personnel development. Since 2021 we have also given managers the opportunity to take part in a 360 degree feedback. This format enables managers to receive specific feedback on their strengths and areas for development from employees, peers and their own managers.

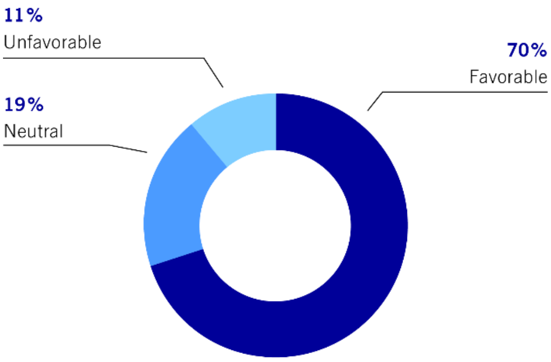
Further information about participation by employees and managers in training and development measures can be found in the table “Key data on Deutsche Börse Group’s workforce as at 31 December 2021”.

In our annual staff survey, the People Survey, which also deals with subjects such as understanding strategy and teamwork, we got good marks for our attractiveness as an employer (85 per cent approval). The largely positive feedback we have received here underlines how we stand for a working environment which makes it easy for staff to reconcile their career and their private life, with flexible models for working hours, allowances for child care, part-time degree courses and part-time work. For this purpose, we survey the average value of the two topics Strategic Alignment & Organisational Framework and Team Effectiveness & Collaboration annually. Our goal is to achieve a value of more than 71.5 per cent. In 2021, we achieved a value of 75 per cent.

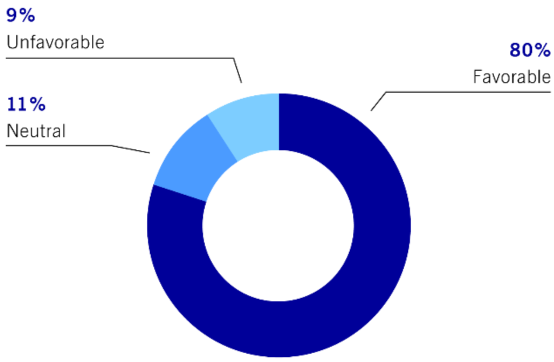
The following graph “Results of our annual People Survey 2021” shows what employees think about the subjects of understanding strategy and teamwork.

Results of our annual “People Survey 2021”

Strategic Alignment & Organisational Framework



Team Effectiveness & Collaboration



Promotion of diversity and inclusion

Deutsche Börse Group operates around the world. At our 69 locations around the world we have over 10,000 employees from the most diverse cultural backgrounds. Our diversity is not only apparent in the origins of our employees, however, but also in the breadth of professional expertise and the many other differences that make up each individual personality in our team.

We are convinced that this diversity is decisive for our global success. We see the wealth of individual characteristics and strengths as the key to fulfilling our corporate purpose. For this reason we strive to create an inclusive working environment in which everyone feels welcome and where they feel comfortable about contributing their ideas.

We are a signatory of the “Diversity Charter” and acknowledge our corporate social responsibility as expressed in the Code of Conduct that applies throughout the Group. A public Diversity & Inclusion statement in which we express our appreciation of all present and future employees and a Diversity & Inclusion policy constitute further elements of our diverse and inclusive working environment.

We do not tolerate any discrimination, whether on the grounds of age, gender, physical or health disability, sexual orientation and identity, ethnic origin or belief and irrespective of whether behaviour among employees is concerned or the placing of orders with third parties. We have therefore implemented processes designed to ensure equal treatment in the selection of personnel and enable the Group to take prompt action whenever discrimination is suspected. No cases of discrimination requiring further action were reported to our whistleblower system in 2021.

Furthermore, we deliberately decided against the centralised management of our diversity and inclusion programmes. Instead, we established a Group-wide Diversity & Inclusion Council last year. The members of the council represent our global workforce and our different minorities; they inform and advise the Executive Board on initiatives and act as trusted third parties and personal contacts for the employees. The council strives to ensure that our everyday workspace continues to be a place where everyone feels appreciated and gets the opportunities they deserve.

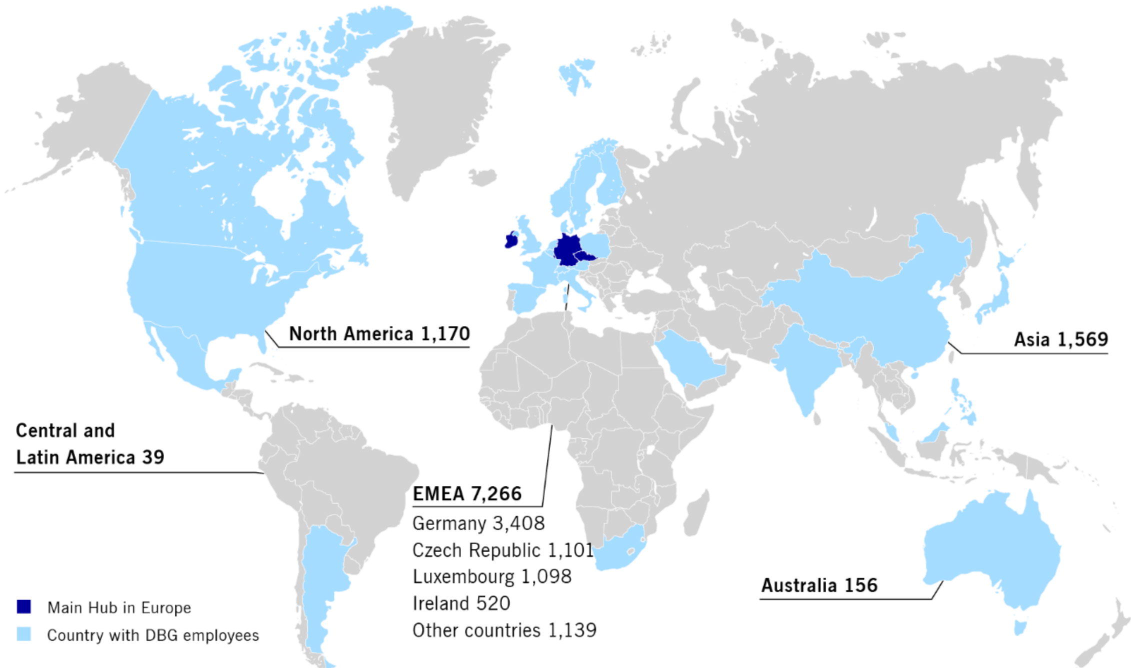
Ensuring equality of opportunities for men and women has long been part of our corporate social responsibility, because we do not want to do without the knowledge and competences of female managers and the performance potential of diversified teams. In this spirit, one of our particular aspirations is to increase the proportion of women at the management level. Our various programmes for promoting talent, and so also for qualifying women for management positions, contribute to the long-term advancement of women. Other measures include focussed succession planning, as well as internal and external mentoring and training programmes. Exchanges among female colleagues are encouraged by an internal women's network. In addition, our Capital Markets Academy offers special training courses for women on financial planning, investment and retirement saving, among other things.

For details regarding targets for female quotas, please refer to the section entitled "Corporate governance statement – target figures for the proportion of female executives beneath the Executive Board" and the "Comparison with the forecast for 2021".

The results of our staff survey on diversity and inclusion confirm that our employees feel that they are welcome here with us (92 per cent positive) and that they are treated fairly and respectfully by their managers (95 per cent positive), regardless of their ethnic origins, their gender or their cultural background. This positive feedback confirms us in our intention to keep expanding our programme for diversity and inclusion, in the spirit of creating a fully inclusive working environment.

Staff developments

Deutsche Börse Group: Our Workforce



10,200
Employees

69
Locations worldwide

109
Nationalities

As at 31 December 2021 Deutsche Börse Group employed a total of 10,200 staff (women: 4,124; men: 6,068; other: 8; 31 December 2020: 7,238), drawn from 109 nationalities at 69 locations worldwide. The average number of employees in the reporting period was 9,347 (2020: 6,996). At Group level, this corresponds to an increase of around 34 per cent compared with the previous year.

Our fluctuation rate was 12.7 per cent (31 December 2020: 6.3 per cent). At the end of the year under review, the average length of service for the company was 7.3 years (2020: 8 years).

The number of Deutsche Börse AG's employees rose by 50 during the year under review to 1,743 as at 31 December 2021 (comprising 664 women and 1,079 men; 31 December 2020: 1,693). The average number of employees at Deutsche Börse AG in the 2021 financial year was 1,715 (2020: 1,605). On 31 December 2021, employees of Deutsche Börse AG worked at six locations.

For more details, please refer to the table entitled "Key data on Deutsche Börse Group's workforce as at 31 December 2021".

Key data on Deutsche Börse Group's workforce as at 31 December 2021 (part 1)

	Deutsche Börse AG		Deutsche Börse Group					
	All locations		Germany		Luxembourg		Czech Republic	
	Male	Female	Male	Female	Male	Female	Male	Female
Employees (Headcount)[1]	**1,079**	**664**	**2,037**	**1,371**	**673**	**425**	**701**	**400**
50 years and older	371	146	587	282	217	103	36	10
40–49 years	275	151	541	317	245	143	201	87
30–39 years	323	266	683	572	156	126	373	225
Under 30 years	111	101	219	194	56	53	91	78
Average age	44	40	43	40	44	42	37	35
Employee classification								
Full-time employees	1,023	459	1,894	895	638	281	685	280
Part-time employees	56	205	143	476	35	144	16	120
Length of service								
Under 5 years (%)	42	44	44	44	32	33	51	52
5–15 years (%)	32	33	33	35	26	28	48	48
Over 15 years (%)	26	23	23	21	42	39	1	1
Staff turnover								
Joiners	107	67	204	159	52	41	112	82
Leavers	57	28	104	73	57	42	58	44
Training								
Training days per employee (FTEs)	2.1	2.8	2.1	2.6	2.3	3.1	3.1	4.5

1) Due to missing information (e.g. gender or age), headcounts of subcategories do not always add up to the total.

Key data on Deutsche Börse Group's workforce as at 31 December 2021 (part 2)

	Deutsche Börse Group						
	Ireland		USA		Other locations		
	Male	Female	Male	Female	Male	Female	Total (part 1 and 2)
Employees (Headcount)[1]	**257**	**263**	**749**	**376**	**1,651**	**1,289**	**10,200**
50 years and older	19	13	161	85	182	70	1,765
40–49 years	80	92	165	82	337	184	2,477
30–39 years	64	91	223	94	528	385	3,521
Under 30 years	94	67	135	86	517	571	2,162
Average age	36	36	37	37	34	31	38
Employee classification							
Full-time employees	255	228	745	366	1,620	1,236	9,131
Part-time employees	2	35	4	10	31	53	1,069
Length of service							
Under 5 years (%)	65	38	52	51	66	67	51
5–15 years (%)	26	43	37	33	28	28	33
Over 15 years (%)	10	19	11	16	5	5	16
Staff turnover							
Joiners	44	20	121	67	487	377	1,882
Leavers	33	25	133	69	270	203	1,184
Training							
Training days per employee (FTEs)	3.2	3.4	0.1	0.2	1.0	1.3	2.0

1) Due to missing information (e.g. gender or age), headcounts of subcategories do not always add up to the total.

9. Our economic situation

The third dimension of our integrated report is the economic situation. It is the result of developments by our customers and markets, and the commitment of our employees. In the following section we therefore look at the macroeconomic and sector-specific environment, the course of business, our earnings, the development of profitability and other financial performance indicators.

Macroeconomic and sector-specific environment

Secular growth factors are a core element of our strategy. We can plan them, manage them and adjust them to external circumstances. Our business performance is also influenced by macroeconomic and sector-specific factors that are beyond our control, however. Looking at the reporting year, these related mainly to the course of the COVID-19 pandemic and the accompanying measures to limit the spread of infections, together with their economic impact. The following aspects are particularly noteworthy:

- Uncertainty among participants on financial and capital markets concerning the progression of the pandemic and a resulting reluctance regarding investment decisions.
- Monetary policy measures by central banks to offset the economic effects of the pandemic.
- Higher new borrowing by many states to alleviate the consequences of the pandemic.
- Low volatility as measured by the VSTOXX index, given the large amounts of liquidity being provided.
- An increase of inflation in the USA and Europe and consequently an increase in interest rate expectations.
- Regulatory projects and the resulting stricter requirements for capital market participants.

In its January estimate (2022) the International Monetary Fund (IMF) predicted global economic growth of 5.9 per cent for 2021. Growth of 5.2 per cent is expected for the euro area and of 2.7 per cent for Germany.

Business developments

2021 was again dominated by the course of the COVID-19 pandemic. The economic optimism that began in the first half of 2021 was partly the result of a positive reporting season, and so companies' higher earnings expectations, and partly due to the success of vaccination campaigns around the world. These conditions helped to settle the nerves of many market participants. The main global indices approached record highs as a result, whereas market volatility moved sideways at a low level on an almost constant plane. Market activity, the need to hedge portfolios and therefore trading volumes in various asset classes, declined as a result. This particularly affected the trading-based segments, which also had to suffer comparisons with the high figures from the same period the previous year.

In the second half-year, the emergence of the Delta variant of the coronavirus again caused uncertainty concerning the economic consequences for the markets. High inflation rates on both sides of the Atlantic were also a surprise and caused inflation expectations on financial markets to be revised upwards. This was accompanied by the assessment of market participants that the central banks would change the direction of their monetary policy faster than previously thought. Nominal interest rates rose accordingly around the world, especially short-term rates. Over the full year, the low-interest rate environment still had a negative effect on net interest income from banking business in the Clearstream segment, however.

Results of operations

Our financial year 2021 was marked by a persistent phase of low market volatility and subdued market activity as a result. This reduced net revenue, especially in the trading segments Eurex and Xetra. Net interest income from banking business in the Clearstream segment also declined as a result of US interest rate changes and was only partly offset by growth in securities settlement and custody. This reduced the Group's cyclical net revenue by some 4 per cent. The effect was offset by strong secular growth and the impact of M&A. The Group's secular net revenue went up by 6 per cent. The fastest secular growth was reported by the IFS segment. This is due partly to solid growth in fund settlement and fund custody and partly to the strong performance of the fund distribution business. Following the purchase of the remaining 49 per cent of the shares in Clearstream Fund Centre from UBS, the IFS segment also profited from a positive non-recurring valuation effect of some €40 million, which is also included in net revenue. Uncertainty among market participants concerning further developments on power and gas markets drove trading in power and gas products, especially in the second half of 2021, leading to a new record for net revenue in the EEX segment. Net revenue therefore increased year-on-year by 9 per cent in 2021 to €3,509.5 million (2020: €3,213.8 million).

The ISS and EEX segments accounted for 93 per cent of ESG net revenue[4] at Group level in 2021. This mainly consists of net revenue from governance solutions, corporate solutions and ESG in the ISS segment, and trading in renewable energy products in the EEX segment. In aggregate, ESG net revenue accounted for 7 percent of total net revenue for Deutsche Börse Group.

Operating costs came to €1,551.6 million (2020: €1,368.7 million), an increase of 13 per cent on the previous year. The increase is due entirely to M&A-related growth, especially the acquisition of ISS. Staff costs went up to €1,002.1 million (2020: €822.9 million), other operating expenses of €549.5 million (2020: €545.8 million) were on par with the previous year.

Result from financial investments increased to €85.2 million (2020: €24.3 million). Various minority investments contributed to this positive performance. The investment in Clarity AI, Inc. accounted for valuation effects of some €45 million.

This boosted earnings before interest, tax, depreciation and amortisation (EBITDA) year-on-year by 9 per cent to €2,043.1 per cent (2020: €1,869.4 million).

[4]ESG net revenue according to the internal definition of Deutsche Börse Group – see "Definition of our ESG net revenue".

Depreciation, amortisation and impairment losses, which are reported separately from the operating costs, came to €293.7 million in the reporting period (2020: €264.3 million). The change stems mainly from purchase price allocations for business combinations. A compensating factor was the decision to bring the amortisation period into line with the useful life of the assets (see Note 3).

The financial result improved to €–40.1 million (2020: €–76.9 million) and benefited from the positive impact of adjusting the expected interest rate for potential tax back-payments. The previous year's financial result also included costs in connection with the issue of a hybrid bond.

The Group's tax ratio of 26 per cent was on par with the previous year.

Overall, the net profit for the period attributable to Deutsche Börse Group shareholders was €1,209.7 million (2020: €1,079.9 million), a year-on-year increase of 12 per cent. Undiluted earnings per share were €6.59 (2020: €5.89) for an average of 183.5 million shares. Earnings per share before purchase price allocations (Cash EPS) were €6.98 (2020: €6.07).

Net profit for the period attributable to non-controlling interests amounted to €55.2 million (2020: €45.2 million) and comprised mainly earnings attributable to non-controlling shareholders of EEX Group, ISS HoldCo Inc. and Qontigo GmbH.

Development of profitability

Deutsche Börse Group's return on shareholders' equity expresses the ratio of net income after taxes to average equity available to the Group during 2021. In the reporting year, it was at 18.2 per cent (2020: 18.1 per cent).

Comparison of results of operations with the forecast for 2021

On the basis of our diversified business model and the resulting growth opportunities we predicted an increase in net revenue to some €3.5 billion for financial year 2021, whereby the growth rate for secular net revenue should be at least 5 per cent. We expected additional net revenue contributions from the acquisitions of Clearstream Fund Centre and ISS. By contrast, we believed that declines in cyclical net revenue were likely in view of interest rate developments and changes in market volatility. At the time the forecast was made the further development of worrying coronavirus variants and their macroeconomic effects were not foreseeable. Despite this, we reported an increase of 9 per cent in net revenue to €3,509.5 million, with secular net revenue growth of 6 per cent. This means we met our forecast.

Furthermore, we predicted an increase in earnings before interest, tax, depreciation and amortisation (EBITDA) to around €2.0 billion. Strict management of operating costs in line with earnings growth and positive valuation effects in net income from financial investments led to EBITDA growth of 9 per cent to €2,043.1 million. This also corresponds to the forecast.

As a result of the M&A growth mentioned above, particularly the acquisition of a majority stake in ISS, the ratio of net debt to EBITDA exceeded the target limit of 1.75 at year-end, with a figure of 2.0. As expected, the Group's cash flow from operating activities was clearly positive. Planned investments in intangible assets and property, plant and equipment of €200 million finally amounted to €206.4 million. Based on the dividend proposal to the Annual General Meeting of €3.20 per share, the dividend ratio of 49 per cent will be in the middle of the planned range of 40 to 60 per cent.

Comparison forecast 2021 with financial year 2021

	Forecast 2021 €bn	Financial year 2021 €m
Net revenue	~3.5	3,509.5
EBITDA	~2.0	2,043.1

Qontigo (index and analytics business) segment

Key indicators Qontigo (index and analytics business) segment

	2021 €m	2020 €m	Change %
Net revenue	258.7	248.1	4
ETF licences	41.3	34.7	19
Exchange licences	33.9	34.7	–2
Other licences	107.6	105.6	2
Analytics	75.9	73.1	4
Operating costs	–123.3	–123.8	–0
EBITDA	180.6	124.1	46

In the Qontigo (index and analytics business) segment, we report on the development of our subsidiary, Qontigo, which was formed through the merger of the index business STOXX and DAX with Axioma in September 2019. In the index business, Qontigo offers issuers an extensive range of indices, thus providing these issuers with a wealth of opportunities to create financial instruments for even the most diverse investment strategies. While the ETF licence revenues depend on the volume invested in exchange-traded index funds (ETFs) on STOXX® and DAX® indices, the exchange licence revenues are derived mainly from the volume traded in index derivatives on STOXX and DAX indices on Eurex. Licence fees from structured products are shown as part of other licence fees. In Analytics, Qontigo offers its clients risk analytics and portfolio-management software. With regard to ESG, Qontigo contributes by licensing sustainable index solutions.

The financial year 2021 saw growing economic optimism combined with expansive fiscal policies to alleviate the implications of the COVID-19 pandemic, leading to record highs in both STOXX and DAX indices. Accordingly, average assets under management in ETF based on STOXX and DAX indices rose significantly and contributed positively to net revenues. Revenues from exchange licences, however, decreased slightly in the reporting period because of their dependency on trading volumes in STOXX and DAX index derivatives on Eurex. These had been extraordinarily high in 2020 and fell in 2021 due to an environment of low market volatility. Other licences revenue benefitted from growth in the business with buy-side clients and structured products issuers.

In the analytics business, net revenues increased moderately despite restrictions imposed to contain the COVID-19 pandemic continuing to slow down sales activity through reduced travel, remote working, and decreased client propensity to implement IT projects. Additionally, exchange rates had an unfavourable impact due to the depreciation of the USD relative to the EUR compared to 2020. Net revenue in this area is partly recognised upfront on the day of transaction, independently of the contract's cash flow profile, leading to positive and negative deviations of recognised revenue from the run-rate associated with the existing customer portfolio.

The former equity method measurement of Clarity AI, Inc. had a positive valuation effect of some €45 million for the full year on the result from financial investments.

ISS (Institutional Shareholder Services) segment

Key indicators ISS (Institutional Shareholder Services) segment

	2021[1] €m	2020 €m	Change %
Net revenue	223.9	n/a	n/a
ESG	158.2	n/a	n/a
Non-ESG	65.7	n/a	n/a
Operating costs	–155.4	n/a	n/a
EBITDA	63.4	n/a	n/a

1) Fully consolidated as at 25 February 2021, see Note 2.

The segment ISS (Institutional Shareholder Services) was introduced in 2021 and showed its first full reporting period in the second quarter. Here we report on the development of our majority owned subsidiary Institutional Shareholder Services, Inc., which is a US-based leading provider of corporate governance and responsible investment solutions, market intelligence, fund services, and events and editorial content for institutional investors and corporations, globally. ISS operates at-arm's-length and we have adopted principles protecting the independence and integrity of ISS' research offerings. The transaction was closed on 25 February 2021, therefore the financial figures include some transactional effects. The net revenue summarised under ESG includes the Corporate Solutions, ESG Analytics and Governance Solutions businesses. With this ISS was the largest contributor regarding ESG net revenue[5] within our Group in 2021. The Non-ESG net revenue contains the business areas Market Intelligence, Media as well as among others the entities FWW (fund data), LiquidMetrix and SCAS (Securities Class Action Services).

[5] ESG net revenue according to the internal definition of Deutsche Börse Group – see "Definition of our ESG net revenue".

In the 2021 financial year, the Corporate Solutions business showed strong growth due to increased demand from companies seeking to comply with market standards. As a leading provider, ISS supports clients in terms of designing and managing their corporate governance, executive compensation, sustainability and cyber risk programmes. ESG Analytics is the fastest growing area within ISS and as such contributed very positively to net revenue in 2021. This business enables institutional investors to develop and integrate responsible investment strategies, engage on responsible investment issues, and monitor portfolio company practices and performance through screening solutions, cyber risk assessments, and the proprietary financial measure, economic value added. Governance Solutions, which encompasses ISS' well-established services, offering institutional clients solutions to apply their corporate governance views, identify environmental, social and governance risk, and manage their complete proxy voting needs on a global basis, also performed well in the reporting period.

The ISS Market Intelligence business included in the Non-ESG reporting line showed a stable development. This service provides critical data, insight, and workflow solutions to global asset managers, insurance companies and distributors, steering strategy and data driven decision making across a wide range of financial products. To position ISS as a market leader in this space ISS completed two acquisitions in 2021. The first was Rainmaker Information on 1 September 2021, a leading platform delivering data, research, events, and media solutions to the Australian financial services market. The second acquisition, Discovery Data, closed on 9 December 2021. The company is a market leading supplier of mission critical financial intermediary data for the financial services industry, serving the sales, distribution and recruitment departments of U.S. asset managers and insurers.

Eurex (financial derivatives) segment

Key indicators Eurex (financial derivatives) segment

	2021 €m	2020 €m	Change %
Net revenue	995.8	1,110.3	– 10
Equity index derivatives	389.9	540.5	– 28
Interest rate derivatives	225.7	200.1	13
Equity derivatives	49.5	48.4	2
OTC clearing	57.1	54.9	4
Margin fees	68.0	85.4	– 20
Eurex data	63.0	59.8	5
Other	142.6	121.2	18
Operative Expenses	– 387.7	– 373.1	4
EBITDA	624.2	738.8	– 16

In the Eurex (financial derivatives) segment we report on the financial derivatives trading and clearing business at Eurex Exchange. The clearing volume of OTC interest rate swaps, one of our secular growth factors, is reported as a separate item within the segment. Reporting for Eurex Data covers the marketing of licences for Eurex-specific real-time trading and market signals and the provision of historical data and analytics. The segment offers a wide range of sustainable investment products in the form of ESG equity index derivatives and ESG interest rate derivatives traded on the Eurex platform, as well as financing products with an ESG connection on Eurex Repo (e.g. green bond general collateral baskets). The performance of the Eurex segment largely depends on the trading activities of institutional investors, and proprietary trading by professional market participants.

Derivative trading in 2021 was primarily defined by a sharp fall in market volatility, particularly compared with the previous year, which was exceptionally volatile due to COVID-19. In an environment of better-than-expected economic signals, negative influences only had temporary effects on share prices, so there was less need for hedging with financial derivatives and trading volumes declined accordingly. This was particularly apparent in trading with equity index derivatives. In interest rate derivatives, by contrast, the higher inflation expectations in the US and Europe and the associated fear of higher long-term interest rates resulted in greater market activity and a corresponding rise in trading volumes. Net revenue from equity derivatives trading was slightly up on the previous year, whereby a higher traded volume was partly offset by a different product mix.

Lower market volatility also meant that the collateral required for trading financial derivatives at Eurex Clearing declined.

The increase in other net revenue is due mainly to the acquisition of Quantitative Brokers.

Growth in clearing of OTC derivatives continued in financial year 2021. Although the equivalence period for UK clearing houses was extended again, the average outstanding notional volume was again higher than the previous year. Eurex Clearing's market share in global euro-denominated OTC interest rate derivatives rose accordingly to around 20 per cent (2020: 17.5 per cent). By refining the incentive programmes for transferring interest rate derivatives portfolios to Eurex Clearing, customers continue to receive focused support when migrating their positions to the EU-27.

EEX (commodities) segment

Key indicators EEX (commodities) segment

	2021 €m	2020 €m	Change %
Net revenue	341.5	302.2	13
Power spot	71.1	72.1	– 1
Power derivatives	118.4	115.8	2
Gas	54.9	43.0	28
Other	97.1	71.3	36
Operating costs	– 178.7	– 174.3	3
EBITDA	162.5	127.0	28

In the EEX (commodities) segment we report on trading activities on EEX Group's platforms in Europe, Asia and North America. The EEX Group operates marketplaces and clearing houses for energy and commodity products, connecting more than 800 participants around the world. The product portfolio comprises contracts on energy, environmental, freight and agricultural products. EEX Group's most important revenue drivers are the power spot and derivatives markets, and the gas markets. Activities also focus on developing sustainable commodity markets. EEX pursued various initiatives in this area in 2021, which made it the second-largest contributor to the Group's ESG net revenue[6]. This includes products such as power derivatives, emissions trading and origin certificates.[7]

[6] ESG net revenue according to the internal definition of Deutsche Börse Group – see "Definition of our ESG net revenue".

[7] The part of the EEX ESG net revenue originating in power markets is based on the assumption that the proportion of renewable energies in physical power markets is by analogy related to the respective net revenue.

As for many other business units, COVID-19 meant that EEX was faced with exceptionally high comparative figures from 2020 at the beginning of 2021, particularly in the power derivatives market. Over the course of the year, particularly from September onwards, the power and gas market saw strong price increases, at times with record prices. This originated in the tense situation on the gas market due to low storage levels, a global economic recovery with higher gas consumption, and global price competition for natural gas as the Asian economy picked up even faster. The resulting high volatility led to an increase in trading activity and hedging requirements, which in turn led to higher trading volumes in power and particularly gas products on the EEX.

Positive performance on the Nordic markets (market entry in 2020) and intraday markets meant the trading volume in the power spot market was slightly higher than the previous year. The gains were partly offset by reduced day-ahead volumes, particularly in Germany and the UK. Overall, the power spot market reported a slight decrease in net revenue, due to lower volumes in the French capacity auctions and incentive programmes, particularly in the day-ahead markets.

Trading volume in the power derivatives market saw a slight increase in financial year 2021. The decline in European volumes resulting from initially hesitant trading activity was partly recouped by high trading volumes from September onwards. The same applied particularly to the US power derivatives market, which had a positive effect on EEX net revenue with a sharp increase of 28 per cent in trading volumes. Gains in market share and a stronger competitive position in Europe, Japan and the US underline the continuous expansion of power derivatives trading. The Japanese market is particularly noteworthy, since within twelve months EEX has established itself here as the market leader for trading in power derivatives, with an 87 per cent share of the exchange market in 2021.

European gas markets reached new highs in terms of volumes in October and December 2021, growing year-on-year by a total of 28 per cent for the reasons described above. Higher trading volumes were recorded on almost all gas spot and derivatives markets, but particularly in Germany and the Netherlands. Volume growth was particularly strong on the US gas markets too. Altogether, EEX continued to build on its position as the leading gas spot exchange in Europe, achieving a significant increase in net revenue from the gas market.

360T (foreign exchange) segment

Key indicators 360T (foreign exchange) segment

	2021 €m	2020 €m	Change %
Net revenue	107.8	101.5	6
Trading	84.3	81.9	3
Other	23.5	19.6	20
Operating costs	–53.7	–53.9	–0
EBITDA	54.1	47.6	14

In the 360T (foreign exchange) segment, we report on our foreign exchange trading business, which takes place on the platforms provided by 360T's subsidiaries 360 Treasury Systems AG and 360TGTX Inc. Net revenue in the 360T segment is driven mainly by the trading activities of institutional investors, banks and internationally active companies, and the provision of liquidity by so-called liquidity providers. During the year under review, the segment generated 78 per cent of its revenue from foreign exchange trading and 22 per cent from the provision of other services.

Although the segment was still faced with exceptionally high comparative figures from the previous year in the first quarter, growth in the second quarter more than made up for this. This trend continued in the second half-year, enabling the 360T Group to report constant double-digit growth rates in average daily trading volumes from September onward. At the same time, volatility in the FX spot market declined in the reporting period, which had a particularly negative impact on trading volumes in the 360TGTX spot business. Trading activity was up year-on-year by around 7 per cent on average and net revenue increased by almost the same margin.

Ongoing customer growth across all segments and regions and the corresponding increase in newly connected customers and additional trading volumes (e.g., stronger trading in forward and swap products) on the 360T platforms, accompanied by a positive performance in the marketing of market data and FX trading technology and infrastructure, all helped to offset the negative cyclical effects. This shows that the secular growth drivers of the 360T Group are intact and confirms its further growth potential.

The Eurex FX market again showed solid growth, with an increase of 19 per cent in average daily trading volumes. More activity by existing customers played a role here, as did new customer wins, now increasingly also from the US and Asia. Two successful product initiatives also contributed to the positive development: the introduction of Scandinavian currency pairs, and the introduction of a partnership product with the Korea Exchange KRX for FX futures (USD/KRW FX future).

Xetra (cash equities) segment

Key indicators Xetra (cash equities) segment

	2021 €m	2020 €m	Change %
Net revenue	364.0	391.7	– 7
Trading and clearing	188.6	203.3	– 7
Listing	21.2	18.9	12
Xetra Data	108.7	125.7	– 14
Other[1]	45.5	43.8	4
Operating costs	– 150.6	– 158.8	– 5
EBITDA	242.8	258.7	– 6

1) Includes Crypto Finance since 15 December 2021.

In the Xetra segment (cash equities), we bring together our cash market trading venues (Xetra®, the Frankfurt Stock Exchange, and Tradegate). Besides trading and clearing services income, the segment generates revenue from the ongoing listing of companies' securities and exchange admissions, the marketing of trading data, connecting clients to trading venues, and from services provided to partner exchanges. The activities of the recently acquired Crypto Finance AG are also reported in the Xetra segment as of December 2021. The acquisition of a majority stake in this provider of trading, custody, and investment services for digital assets has enabled us to tap into a new asset class. Xetra contributes to ESG net revenue[8] by offering products related to trading in green bonds and ESG ETFs.

Cash equities trading was influenced in 2021 by economic signals that were more positive than expected, with negative factors only having a temporary impact on share prices. This manifested itself in an environment of low market volatility, as measured by the VSTOXX index, and correspondingly reduced trading activity, although shares and ETPs (exchange-traded products) did scale record heights at times. Order book volumes on the segment's exchanges fell in consequence by 5 per cent compared with the extraordinarily strong figures from the previous year, which were due to the high volatility caused by the coronavirus pandemic. Trading and clearing revenue sank accordingly, resulting in an overall decrease of net revenue in the Xetra segment. Low market volatility was accompanied by increasing competition in cash equities trading with pan-European exchanges, so Xetra's market share as the reference market for trading in DAX shares fell to 69 per cent, the same level as 2018 (–4 percentage points compared to 2020).

A total of 23 initial public offerings (IPOs) took place in the financial year (2020: nine). The total issue volume came to around €10 billion (2020: €1.2 billion). Secular growth in the listing business from the large number of entries onto the regulated market was able to compensate partly for the segment's decline in net revenue.

The sale of Regulatory Services GmbH – our regulatory reporting hub – to MarketAxess Holdings Inc. in November 2020 resulted in delayed income of around €16 million, which was attributed to Xetra data.

[8] ESG net revenue according to the internal definition of Deutsche Börse Group – see "Definition of ESG net revenue".

The business of Tradegate AG Wertpapierhandelsbank remained strong in 2021 thanks to the high ongoing level of activity from private investors, and its equity method measurement had a positive impact of some €28 million on the result from financial investments.

Clearstream (post-trading) segment

Key indicators Clearstream (post-trading) segment

	2021 €m	2020 €m	Change %
Net revenue	835.4	827.2	1
Custody	445.2	417.5	7
Settlement	120.2	114.8	5
Net interest income from banking business	50.0	100.5	– 50
Collateral management	80.9	76.9	5
Third party services	23.8	23.8	0
Other	115.3	93.7	23
Operating costs	– 376.3	– 367.3	2
EBITDA	459.6	458.0	0

Our settlement and custody activities are reported under the Clearstream (post-trading) segment. In providing the post-trade infrastructure for Eurobonds and other markets, Clearstream is responsible for the issuance, settlement, management and custody of securities from 59 domestic markets worldwide, plus the international market. Net revenue in this segment is driven mainly by the volume and value of securities under custody, which determine the deposit fees. The settlement business depends primarily on the number of settlement transactions processed by Clearstream via stock exchanges as well as over the counter (OTC). This segment also contains net interest income from banking business. Clearstream's contribution to ESG stems from proxy voting instruction and distribution services offered as part of investor services supporting customers to comply with regulatory, governance and market standard requirements as well as stakeholder expectations.

The financial year 2021 saw continuously high issuance activity on the bond market especially by the public sector. The result was a higher average value of assets under custody in the central securities depository (CSD) and international central securities depository (ICSD), surpassing the €13 trillion mark in June 2021 for the first time. Higher trading volumes especially in the ICSD led to a higher number of settlement transactions with a new record volume of 8.3 million transactions in March. Both developments had a positive impact on custody and settlement net revenues. Clearstream acquired the remaining shares in LuxCSD S.A., the Luxembourg central securities depository, in December 2021. For Clearstream, the full acquisition of LuxCSD represents a natural and complementary addition to its portfolio and completes the offering for issuers to use Clearstream as a global issuer hub.

Central banks' monetary policy measures related to the COVID-19 pandemic, especially in the US, resulted in reference rate levels around zero or even below. The cash handling fee of 30 basis points on US-dollar denominated deposits which had been introduced in 2020 could only partly offset this. The net interest income from banking business fell accordingly as anticipated.

Average outstanding volumes in collateral management and securities lending grew slightly in the reporting year, thus leading to also slightly increased net revenues in this area.

Other net revenue in the Clearstream segment benefited from an exceptional effect related to the claim of a reimbursement of legal costs of around €17 million.

IFS (investment fund services) segment

Key indicators IFS (investment fund services) segment

	2021 €m	2020 €m	Change %
Net revenue	382.4	232.8	64
Custody	113.0	87.4	29
Settlement	90.2	72.0	25
Fund distribution	77.6	14.4	439
Other	101.6	59.0	72
Operating costs	– 125.9	– 117.5	7
EBITDA	255.9	115.2	122

In the IFS (investment fund services) segment, we report the order routing and settlement activity and custody volumes of mutual, exchange-traded, and alternative funds processed by Clearstream. Clients can settle and manage their entire fund portfolio via Clearstream's Vestima® fund processing platform. The Fund Distribution unit covers the fund platform business of Clearstream Fund Centre, a merger of the existing Clearstream Fund Desk with the in 2021 fully acquired UBS Fondcenter AG business. IFS' ESG product suite consists of custody and settlement services for processed ETFs where investors see sustainability features. Net revenue in the IFS segment is largely a function of the value of assets under custody and the number of orders and transactions processed.

The financial year 2021 saw continuously high activity on the fund retail market, especially in Germany, and accordingly high demand for investor services, even when taking into account the extraordinary volumes beginning of 2020 related to COVID-19. Combined with organic product development in the IFS segment, including the extension of market network coverage, this led to steadily increasing volumes and revenues across all line items confirming the continuing growth trend in investment fund services. The assets under custody grew significantly also related to higher market index levels.

The remaining 49 per cent stake of Clearstream Fund Centre, which was founded in the fourth quarter of 2020 by combining UBS' fund distribution platform with our corresponding business, was acquired earlier than planned on 1 June 2021. This makes us the sole shareholder in the Zurich-based fund distribution platform, generating a positive valuation effect of around €40 million reported under "Other" net revenue. Clearstream Fund Centre's services which are reported separately in the business line "Fund distribution" developed very positively for the reasons already mentioned above, including secular growth from winning new clients. The business is considered to be one of the leading market providers in the world and centre of competence for global fund distribution services within our Group with around €400 billion assets under distribution at the end of the reporting period, giving global fund distributors access to contracts covering more than 76,000 funds. Usually resource-intensive distribution support services such as fee management and research as well as the administration of fund data and documentation can be streamlined in an efficient way by using Clearstream Fund Centre's services. Approximately 600 global asset managers benefit from Clearstream's global client network which brings additional scope and efficiency in the distribution of investment funds.

Disclosures in accordance with Article 8 EU Taxonomy Regulation
Article 8 of EU Taxonomy Regulation requires companies with a reporting obligation under Section 289b HGB (German Civil Code) to disclose to what extent their economic activities qualify as environmentally sustainable under the EU Taxonomy Regulation. The delegated act supplementing the EU Taxonomy Regulation (EU) 2021/2139 established the technical screening criteria for this assessment, which currently concentrate exclusively on economic activities which contribute substantially to climate change mitigation or climate change adaptation. According to the delegated act, companies must report on the proportion of their eligible and non-eligible turnover and on their capital and operating expenditure for financial year 2021.

As a company obliged to prepare non-financial reporting we report for the 2021 financial year at Group level on our turnover, operating and capital expenditure covered by the EU Taxonomy Regulation.

For 2021 we have not identified any economic activity covered by the delegated act. Furthermore, we did not identify any material capital or operating expenditure that fall within the scope of the delegated act in financial year 2021.

The following table shows the proportion of eligible and non-eligible turnover, capital and operating expenditure:

EU taxonomy

Category	Eligible	Non-eligible
Net revenue	0.00%	100%
Operating expenditures	0.00%	100%
Capital expenditures	0.00%	100%

Basis for determining the quotas

The quotas were determined in accordance with the requirements of Annex I to Article 8 of the delegated act. The determination of the taxonomy-eligible quotas is based on the following principles:

Turnover

The proportion of eligible economic activities was determined by dividing the turnover from eligible economic activities (numerator) by total turnover (denominator). The numerator is based on turnover as defined in IAS 1.82(a) and presented in the consolidated income statement. For further details we refer to our consolidated financial statements (see Note 4, Net revenue table "Composition of net revenue (Part 1-4)" column "net revenue 2021").

We have reviewed the application of the EU Taxonomy Regulation to our business model on the basis of the economic activities listed in the delegated act. Our business model is largely based on the following activities:

- Integrating various financial market services such as ratings, index and analytics services, trading, clearing, settlement, custody, market data services, and liquidity and collateral management
- Offering these services for various asset classes
- Developing and operating proprietary electronic systems for all processes along the value chain, in order to provide neutral marketplaces

The above pillars of our business model are not explicitly listed in the economic activities and provisions of the delegated act. We therefore limited our analysis to the following economic activities:

- 8.1 Data processing, hosting and related activities
- 8.2 Data-driven solutions for GHG emissions reductions

As mentioned, we did not identify any eligible turnover under the Taxonomy Regulation for the past financial year.

Operating and capital expenditure

We calculated the proportion of qualifying operating expenses by comparing our operating expenses (see Note 6, table "Composition of other operating expenses", line IT costs and line premises expenses) with the economic activities in Annex I, which contribute substantially to climate change mitigation or climate change adaptation.

We calculated the proportion of eligible investment expending in the same way. Investment expenses are all additions to intangible and tangible assets (see Note 10, table "Intangible assets" column "Other intangible assets" and Note 11, table "Property, plant and equipment (incl. Right-of-use assets)" in the lines "Additions") without depreciation and amortisation, without remeasurement and changes to fair value. Goodwill is also not included in the calculation of taxonomy-eligible capital expenditure as it is not an intangible asset according to IAS 38.

We consider operating and capital expenditures to be eligible if the output stems from an eligible economic activity. We have identified and analysed the following economic activities in the delegated act that could fundamentally give rise to eligible operating or investment expenses:

- Infrastructure for personal mobility, cycle logistics
- Renovation of existing buildings
- Installation, maintenance and repair of charging stations for electric vehicles in buildings (and in parking spaces belonging to buildings)
- Installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings
- Installation, maintenance and repair of technologies for renewable energy technologies
- Data processing, hosting and related activities

As mentioned, we did not identify any eligible operating or investment expenses under the Taxonomy Regulation for the past financial year.

Definition of our ESG net revenue
The EU Taxonomy does not apply directly to our business model and is therefore not suitable as a reference framework for classifying our products and services in terms of sustainability. We therefore devised our own definition of ESG net revenue in the course of a strategic dialogue. Since the beginning of the year, we have been explicitly measuring our ESG net revenue according to this definition, which we describe in more detail below.

The products and services of our respective segments generate economic value in different areas of the financial sector and the real economy and are often not comparable. From a Group perspective, this requires a wide-ranging definition of ESG net revenue, which then has to be broken down into more detail at the segment level. From the Group perspective, net revenue is deemed to be ESG net revenue if the products concerned are related to the transformation of the real and/or financial economy in terms of environmental, social and governance aspects.

This relationship exists if our products can increase the general transparency of information in terms of the three ESG dimensions – not only for investors, founders, asset managers and market participants, but also for external observers:

- Environmental: This particularly comprises compliance with climate targets, regulatory requirements and environmental standards and/or credible commitments.
- Social: This particularly includes compliance with labour law in all regions and operations, equal opportunities for all employees and minimum standards for suppliers.
- Corporate governance: This particularly includes minimum standards for the transparency of internal processes and control mechanisms.

Each operating segment in Deutsche Börse Group can increase its information transparency in these three dimensions by including ESG aspects in its product portfolio – be it by integrating ESG ratings, data and/or analysis, or by reporting data on trading volumes for securities, derivatives, renewable energies and/or commodities. Our product portfolio can increase information transparency specifically by providing generally accepted indicators as market signals.

The following activities fall within our ESG reference framework for each segment:

ESG net revenue by segment

Qontigo	The corresponding ESG net revenue comprises all revenue from licensing sustainable index solutions. Licence revenue from such products can either be observed directly (e.g. in the case of ETF licences) or it is allocated, if it is sold as part of a package. Revenue from sustainable analytics solutions will be added as soon as these products are available and actively marketed.
ISS	ESG net revenue comprises Corporate Solutions, ESG Analytics and Governance Solutions from ISS, without LiquidMetrix and SCAS (securities class action services). ▪ Corporate Solutions offers web-based tools for governance and sustainability analyses, ESG data, ratings, valuations and reports that support corporate customers to design and manage their corporate governance, remuneration and sustainability programmes. ▪ ESG Analytics comprises solutions that enable investors to develop and integrate responsible investment policies and practices, to advocate responsible investment topics, and monitor portfolio companies by means of screening and analytics. ▪ Governance Solutions consists of objective governance research and recommendations, end-to-end solutions for proxy advisers and reporting, as well as an outsourced proxy voting service, which includes the transmission of voting instructions.
Eurex	ESG net revenue at Eurex comes from trading on the platform in ESG equities index and fixed-income index derivatives (based on licences from various index providers). ESG net revenue at Eurex Repo comes from trading on the platform in ESG-related collateral-based financial products, which include green bond general collateral baskets (sovereign and non-sovereign bonds).
EEX	EEX defines ESG net revenue as revenue related to sustainable commodity markets (environmental markets, both compliance and voluntary). They include contracts for green power, emissions certificates and the related services for registers and certificates of origin. In future they may also relate to natural gas, freight or agricultural products.
360T	360T does not report any ESG net revenue.
Xetra	ESG net revenue relates to trade in green bonds and ESG ETF (best-in-class approach, exclusion method, investment by topic), but also to courses on ESG topics like the Master Class SDG Strategy (planned for 2022) (E), seminars to boost women's financial competence (S) or an examination to qualify as a Supervisory Board member (G).
Clearstream	Clearstream defines ESG net revenue as revenue in connection with voting instructions and distribution services offered in the context of investor services. These products support compliance with regulatory, governance or market standards and make it easier for shareholders to exercise their governance rights as active investors.
IFS	IFS defines ESG net revenue as revenue related to Vestima's custody and settlement services for funds classified as ESG funds. Vestima acts as a central point of contact and offers a standardised process for all fund transactions, which increases our customers' operating efficiency.

Financial position

Cash flow

Consolidated Cash flow statement (condensed)

	2021 €m	2020 €m
Cash flows from operating activities (excluding CCP positions)	1,181.4	1,523.0
Cash flows from operating activities	908.9	1,412.0
Cash flows from investing activities	–2,168.0	–787.7
Cash flows from financing activities	798.7	–254.2
Cash and cash equivalents at 31 December	2,040.0	2,506.7
Other cash and bank balances as at 31 December	1,029.6	1,467.3

Cash and cash equivalents at Deutsche Börse Group, i.e. its liquidity, comprise cash and bank balances – to the extent that these do not result from reinvesting current liabilities from cash deposits by market participants – as well as receivables and liabilities from banking business with an original maturity of three months or less. Change in other cash and bank balances was affected by cash used for acquisitions, as well as cash outflows from operating activities.

Cash flow from operating activities was €1,181.4 million (2020: €1,523.0 million) before changes in CCP positions on the reporting date and was made up primarily of net income for the period of €1,264.9 million (2020: €1,125.1 million) and cash outflows from changes in working capital.

Cash flow from investing activities came to €2,168.0 million in 2021 (2020: €787.7 million) and were determined largely by the acquisitions of ISS, Data Discovery and Crypto Finance, which resulted in a cash outflow of €1,843.0 million. Capital expenditure on intangible assets and property, plant and equipment of €206.4 million (2020: €195.4 million) was similar to the previous year.

Cash flow from financing activities was €798.7 million (2020: cash outflow of €254.2 million) and consists mainly of the dividend distributed for financial year 2020 of €550.6 million (2020: dividend for financial year 2019 of €531.9 million), the issue of two bonds for €1.0 billion to acquire ISS and the issue of commercial paper, which generated net cash proceeds of €0.8 billion. The purchase of the remaining 48.8% of the shares in Clearstream Fund Centre also resulted in a cash outflow of €356.0 million.

Cash flow for 2021, which is the sum of all inflows and outflows of cash from operating, investing and financing activities, came to €–460.5 million (2020: €370.0 million) and was mainly the result of M&A activity.

The positive cash flow from operating activities, sufficient credit lines and flexible management and planning system mean that we are still adequately supplied with liquidity for 2022.

For further details of cash flow, see the "Consolidated cash flow statement" and Note 21 to the consolidated financial statements.

Liquidity management

We mainly cover our operational liquidity needs by means of internal financing, i.e. by retaining earnings. Our aim is to hold sufficient liquidity to be able to meet all our payment obligations as they fall due. We have an intra-Group cash pool to aggregate our surplus cash as far as regulatory and legal provisions allow. We invest cash in principle on a short-term basis, in order to ensure rapid availability, and these investments are largely secured by liquid bonds from prime-rated issuers. Moreover, we have access to external sources of financing, such as bilateral and syndicated credit lines, as well as a commercial paper programme (see Note 24 to the consolidated financial statements for details of financial risk management). In recent years, we have leveraged our access to the capital markets to issue corporate bonds in order to meet our structural financing needs.

Debt instruments issued by Deutsche Börse AG (outstanding as at 31 December 2021)

Type	Issue volume	ISIN	Term to	Maturity	Coupon (p.a.)	Listing
Fixed-rate bearer bond	€600 m	DE000A1RE1W1	10 years	October 2022	2.375%	Luxembourg/ Frankfurt
Fixed-rate bearer bond	€500 m	DE000A1684V3	10 years	October 2025	1.625%	Luxembourg/ Frankfurt
Fixed-rate bearer bond	€500 m	DE000A3H2457	5 years	February 2026	0.000%	Luxembourg/ Frankfurt
Fixed-rate bearer bond	€600 m	DE000A2LQJ75	10 years	March 2028	1.125%	Luxembourg/ Frankfurt
Fixed-rate bearer bond	€500 m	DE000A3H2465	10 years	February 2031	0.125%	Luxembourg/ Frankfurt
Fixed-rate bearer bond (hybrid bond)	€600 m	DE000A289N78	Call date 7 years/final maturity in 27 years	June 2027/ June 2047	1.250% (until call date)	Luxembourg/ Frankfurt

Capital management

The Group's clients generally expect us to maintain conservative interest coverage and leverage ratios, and hence to achieve a good credit rating.

We are committed to achieving the minimum financial risk profile that is consistent with an AA rating in accordance with S&P Global Ratings methodology. Furthermore, we endeavour to maintain the strong AA credit ratings of our subsidiaries Clearstream Banking S.A. and Clearstream Banking AG, in order to ensure the long-term success of the Clearstream securities settlement and custody segment. The activities of our Eurex Clearing AG subsidiary also require strong credit quality.

In the course of our capital management we aim for the following relevant ratios:

- Net debt to EBITDA ratio: no more than 1.75
- Free funds from operations (FFO) to net debt: equal to or greater than 50 per cent
- Interest cover ratio: at least 14
- Tangible equity (for Clearstream Banking S.A.): total of at least €1,100 million

We follow the methodology of S&P Global Ratings closely when calculating these ratios.

- To determine EBITDA for rating purposes, reported EBITDA is adjusted by the result from financial investments, as well as by unfunded pension obligations. EBITDA for rating purposes in 2021 was €1,970 million.
- FFO for rating purposes is calculated by deducting interest and tax expenses from EBITDA. FFO for rating purposes in 2021 was €1,452 million.
- The Group's net debt for rating purposes is reconciled by first deducting 50 per cent of the hybrid bond, as well as the surplus cash as at the reporting date, from gross debt (i.e. from interest-bearing liabilities). Liabilities from operating leases and unfunded pension obligations are then added. Net debt for rating purposes in 2021 was €3,873 million.
- Interest expenses for rating purposes are calculated on the basis of interest expenses for financing, less interest expenses of Group entities which are also financial institutions. These are among others Clearstream Banking S.A., Clearstream Banking AG and Eurex Clearing AG. Interest expenses which are not related to our financing are not included in the calculation of interest expenses. Only 50 per cent of the hybrid bond is counted towards interest expenses. Interest expenses for rating purposes in 2021 came to €42 million.

The following table "Relevant key performance indicators" illustrates our calculation methodology and shows the values for the reporting year.

Relevant key performance indicators

		Target figures	2021
Net debt / EBITDA		≤ 1.75	2.0
Free funds from operations (FFO) / net debt	%	≥ 50	38
Interest coverage ratio		≥ 14	46
Tangible equity of Clearstream Banking S.A. (as at the reporting date)	€m	≥ 1,100	1,468

The acquisitions in 2021, particularly the acquisition of a majority interest in ISS and the purchase of the remaining shares in Clearstream Fund Centre, resulted in the ratio of FFO to net debt being below target and the ratio of net debt to EBITDA being higher.

We intend not to allow tangible equity (equity less intangible assets) of Clearstream Banking S.A. to fall below €1,100 million. Clearstream Banking S.A. exceeded this during the year under review, with a figure of €1,468 million.

S&P Global Ratings bases the calculation of key performance indicators on the corresponding weighted average of the reported or expected results of the previous, the current and the following reporting period. To ensure the transparency of the key performance indicators, we report them based on the current reporting period.

Dividends and share buy-backs

We generally aim to distribute dividends equivalent to between 40 and 60 per cent of net profit for the period attributable to Deutsche Börse AG shareholders. Within this range, we manage the actual payout ratio mainly in relation to our business performance and based on continuity considerations. In addition, we plan to invest the remaining available funds primarily in our complementary external development. Should the Group not be able to invest these funds, additional distributions, particularly in the form of share buy-backs, would be another possible use for them.

At the Annual General Meeting we will be proposing to pay a dividend of €3.20 per no-par value share for the financial year 2021 (2020: €3.00). This dividend is equivalent to a distribution ratio of 49 per cent of net profit for the period attributable to our shareholders. Given 183.6 million no-par shares bearing dividend rights, this would result in a total dividend payment of €587.6 million (2020: €550.6 million). The number of shares with dividend rights is produced by deducting 6.4 million treasury shares from our ordinary share capital of 190.0 million shares.

Credit ratings

Credit ratings

	Long-term	Short-term
Deutsche Börse AG		
S&P Global Ratings	AA	A–1+
Clearstream Banking S.A.		
Fitch Ratings	AA	F1+
S&P Global Ratings	AA	A–1+
Clearstream Banking AG		
S&P Global Ratings	AA	A–1+

Our credit quality is reviewed regularly by S&P Global Ratings, while Clearstream Banking S.A. is rated by Fitch Ratings and S&P Global Ratings, and Clearstream Banking AG by S&P Global Ratings.

On 5 July 2021, Fitch Ratings affirmed the AA credit rating of Clearstream Banking S.A. with a stable outlook. The rating reflects Clearstream Banking's leading position in the post-trade business, its diligent liquidity management, as well as its impeccable capitalisation.

On 18 January 2022, S&P Global Ratings affirmed the AA credit ratings of Deutsche Börse AG, Clearstream Banking AG and Clearstream Banking S.A. Deutsche Börse AG's rating reflects the assumption that the Group will continue its growth strategy. Clearstream Banking S.A.'s rating reflects its strong risk management, minimal debt levels and strong position on the international capital markets – especially through its international custody and transaction business.

As at 31 December 2021 we were one of only two DAX-listed companies with an AA rating from S&P Global Ratings.

Net assets

Material changes to net assets are described below; the full consolidated balance sheet is shown in the consolidated financial statements.

Consolidated balance sheet (extract)

	31 Dec 2021 €m	31 Dec 2020 €m
ASSETS	**222,919.3**	**152,677.9[1]**
Non-current assets	20,462.4	14,570.5[1]
thereof intangible assets	8,162.9	5,723.2
thereof goodwill	5,596.0	3,957.6
thereof other intangible assets	1,913.6	1,255.4
thereof financial assets	11,460.4	8,059.8
thereof financial assets measured at amortised cost	1,634.7	997.5
thereof equity investments measured at FVOCI	227.1	111.4
thereof financial instruments held by central counterparties	9,442.4	6,908.5[1]
Current assets	202,457.0	138,107.4[1]
thereof financial instruments held by central counterparties	103,195.7	80,704.5[1]
thereof restricted bank balances	78,542.0	38,420.1
thereof other cash and bank balances	1,029.6	1,467.3
EQUITY AND LIABILITIES	**222,919.3**	**152,677.9[1]**
Equity	7,742.4	6,556.1
Liabilities	215,177.0	146,121.8[1]
thereof non-current liabilities	13,623.0	11,005.2[1]
thereof financial instruments held by central counterparties	9,442.4	6,908.5[1]
thereof financial liabilities measured at amortised cost	3,037.3	3,474.4
thereof deferred tax liabilities	338.5	216.7
thereof current liabilities	201,554.0	135,116.6[1]
thereof financial instruments held by central counterparties	103,267.7	80,609.5[1]
thereof financial liabilities measured at amortised cost	16,618.7	15,018.6
thereof cash deposits by market participants	78,292.5	38,188.8

1) Prior year adjusted.

Deutsche Börse Group’s total assets increased year-on-year by 46 per cent. The increase in intangible assets resulted primarily from the acquisitions of Institutional Shareholder Services and Crypto Finance. This particularly resulted in significantly higher goodwill and other intangible assets.

The significant increase in total assets was particularly due to the volatility of restricted bank balances and financial instruments of the central counterparties at the reporting date.

Group equity rose by 18 per cent compared with the previous year. This was due mainly to the net profit for the reporting year 2021, less the dividend payment for the previous financial year 2020.

Deutsche Börse Group invested a total of €206.4 million in the reporting year (2020: €195.4 million) in intangible assets and property plant and equipment (capital expenditure, CAPEX). The Group's largest investments were in the Clearstream and Eurex segments.

Working capital

Working capital comprises current assets less current liabilities, excluding technical closing-date items. Current assets, excluding technical closing-date items, amounted to €1,387.7 million (2020: €875.6 million). As Deutsche Börse Group collects fees for most of its services on a monthly basis, the trade receivables of €969.4 million included in current assets as at 31 December 2021 were relatively low compared with net revenue (31 December 2020: €616.6 million). The increase in trade receivables was particularly due to open items as of the reporting date from the high market volatility of the sports markets within EEX Group, which were offset by an increase in trade payables at the same time. The current liabilities of the Group, excluding technical closing-date items, amounted to €1,214.8 million (2020: €959.4 million, excluding technical closing-date items). For this reason, the Group had a working capital of €173.0 million at year-end (2020: negative working capital of €83.8 million).

Technical closing-date items

The "financial instruments of the central counterparties" item relates to the function performed by Eurex Clearing AG, European Commodity Clearing AG as well as Nodal Clear, LLC. Since they act as the central counterparties for Deutsche Börse Group's various markets, their financial instruments are carried in the balance sheet at their fair value. The financial instruments of the central counterparties are described in detail in the section "Risk management" of the Combined management report and in Notes 12 and 24 to the consolidated financial statements.

Market participants linked to the Group's clearing houses partly provide collateral in the form of cash deposits, which are subject to daily adjustments. The cash deposits are generally invested on a secured basis overnight by the central counterparties and reported in the balance sheet under "restricted bank balances". The total value of cash deposits at the reporting dates relevant for the reporting period (31 March, 30 June, 30 September and 31 December) varied between €32.9 billion and €78.3 billion (2020: between €38.2 billion and €62.2 billion).

Overall assessment of the economic position by the Executive Board

The financial year 2021 was again dominated by the course of the pandemic and the resulting effects on the world economy. Low market volatility and so less activity by market participants led to tangible cyclical headwinds in the trading segments. On the other hand, busy trading on gas and power markets and in the market for investment fund services resulted in significantly positive secular growth. Additional net revenue from M&A growth, particularly ISS, also supported the Group's growth. Secular growth of 6 per cent was therefore able to more than make up for the cyclical contraction of –4 per cent. Net revenue growth from M&A activities came to 7 per cent and contributed to net revenue growth at Group level of 9 per cent as expected by the Executive Board, taking the total to €3,509.5 million. Thereby the Group's ESG related net revenue[9] increased by 210 per cent, in particular due to the acquisition of ISS. Higher costs were due entirely to the Group's M&A growth. Earnings before interest, tax, depreciation and amortisation (EBITDA) also rose year-on-year by 9 per cent to €2,043.1 million and were in line with the Executive Board's expectations. Net profit for the period attributable to Deutsche Börse AG shareholders went up by 12 per cent to €1,209.7 million.

Based on this, the Executive Board considers that Deutsche Börse Group's financial position remained very solid during the reporting period. The Group generated high operating cash flows as in previous years. Net debt in relation to EBITDA of 2.0 was slightly higher than the target limit of 1.75 as a result of M&A activities mainly driven by the ISS acquisition.

As in all recent years, we are again offering shareholders a higher dividend for financial year 2021. The proposed dividend is €3.20 (2020: €3.00), a year-on-year increase of 7 per cent.

[9] ESG net revenue according to the internal definition of Deutsche Börse Group – see "Definition of our ESG net revenue".

Deutsche Börse Group: five-year overview

		2017	2018	2019	2020	2021
Consolidated income statement						
Net revenue	€m	2,462.3	2,779.7	2,936.0	3,213.8	3,509.5
thereof treasury result from banking and similar business	€m	132.6	204.5	247,7	196.6	142.7
Operating costs (excluding depreciation, amortisation and impairment losses)	€m	– 1,131.6	– 1,340.2	– 1,264.5	– 1,368.7	– 1,551.6
Earnings before interest, tax, depreciation and amortisation (EBITDA)	€m	1,528.5	1,443.7	1,678.2	1,869.4	2,043.1
Depreciation, amortisation and impairment losses	€m	– 159.9	– 210.5	– 226.2	– 264.3	– 293.7
Net profit for the period attributable to Deutsche Börse AG shareholders	€m	874.3	824.3	1,003.9	1,079.9	1,209.7
Earnings per share (basic)	€	4.68	4.46	5.47	5.89	6.59
Consolidated cash flow statement						
Cash flows from operating activities	€m	1,056.2	1,298.2	926.1	1,412.0	908.9
Consolidated balance sheet						
Non-current assets	€m	10,883.7	15,642.0	11,706.9	14,570.5	20,462.4
Equity	€m	4,959.4	4,963.4	6,110.6	6,556.1	7,742.4
Non-current interest-bearing liabilities[1]	€m	1,688.4	2,283.2	2,286.2	2,637.1	3,037.3
Performance indicators						
Dividend per share	€	2.45	2.70	2.90	3.00	3.20[2]
Dividend payout ratio[3]	%	52	61	53	51	49[4]
Employees (average annual FTEs)		5,183	5,397	5,835	6,528	8,855
Deutsche Börse shares						
Year-end closing price	€	96.80	104.95	140.15	139.25	147.10
Average market capitalisation	€bn	17.2	21.5	24.0	27.7	27.0
Rating key figures						
Net debt / EBITDA		1.1	1.1	1.0	1.0	2.0
Free funds from operations (FFO) / net debt	%	59	69	79	76	38

1) Bonds that will mature in the following year are reported under other current liabilities.
2) Proposal to the Annual General Meeting 2022.
3) The ratios for the years 2017–2020 have been adjusted. The dividend payout ratio is determined using reported net profit.
4) Amount based on the proposal to the Annual General Meeting 2022.

10. Our social environment

We describe the fourth and last category of our value creation in the section our social environment. We consider ourselves to be an established part of society and wish to make a positive contribution here too. In this heterogeneous field, our commitments go well beyond those topics that concern us directly as a company, such as our own carbon footprint or human rights in the supply chain. As a result our value added is very broad. We play an active part in financial market initiatives and offer training courses – some free of charge – to increase understanding of our market role and of our products and services. As a member of the UN Global Compact (UNGC) and the Sustainable Stock Exchanges initiative (SSE), Deutsche Börse Group has committed itself to implementing the 17 Sustainable Development Goals (SDGs) of the "2030 Agenda for Sustainable Development" set by the UN.

Our stakeholder engagement

We regularly review the statutory requirements and the demands of rating agencies and (voluntary) market standards and initiatives. We seek dialogue with our internal and external stakeholders continuously and systematically and so determine the focus areas of our work – by means of investor days, employee and client surveys, dialogue with rating agencies and society as a whole, our involvement in various initiatives and our regular materiality analysis, in which we interview our stakeholders with respect to our company and the impact we have on society and the economy.

The Group Regulatory Strategy department, which reports to the CEO, is responsible for holistically positioning Deutsche Börse Group with regard to political and regulatory developments at the national, European and international level. It monitors, analyses and deals with regulatory revenue risks and opportunities. Based on our specific knowledge as a financial market infrastructure provider, we share our expertise about the evolution of the regulatory framework. Thus, we make a permanent contribution to strengthening financial market infrastructure and capital markets as a vital tool for achieving society's overarching objectives. We take part in consultations on political and regulatory initiatives, for example, and submit comments and papers to explain the implications of certain regulatory proposals for Deutsche Börse Group, our clients, the financial markets and society as a whole. Our white papers and studies also contribute to an improved understanding of specific aspects of financial market regulation.

We also seek the exchange with experts from politics, supervisory authorities, civil society and academia by participating in expert events, expert groups and associations. We advocate for effective regulation that supports the objective of efficient, transparent and stable financial markets while safeguarding our corporate interest.

The initiatives we support do not necessarily have to have a financial or capital market background but should rather address issues that Deutsche Börse Group considers to be highly important. For instance, the Green and Sustainable Finance Cluster Germany is a sustainability initiative for Germany as a financial centre. The cluster aims to drive sustainable development and the related transformation process in the finance industry. The Sustainable Stock Exchanges (SSE) initiative mentioned above is a peer-to-peer learning platform that enables to research how stock exchanges can work with investors, regulatory authorities and companies to increase their ESG performance and promote sustainable investments. Our engagement in other forums is more broadly based. One typical example is ecosense, the sustainable development forum of German business, a collaboration of global companies and organisations based in Germany. Here the focus is on the fundamental integration of sustainability topics into business activities.

Another important element of our stakeholder engagement is the dialogue with rating agencies. There are many ESG ratings of independent organisations to evaluate companies in terms of how they deal with economic, ecological and social opportunities and risks. We use this external validation of our own ESG endeavours to continuously improve and sharpen our ESG profile. Insights from the ESG rating process were also factored into our materiality analysis.

The following rating agencies, projects and indices measure the sustainability performance of Deutsche Börse AG every year and play a particular role for us:

ESG ratings

	Valuation		
Rating agency	**2021**	**2020**	**Comment**
S&P	73	67	We improved in all ESG dimensions
Sustainalytics	76	70	Increase in absolute result with market position still strong
MSCI	AAA	AAA	AAA rating unchanged since 2016

When our revolving credit facility (RCF) was renewed in 2019 the pricing was tied to our ESG ratings from Sustainalytics. Originally on 28 March 2017, the credit facility was concluded with a banking consortium by us and our subsidiary Clearstream Banking S.A. amounting up to €750 million.

Climate strategy and reporting

We announced our new climate strategy at the Annual General Meeting in May 2021. Our objective is to become climate-neutral by 2025, i.e. we will reduce our CO_2 emissions per workspace by at least 70 per cent by 2022 (base year: 2019). The remaining emissions will be offset by external emissions reduction projects.

We intend to proceed as follows:
The first step is to reduce the CO_2 emissions per workspace by more than 50 per cent compared with 2019. This will take place by means of direct measures to avoid CO_2 emissions. They include switching the energy supplies of office buildings to renewable energies and expanding local infrastructure for electric vehicles.

The second step is to expand these measures in order to reduce emissions by at least a further 20 percentage points by 2023. Currently, we assume that we will achieve this target in 2022 (see "Report on expected developments").

The third stage from 2025 is to offset the remaining annual emissions by means of real external projects, such as reforestation. We intend to validate our path to climate neutrality with the Sciene Based Targets initiative (SBTi).

In addition, we have published a TCFD index, which follows the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). Information on how we deal with climate risks and opportunities is presented in the TCFD index on our homepage.

For further sustainability performance indicators we refer to our GRI index on our homepage.

Human rights matters

We are aware of our corporate responsibility and are committed to the principles of sustainability. We aspire to lead by example, by assuming our corporate responsibility in a holistic way and reporting on how we do so. Our management approach for a Group-wide commitment to sustainability therefore includes respect for human rights both in the supply chain and within the company. To ensure that this is the case, our human rights declaration applies to all the activities of Deutsche Börse Group and its consolidated entities, including our relations with employees, suppliers and clients. In addition, we have introduced a code of conduct for suppliers and service providers, which comprises a comprehensive catalogue of environmental, social and governance criteria (ESG). Suppliers responsible for 99.3 per cent of our purchasing volume have currently signed an agreement based on the Code of Conduct. It is standard practice for new suppliers to sign the Deutsche Börse Group's Code of Conduct or (in exceptional cases) to make a voluntary commitment of their own.

Capital Markets Academy

Our Capital Markets Academy offers training courses on everything to do with capital markets. They include specialist seminars, certified courses, system training programmes and examinations for traders. In addition, Frankfurt Stock Exchange regularly hosts free webinars on current topics for private investors and uses video tutorials to present contents in a structured, simple and understandable way. With this free service our aim is to simplify access to complex aspects of capital markets and contribute to the economic education of society.

11. Risk management

Risk management for Deutsche Börse AG and risk reporting to the Executive Board for Deutsche Börse Group as a whole is centralised with the Chief Risk Officer (CRO). Deutsche Börse AG's risk management adheres to the same standards that apply to our subsidiaries that are regulated as banks. This includes regular reporting to the Executive Board on a number of metrics, which cover operational risks (e.g. system availabilities and litigations), financial risks, business risks and other special risks. The Executive Board has defined what is known as a risk appetite for all these areas, which is monitored by means of the monthly reporting. The Group's capital and liquidity position is also part of the extensive reporting to the Executive Board. This ensures that the effectiveness of capital and liquidity planning is reviewed continuously. The following sections look in more detail at the aspects mentioned above. In view of their economic importance, we particularly discuss the largest regulated banks in our Group, namely Clearstream Banking S.A. and Clearstream Banking AG (hereafter Clearstream, including Clearstream Holding AG) and Eurex Clearing AG.

Our banks follow international standards and comply with the minimum capital requirements set by regulation (Capital Requirements Regulation, CRR). In addition, they rely on the internal processes to judge the adequacy of capital and liquidity (Internal Capital Adequacy Assessment Process, ICAAP and Internal Liquidity Adequacy Assessment Process, ILAAP), which comprise internal stress tests and constitute a core component of the risk management approach. Clearstream Banking AG and Clearstream Banking S.A. are also subject to the Central Securities Depositories Regulation (CSDR). Clearstream companies are also subject to the Minimum Requirements for Own Funds and Eligible Liabilities (MREL) as of 2022. Eurex Clearing AG and European Commodity Clearing AG are authorised as central counterparties (CCPs) and are subject to the requirements of the European Market Infrastructure Regulation (EMIR).

In addition, other Group entities 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 the section on "Regulatory capital requirements and regulatory capital ratios"). In addition to the above statutory requirements, there are the Minimum Requirements for Risk Management (MaRisk) issued by the German 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 for a number of our Group's companies are defined in the context of the second pillar of the Basel III regime. Moreover, Clearstream and Eurex Clearing AG have wide-ranging recovery and resolution plans to comply with the EU Banking Recovery and Resolution Directive (BRRD).

The second core component of our risk management approach is the three lines of defence (3LoD), which are established at Deutsche Börse AG and our regulated Group companies (banks and securities companies). This model defines a clear division of functions and responsibilities between the operating business units (first line of defence), risk management (second line of defence) and internal audit (third line of defence). The main aspects of 3LoD are described in detail in the section "Centrally coordinated risk management – a five-stage process".

Risk management approach and risk controlling

We align our risk management approach with our business model and our corporate strategy. As Deutsche Börse Group we provide the infrastructure for reliable and secure capital markets, assist constructively in their regulation and strive to play a leading role in all our business areas. Our risk management approach is based on three principles:

1. Risk limitation – protecting the company against liquidation and ensuring its continuing operation
"Capital exhaustion should not occur more than once in 1,000 years." This means that one goal is to ensure a minimum probability of 99.9 per cent that the total capital available to cover risks will not be lost within the next twelve months. This approach reflects an economic perspective of risk assessment at Deutsche Börse Group. In other words, this principle establishes how much risk we can bear and at the same time what our risk appetite is. Guaranteeing business continuity also means that the regulatory capital requirements have to be met for the banks and securities firms in the Group, which constitutes a normative approach to risk assessment.

2. Supporting the business strategy
"Risk management supports the business units to implement the business strategy within the defined risk appetite." As such, risks are identified, clearly communicated and the compliance with the risk appetite monitored. This principle includes risk from organic growth, M&A activities and the use of transformational technology. The aim is make well-founded strategic decisions within the boundaries of the defined risk appetite.

3. Appropriate risk/return ratio
"Higher risks are only accepted for an adequate return." We have set ourselves 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 management approach". 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 of our regulated subsidiaries is responsible for managing its own risk.

Interlocking business strategy and risk management approach

Business strategy

↓ Implied risks

Risk management approach/risk appetite

Risk analysis

Risk scenarios	Risk types	Internal and external losses	
Root cause →	Event →	Effect →	Loss

↓ Risk mitigation

Risk mitigation

Reduces frequency of events or severity of effect		Risk transfer	Risk avoidance
▪ Straight-through processing ▪ Compliance ▪ Legal ▪ Information security ▪ Physical security	▪ Business continuity measures ▪ Internal control system ▪ Other	▪ Insurance ▪ Other	▪ Changes to business and/or business strategy

↓ Risk acceptance

Risk monitoring

Existing risks	Emerging risks	Long-term developments
▪ Aggregated risk measurement ▪ Stress tests ▪ Risk metrics	▪ Risk map	▪ DB1 Ventures ▪ Deutsche Börse Venture Network®

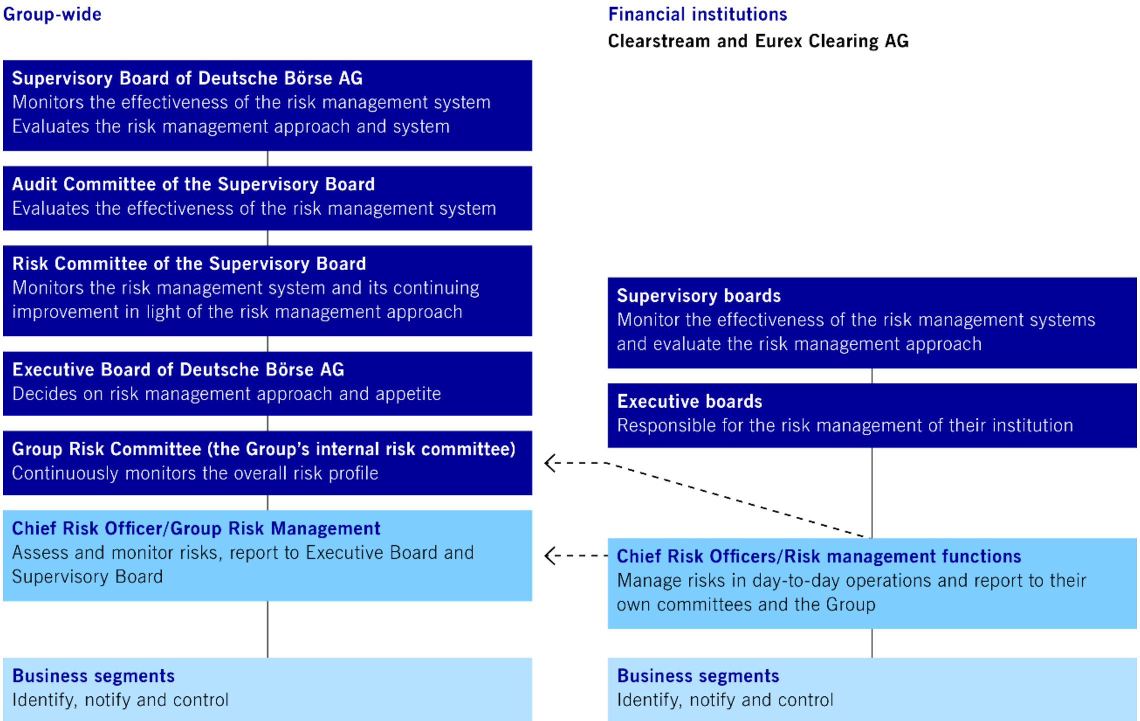
Implementation in the Group's organisational structure and workflow

Our risk management approach applies to the entire Deutsche Börse Group. Risk management functions, processes and responsibilities are binding for all our 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. Regular mandatory training sessions are also held, which were developed in a project to strengthen the risk culture of all employees. The Executive Board is responsible for risk management overall, whereas within the subsidiaries it is the responsibility of the 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 evaluation to its Audit Committee. In addition, the Risk Committee examines the risk management approach and risk appetite on an annual basis.

Deutsche Börse AG's Executive Board determines the Group-wide risk management approach 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.

Risk management – organisational structure and reporting lines



The Executive Board of Deutsche Börse AG also determines what parameters are used to assess risks, how risk capital is allocated and what procedures apply. It ensures that the requirements for the risk management approach and the risk appetite are met.

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 an internal Group committee, chaired by the Chief Financial Officer.

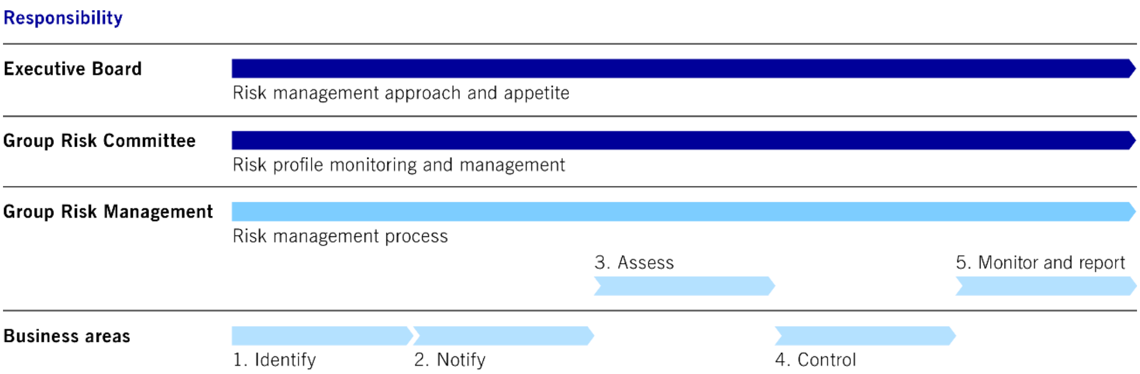
The Chief Risk Officer leads the development of proposals for the risk management approach, risk appetite, approaches and methods for risk monitoring and control, capital allocation and the necessary processes. Risks are continuously analysed, evaluated and reported quantitatively and qualitatively. The reports are submitted regularly to the GRC, once a month or as needed 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.

Our 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 management approach 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 is responsible for its risk management approach and risk appetite; compliance is monitored by the respective supervisory board.

Centrally coordinated risk management – a five-stage process

Our risk management is implemented in a five-stage process. All potential losses should be identified, recorded centrally and measured, quantitatively whenever possible. Measures for managing them are to be recommended as necessary and their implementation ensured (see chart "Five-stage risk management process"). The first stage identifies the risks and the possible causes of losses or operational malfunctions. In the second stage, the business areas (first line of defence) regularly – or immediately, in urgent cases – report the risks that they have identified and quantified. The report goes to the risk management function (part of the second line of defence), which evaluates the potential threat in a third stage. In the fourth stage the business units manage the risks by avoiding, mitigating or transferring them, or by actively accepting them. The fifth and final stage involves 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, the CRO division 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. The internal audit function (third line of defence) is an independent function and monitors both the business units and the risk management functions.

The five-stage risk management system



Approaches and methods for risk monitoring

We use quantitative and qualitative approaches and methods for risk monitoring, with the objective of providing as complete a picture as possible of our risk situation at all times. To this end, the Group continuously reviews internal events with regard to their risk properties, while also considering regional as well as global developments. We are 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

We measure and monitor operational, financial and commercial risks on a continuous basis using a range of instruments. We adopt an economic perspective to quantify and aggregate risks. A normative perspective is adopted for the credit institutions that are in focus below – such as Clearstream and Eurex Clearing AG in particular – and the financial services institutions in the Group. The value at risk (VaR) model is the main tool 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 very unlikely but possible losses incurred within twelve months. Moreover, we carry out stress tests 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 cover?

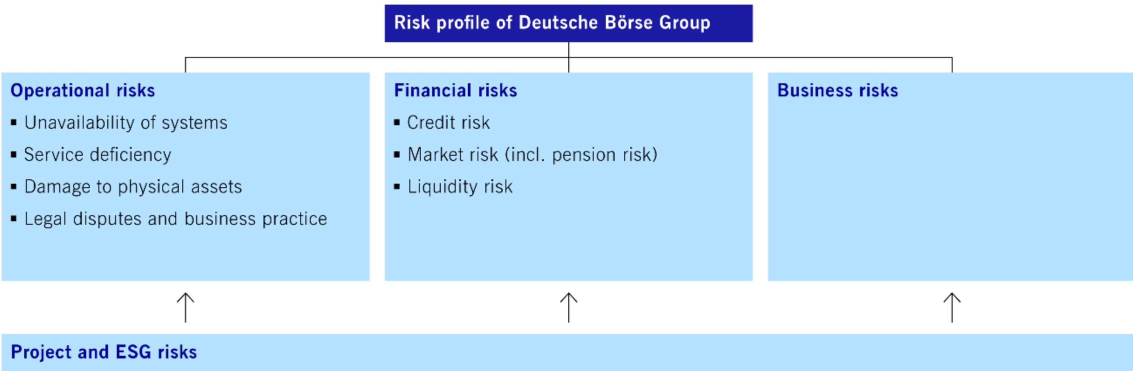
The economic perspective measures risk positions arising from regular operations solely on the basis of qualitative and quantitative criteria, regardless of the requirements of individual accounting or regulatory models. This perspective defines the minimum amount of required economic capital (REC). Principle 1 of our risk management approach stipulates that we should not exhaust our risk-bearing capacity in more than 0.1 per cent of all years. REC calculated in this manner also complies with the requirements of the second pillar of Basel III for our subsidiaries Clearstream and Eurex Clearing AG. At Group level we determine our risk-bearing capacity on the basis of 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").

The risk management function regularly calculates the ratio of REC to risk-bearing capacity as a management metric and so provides an answer to a repetitive but vital risk management question: how much risk can we afford and what is our current risk exposure? The ratio of REC to risk-bearing capacity was always below the set limit in the reporting year, i.e. we ensured that our risk-bearing potential was adequate and we were at no time exposed to insolvency risk.

2. Normative perspective and other regulatory capital requirements

Our banks Clearstream and Eurex Clearing AG 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 met the EMIR capital requirements, while Clearstream Banking AG has to comply with CSDR capital requirements as authorisation as a CSD was granted by BaFin and the CSSF in 2020 and 2021 respectively. Clearstream and Eurex Clearing AG use the standard approach for analysing and evaluating credit and market risk.

Deutsche Börse Group’s risk profile



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 the basic indicator approach in order to calculate regulatory capital requirements (for details, see section “Regulatory capital requirements and regulatory capital ratios”).

As already explained in the 2021 half-year financial report, we reduced the defined confidence level for determining the required economic capital from 99.98 percent to 99.9 percent as of 1 January 2021 while keeping the considered time window constant. This adjustment allows better comparability and thus better risk management, since the capital requirements are now subject to a uniform confidence assumption in the economic and normative perspective.

3. Stress tests

Stress tests are carried out in order to simulate separately and in aggregate extreme but plausible events for all material types of risk. They simulate the occurrence of extreme losses or the accumulation of large losses within a single year. Both hypothetical and historical scenarios are used and calculated for the banks and securities firms in the Group. Inverse stress tests are also carried out. They calculate which loss scenarios or liquidity squeezes would have to materialise for risk-bearing capacity to be exceeded from a capital or liquidity perspective. Additional adverse scenarios are simulated for the normative perspective of banks and securities firms. The recovery plans for the banks also include other recovery stress tests.

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 under- or overshoot 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 necessary analysis and risk mitigation processes.

Emerging risks
Our risk management approach also contains a sustainable long-term component by considering risks over a twelve-month horizon, in addition to the current risk exposure. For this purpose, we have 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.

Structure of the internal control system
Deutsche Börse has a Group-wide internal control system (ICS) that defines the minimum requirements for all entities in the Group. The ICS comprises rules for managing our activities as well as guidelines defining how compliance with these rules is monitored. Monitoring takes place by means of both process-integrated measures (such as organisational safeguards and controls) as well as process-independent measures. It should be emphasised that the monitoring covers both the financial and non-financial effects of risks, especially on the process level. All business divisions are responsible for ensuring that Group-wide ICS requirements are met in their respective areas of responsibility.

The purpose of the accounting-related ICS is to ensure correct accounting practices. The central Financial Accounting and Controlling (FA&C) division, together with decentralised units acting on the requirements set out by FA&C, are responsible for preparing the accounts at Deutsche Börse AG and its consolidated subsidiaries. Group Tax is responsible for determining tax items for accounting purposes. The relevant department heads are responsible for the related processes, including effective security and control measures. The aim is to ensure that risks relating to the accounting process are identified early on, so that remedial action can be taken in good time.

In order to assure uniform and consistent accounting, FA&C provides regularly updated accounting manuals and guidelines and instructions for the material accounting processes – as part of the preparation of the annual and consolidated financial statements of Deutsche Börse AG. All employees in the FA&C area, as well as in decentralised units, have access to these documents and the accounting and account assignment guidelines, allowing them to see for themselves the scope of managerial discretion and accounting options Deutsche Börse Group exercises.

Moreover, we continuously monitor and analyse changes in the accounting environment and adjust our processes accordingly. This applies in particular to national and international accounting standards.

Another key component of our ICS is the principle of segregation of duties: tasks and authorities are clearly assigned and separated from each other in organisational terms. Incompatible tasks – such as modifying master data on the one hand and issuing payment instructions on the other – are strictly segregated at a functional level. An independent control unit grants individual employees access rights to the accounting system and continuously monitors these permissions using a so-called incompatibility matrix. Transactions are initially recorded in the general ledger or the appropriate sub ledgers on the basis of the chart of accounts and the account allocation guidelines.

Significant subsidiaries of Deutsche Börse Group maintain and consolidate their general ledgers in the same system. Accounting data from other companies is uploaded for inclusion in the consolidated financial statements. Receivables, liabilities, expenses and income for individual transactions are recorded in separate accounts under the name of the counterparty concerned. Any consolidation differences are reviewed centrally and sent to the accounting departments of the companies concerned for clarification.

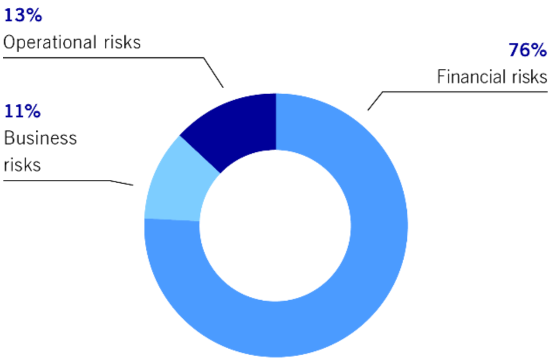
The processes, systems and controls described above aim to provide reasonable assurance that our accounting system complies with the applicable principles and laws. In addition, Compliance and Internal Audit act as a further line of defence, performing risk-based, process-independent controls on whether the ICS is appropriate and effective. The Executive Board and the Audit Committee established by the Supervisory Board receive regular reports on the effectiveness of the ICS with respect to the financial reporting process.

Risk description

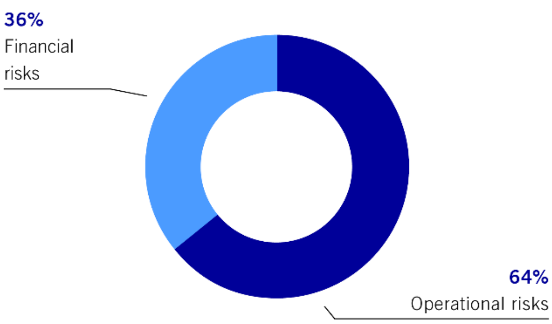
The following section describes the types of risk that we generally have to manage and presents the risks it actually faces. It also explains the measures that we use to attempt to prevent incidents, and to minimise their financial effects.

Risk profile
Our risk profile is fundamentally different from that of other financial services providers. We differentiate between the three types of risk: operational risk, financial risk and business risk. Project risks also exist but we do not specifically quantify them as their impact is already reflected in the three risk types. In contrast to the risks of traditional financial services providers, the majority of our 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

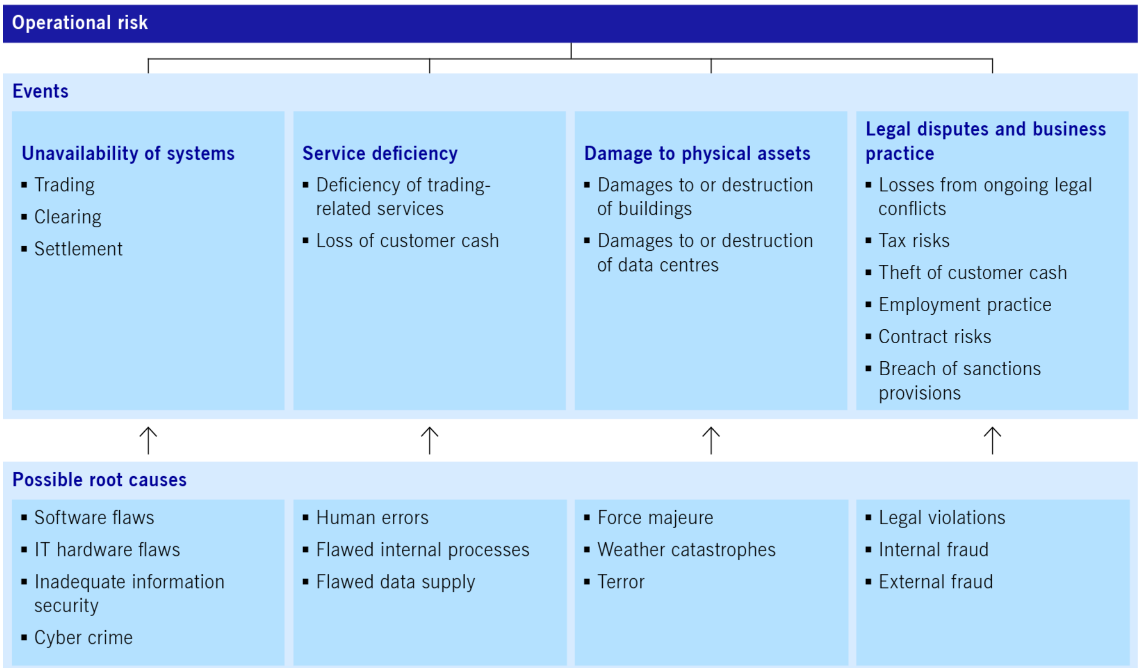
We use the utilisation of risk-bearing capacity from an economic perspective as an internal management indicator for the whole Group (see the section "Approaches and methods for risk monitoring" for an explanation of these terms). In addition to the financial and operational risk already mentioned, business 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 (including pension risks as part of market risk) accounts for 36 per cent of all Group risks. Business risks do not have to be backed up anymore with equity as at the reporting date. This is due to internal modifications made to the model in the reporting year to determine these business risks. As a side effect of this model adjustment, the reported relative share of financial risks is now also increasing compared to the previous year. Details on this will be provided further on. The third type of risk is much more important for us: operational risks account for 64 per cent or nearly two thirds of the REC. The additional capital requirements of our subsidiaries are described in the section "Regulatory capital requirements and regulatory capital ratios".

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

Operational risk

For us, operational risks comprise the unavailability of systems, service deficiency, damage to physical assets as well as legal disputes and business practices (see the chart below: "Operational risk at Deutsche Börse Group"). Human resources risks are quantified just like other operational risks. Operational risks are measured using scenarios. The share of operational risk of the REC was 64 per cent as at 31 December 2021.

Operational risk at Deutsche Börse Group



Unavailability of systems

Operational resources such as the T7® trading system are essential for our service offering. They should never fail in order to ensure that market participants can trade securities or derivatives at any time and without delay. We therefore measure the availability of these systems as an important risk indicator. In line with our risk management approach, 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; in unlikely cases, the availability of the systems could be affected by acts of cyber-crime or terrorist attack. In the past, only limited failures have occurred with the T7 system. In practice, there has never been a system failure lasting longer than one day. We have taken a number of measures to further minimise the risk of failure lasting an entire day or longer, e.g. the redundancy of the network infrastructure. However, malfunctions in the IT infrastructure can never be ruled out completely. In such cases, short-term countermeasures are initiated to address the incidents.

Since availability risk is the biggest operational risk for the Group it is the subject of regular testing. This simulates the impact of a failure of our own systems or those of suppliers.

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 errors may lie with suppliers or defective products. Then there are errors that may result in the loss of client assets and invoicing errors. We register all complaints and formal objections as a key indicator of deficient processing risk.

Damage to physical assets

Natural disasters, accidents, terrorism or sabotage are other operational risks that could, for example, cause the destruction of or severe damage to a data centre. Business Continuity Management aims 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. The claims asserted against Deutsche Börse Group in the legal disputes presented below were not translated into the actual reporting currency Euro.

Litigation Involving Clearstream Banking S.A. in connection with the Central Bank of Iran

Clearstream Banking S.A. is involved in different legal proceedings in Luxembourg and the U.S. in connection with the Iranian central bank, Bank Markazi. On the one hand of this, different plaintiffs groups – each of which have obtained U.S. judgments against Iran and/or Bank Markazi – are seeking turnover of assets that Clearstream Banking S.A. is holding as custodian and that are attributed to Bank Markazi. Several of the plaintiffs groups also raise direct claims for damages against Clearstream Banking S.A. On the other hand, Bank Markazi is suing, among others, Clearstream Banking S.A. in Luxembourg in connection with assets that currently or in the past were held by Clearstream Banking S.A. as custodian.

On the basis of a binding and enforceable U.S. judgment in 2013, assets in an amount of approx. USD 1.9 billion were already turned over to a plaintiffs group in a U.S. proceeding ("Peterson I") to which also Bank Markazi was a party. Currently, the following proceedings that were initiated by the mentioned plaintiffs groups and that primarily target assets attributed to Bank Markazi are ongoing:

- „Peterson II" plaintiffs group: On 30 December 2013, plaintiffs filed a complaint in the U.S. against Clearstream Banking S.A. and other parties seeking turnover of certain assets that Clearstream Banking S.A. holds as a custodian in Luxembourg and that are attributed to Bank Markazi. Parts of the case since then reached the U.S. Supreme Court. After remand the case now is before the district court again where the plaintiffs lastly have filed a motion for summary decision on their asserted turnover claim. Alternatively, the plaintiffs have requested a preliminary court decision ordering the transfer to the U.S. of the relevant assets.
- „Havlish" plaintiffs group: On 14 October 2016, plaintiffs filed a complaint in the U.S. against Clearstream Banking S.A. and other parties. Besides the request for turnover of certain assets that Clearstream Banking S.A. holds as a custodian in Luxembourg, the complaint also asserted direct damage claims against Clearstream Banking S.A. and other defendants in the amount of up to approx. USD 6.6 billion (plus punitive damages and interest). On 12 October 2020, an amended complaint was filed in this case, which added further plaintiffs and which in turn asserted additional damages of approx. USD 3.3 billion (plus punitive damages and interest) against Clearstream Banking S.A. and the other defendants.

- „Levin“ plaintiffs group: On 26 December 2018, plaintiffs filed a complaint in the U.S. against Clearstream Banking S.A. and other parties. Besides the request for turnover of certain assets that Clearstream Banking S.A. holds as a custodian in Luxembourg, the complaint also asserts direct damage claims against Clearstream Banking S.A. and other defendants in the amount of up to approx. USD 29 million (plus punitive damages and interest).
- „Heiser“ plaintiffs group: On 4 December 2019, plaintiffs from a previous case filed a new complaint in the U.S. against Clearstream Banking S.A. targeting turnover of certain assets that Clearstream Banking S.A. holds as a custodian in Luxembourg.
- „Ofisi“ plaintiffs group: On 26 August 2020, plaintiffs filed a complaint in the U.S. against Clearstream Banking S.A. and other parties. Besides the request for turnover of certain assets that Clearstream Banking S.A. holds as a custodian in Luxembourg, the complaint also asserts direct damage claims against Clearstream Banking S.A. and other defendants in the amount of up to approx. USD 8.7 billion (plus punitive damages and interest).
- On 24 November 2020, plaintiffs from the abovementioned Havlish case also sued Clearstream Banking S.A. and other parties in Luxembourg. The complaint, among others, asserts direct damage claims against Clearstream Banking S.A. and other defendants in the amount of up to approx. USD 5.5 billion (plus interest).

In connection with assets concerning Bank Markazi, Bank Markazi on 17 January 2018 filed a complaint in Luxembourg court naming Clearstream Banking S.A. and Banca UBAE S.p.A. as defendants. The complaint primarily seeks the restitution of assets totaling approximately USD 4.9 billion (plus interest), which the complaint alleges are held on accounts of Banca UBAE S.p.A. and Bank Markazi with Clearstream Banking S.A. Alternatively, Bank Markazi seeks damages in the same amount.

In another proceeding, on 30 April 2021, a Luxembourg first instance court at the request of Bank Markazi issued a declaratory judgment in connection with, amongst others, the abovementioned Peterson II proceeding pending in the U.S. The first instance decision of 30 April 2021 subjects the transfer of assets attributed to Bank Markazi based on a U.S. decision to the requirement of prior judicial recognition in Luxembourg, violation of which is punishable by a fine of €10 million. Clearstream has filed an appeal against the decision.

On 15 June 2018, Banca UBAE S.p.A. filed a complaint against Clearstream Banking S.A. in Luxembourg court. This complaint is a recourse action related to the above-mentioned 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.

Independent of whether Clearstream Banking S.A. should be required to turn over assets attributed to Bank Markazi in the U.S., the executive board does not think that claims for damages raised against Clearstream Banking S.A. in Luxembourg or in the U.S. will be successful. Based on this as of 31 December 2021 and unchanged from the previous year, no provisions were made in connection with the aforementioned matters.

Further litigations and proceedings

Litigations

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 U.S. 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 USD 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.

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 in the amount of € 33 million against Clearstream Banking AG, Deutsche Börse AG and other parties. The lawsuit was dismissed at first instance in October 2020; the plaintiff filed an appeal against the judgment.

On 23 July 2021, Clearstream Banking AG was served with a lawsuit that Air Berlin PLC i.L. had announced by way of an ad hoc announcement on 25 June 2021. The insolvency administrator in connection with the assets of Air Berlin PLC i.L. claims the payment of approximately € 497.8 million from Clearstream Banking AG as personally liable partner of Air Berlin PLC i.L. due to Brexit and seeks declaratory relief that Clearstream Banking AG is liable for all debts which have not already been approved to the insolvency table.

On 24 January 2022, Clearstream Banking AG was served with a complaint naming Clearstream Banking AG and two other parties as jointly and severally liable defendants. The lawsuit seeks damages of approximately € 216 million (plus interest) and declaratory relief that the defendants are liable for future damages. The claims pursued in the lawsuit are related to instructions to transfer securities that were not executed due to, among others, official measures.

The Executive Board does not expect that Group companies can be successfully held liable for these matters either and a material change of the risk situation of the Group currently is not discernible for the Executive Board.

Proceedings

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 U.S. sanction laws. Clearstream Banking S.A. is cooperating with the US attorney.

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.

Measures to mitigate operational risk

We take specific measures to reduce operational risks. Among 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, we have insurance policies that partly cover the potential financial consequences of operational incidents.

Emergency and contingency plans

It is essential for the Group that we provide our products and services as reliably as possible. We have to maintain our business operations and safeguard against emergencies and crises. If our 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, we have 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. This includes unavailability due to pandemic based events, like the coronavirus outbreak in 2020. This situation is being handled in accordance with the Group's Incident and Crisis Management Process. Activities are centrally coordinated to ensure the continuity of the Group's critical operations as well as employees' health and safety. Examples of such emergency and contingency measures are listed in the following chart "Business continuity management" chart.

Business continuity management

Emergency and crisis management process

Systems	Workstations	Employees	Suppliers
▪ Trading, clearing and settlement systems designed to be available at all times ▪ Duplication of all data centres to contain failure of an entire location	▪ Emergency arrangements for all essential functions ▪ Fully equipped emergency workspaces, ready for use at all times ▪ Remote access to systems for numerous employees	▪ Option to move essential operational processes to other sites if staff at one site are not able to work ▪ Additional precautions to ensure that operations remain active in the event of a pandemic	▪ Contracts and agreed plans of action for suppliers and service providers to specify emergency procedures ▪ Careful and continuous check of suppliers' emergency preparations ▪ Utilisation of multiple suppliers

Preparations for emergencies and crises

Our Group has introduced and tested a management process for emergencies and crises that enables us 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.

Our emergency and contingency plans are tested regularly by rehearsing critical situations as realistically as possible. 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.
- Practicable: 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 technology risks

As mentioned in the section on information security, attacks on IT systems and their data, particularly by cybercriminals, constitute operational risks for the Group. For us, as for other financial services providers and the industry as a whole, there is a pervasive and ever-increasing set of threats. 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, denial-of-service and ransomware attacks). There was no successful attack on the Group's core systems in 2021.

Physical security
We place 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 continuously assess the security situation at our 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 our 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 and other tests are carried out on a regular basis to verify the efficiency and effectiveness (as well as the quality) of the security processes at our locations.

In an increasingly competitive global market environment, access to know-how and confidential company information can be a major financial advantage to outsiders or competitors. We apply state-of-the-art technology to prevent our knowledge from being obtained illegally, e.g. through wiretapping.

Furthermore, Corporate Security is tasked with providing support to our employees while 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 we have established a worldwide travel security programme, 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 we cannot or do not wish to bear ourselves are transferred to insurance companies, if this is possible at a reasonable price. All insurance contracts are reviewed individually and regularly to identify potential for optimisation.

Financial risk
We divide our 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 36 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 24 to the consolidated financial statements). They occur principally at our banking subsidiaries. The presentation therefore focuses on our subsidiaries in "Trading & Clearing" (Eurex Clearing AG) and "Post-Trading" (Clearstream). By incorporating the Crypto Finance group, our current business has been enriched with a brokerage business, having its own risk structure. However, as this business type is characterised by a trading book that is widely hedged against market price moves, the general risk profile of the group is not significantly impacted.

Financial risk at Deutsche Börse Group

Financial risk

Credit risk
- For collateralised and uncollateralised customer credits
- For collateralised and uncollateralised cash investments
- In securities lending
- Participation in default fund
- Outstanding liabilities

Market risk
- For securities
- For pension provisions
- In case of balance-sheet currency mismatches

Liquidity risk
- Customer default
- Payment obligations
- Repayment of customer deposits

Credit risk

Credit risk and counterparty default risks describe the danger that one of our counterparties 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 the 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 clearing securities transactions.

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 lending transactions are fully backed with collateral. 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, 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 one of our clients with a secured credit line has resulted in a financial loss for us. We therefore consider the risk of client default resulting in material losses for us to be low. Moreover, we regularly evaluate the reliability of the recovery plans at our subsidiaries Clearstream and Eurex Clearing AG in various scenarios (including counterparty defaults), and for the resulting credit risk.

Credit risk can also arise from cash investments. The Treasury department is responsible and has Group-wide authority. Treasury invests both our funds and those deposited with our subsidiaries by our customers, mostly on a secured basis. We have never incurred a loss from these investment transactions 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 counterparties 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. The stress scenarios drawn up in the previous year were expanded in 2021, especially in view of the ongoing coronavirus pandemic and the potential future defaults at banks. The results were analysed continuously and included in the calculation of risk-bearing capacity.

We generally track a variety of risk indicators in addition to our risk metrics 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

Our subsidiaries assess the creditworthiness of potential customers or counterparties to an investment before entering into a business relationship with them. We do this in the same way and determine the credit lines for individual borrowers based on customer requirements and regular credit checks, which our subsidiaries supplement with ad hoc analyses if necessary. Our subsidiaries define safety margins for the collateral depending on the risk involved and review them continuously.

We reduce our risk when investing funds belonging to Group companies and client deposits 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; 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 collateral management. This system is described in detail in the following section.

Certainty for participants and the clearing house

Each clearing member must prove that it has liable capital (or, in the case of 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 securities collateral for margin calls. Internal valuations and external ratings are used to determine the credit quality. On the basis of these consolidated ratings, only securities that are classified as at least investment grade are permitted. The minimum for bank bonds has been raised to at least "A–" due to the potential wrong-way risks. Acceptance criteria are reviewed continuously. Market risk is also 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 recalculated daily for each security. In addition, a minimum safety margin 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 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 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 five-day holding period) for OTC transactions. Every day, Eurex Clearing AG verifies whether the margins match the necessary confidence level. The initial margin is currently calculated using both the risk-based margining method and the Eurex Clearing Prisma method. The Eurex Clearing Prisma method is available for all traded derivatives contracts. In contrast to the risk-based margining method, this method 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. In contrast to the Eurex Clearing Prisma method the risk-based margining method only partially takes portfolio effects into consideration when defining margin requirements. At present, it is still used for cash market products, physical deliveries 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 would be 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 2021, collateral amounting to €74,371 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 €342 million as of 31 December 2021.
- 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 million as of 31 December 2021.
- Only then would the other clearing members' contributions to the default fund be used proportionately. As at 31 December 2021, aggregate default fund contribution requirements for all clearing members of Eurex Clearing AG amounted to €6,130 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 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 equity would be realised.
- Finally, the remaining minimum regulatory 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 million, as mentioned before. The maximum amount to be provided under the comfort letter amounts to €600 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 above, 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.

European Commodity Clearing AG assumes the function of central counterparty in the Group for clearing commodity contracts. As with Eurex Clearing AG, credit risks are managed by a multi-level system according to the EMIR and the Group's risk management standards. The main element for mitigating credit risk is highly liquid collateral, which is obtained from clearing members in the form of initial margin and contributions to the default fund. Collateral is provided mainly in monetary form.

The geopolitical situation, as well as supply and demand effects, caused significant increases in price and volatility for many of the gas and power contracts cleared by European Commodity Clearing AG from September 2021 onwards. The models used to calculate the initial margin reflect this higher pricing and volatility. This resulted in a significant increase in initial margin to €39,203 million as at 31 December 2021. There were no defaults by clearing members or other material disruptions to operations.

Market risk

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

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

Pensions for our past and present employees are managed in a variety of pension funds. The pension risk stems from changes in the main parameters: discount rate, salary growth, inflation and the life expectancy of employees. Most of the risk comes from the effects of changes in the discount rate used to calculate pension obligations and pension plan assets.

Liquidity risk

Liquidity risk arises if a Group company is potentially unable to meet its upcoming payment obligations on time and in full or if it can only do so at a higher refinancing cost. Operating liquidity is mainly covered internally, by retaining earnings. Our aim is to hold sufficient liquidity to be able to meet all our obligations as they fall due. An intra-Group cash pool is used to pool surplus cash from our subsidiaries with Deutsche Börse AG, 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. We have access to short-term external sources of financing, such as agreed credit lines with individual commercial banks or consortia, and a commercial paper programme. In recent years, we have used our access to the capital markets to issue corporate bonds in order to meet our 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.

At Group level we 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 – secured and generally 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 the liquidity risk exposure at Group level. Clearstream and Eurex Clearing AG use stress tests to calculate the daily liquidity that would be required if their two biggest customers defaulted and report this monthly. They maintain sufficient liquidity to cover the requirement. Potential risks that are identified in the course of stress tests are analysed and corresponding risk-reduction measures initiated. Aggregated across all currencies, Eurex Clearing AG and Clearstream always had sufficient liquidity to cover their actual liquidity needs in 2021.

Risks from the use of financial instruments

Since the investment policy for both Clearstream and Eurex Clearing AG is conservative, derivative financial instruments such as interest rate or currency swaps are used exclusively for hedging purposes and therefore do not contribute to an increase in any financial risks.

Business risk

Business risk describes the unexpected residual loss that would occur if the earnings at risk exceed the forecast net profit after tax, which can be due to the competitive environment (e.g. customer action, investment loss, sector developments), macro-economic and geopolitical developments or strategic management errors. Factors influencing this residual loss include lower revenue or higher costs than originally planned. Business risk is reported when the value at risk is higher than the net profit planned for the next four quarters.

The definition and modelling of business risk have changed since last year and no longer include a complex scenario analysis. The new approach is based rather on using historical forecasts and actual expenses and income, which makes the model more objective and easier to interpret. Modifying the model did cause the relationships between different types of risk reported in the overall risk profile to change, however, although the Group's actual risk profile did not in fact change materially compared with the previous year.

Business risks are monitored permanently by the business units and no longer have to be backed by capital as at the reporting date following the changes made to the internal model. Business risk may result in revenue 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).

Other business risks may arise from regulatory requirements and from the geopolitical or economic environment. Examples include a crisis in the European currency union, the impact of negative interest rates or a customs dispute with negative effects on trade.

In recent years, we took steps to reduce the direct risks associated with “Brexit” – the departure of the United Kingdom (UK) from the European Union (EU). They focused on customer access to the Group’s systems, on market access to the UK for our 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 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 our Group and for market participants.

In terms of political tax discussions, the financial transaction tax (FTT) to which some European states aspire represents a variable which could have an adverse effect on our business. The agreement on the international reform of corporation tax agreed by the OECD/G20 excludes financial services from the scope of Pillar 1 (partial restructuring of taxation rights). It remains to be seen whether there will be any European efforts to introduce a digital tax or harmonise the taxation of financial services across the EU, which could have an adverse effect on our business, depending on how they are structured.

Furthermore, we as a Group have an exposure to VAT risk following a letter from the German Federal Ministry of Finance on 3 May 2021 on the VAT treatment of services by exchange operators. This put an end to the standard tax practice that had been in place since the fully electronic trading systems were introduced in the mid 1990s. According to the letter, all exchange-based and over-the-counter services for securities trading in the cash market are to be invoiced without VAT from 1 July 2021. Since the letter is also to be applied retroactively, there is a risk for years which have not yet been definitively assessed that the tax authorities will reclassify services that were previously liable for VAT as VAT-free and so deny the deduction of input VAT, whereby there would be no objection for transactions with customers in Germany.

Other regulatory risks exist in connection with the forthcoming revision 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 our spot market would be if any competitive disadvantages caused trading activities to move to alternative venues. The rules on non-discriminatory access to clearing and trading in exchange-traded derivatives could also have an adverse effect on trading volumes and revenue if the revision of the legislation does not abolish those rules, as the European Commission is currently proposing. Finally, it should be noted that proposals at EU level for a consolidated data ticker, particularly in combination with stricter regulation of pricing for market data, could result in business risks for our 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 GmbH, particularly from further delays to the conditions for the use of mandatory buy-in agents, which are linked to rules on settlement discipline. 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 capital requirements of operators of central counterparties 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 European Commission and the ESMA Supervisory Committee for Central Counterparties could affect the ongoing development of the Eurex clearing partnership programme for interest rate derivatives. Further work on global standards and the European Market Infrastructure Regulation 2.1 (EMIR 2.1) could also distort competition and so cause revenue to be lost by changing the incentives for market participants in terms of central clearing, existing clearing mandates, requirements of regulatory approval procedures or requirements of CCP models.

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 dedicated multilateral trading systems (known as multilateral trading facilities, MTF), but also "DLT SSS" (settlement systems) 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 or DLT SSS. 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. Part of the package to digitise the financial sector is also the Market in Crypto Assets Regulation (MiCA), which is intended to reduce risks for investors, ensure investor protection and financial stability and enable innovative new business models based on crypto assets.

Another proposal by the European Commission, the Digital Operational Resilience Act (DORA), provides for an 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 increasing costs and growing complexity for the operation of the Group's IT infrastructure and of demarcation from other directives affecting all industries that are also intended to guarantee infrastructure security. Furthermore, the proposal could have an adverse impact on our 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) or the current revision of the NIS Directive at the European level. The provisions of the Second Act to Increase the Security of Information Systems (IT-SiG 2.0) must be considered as significant for the companies concerned. Alongside new standards and specifications, new responsibilities, technical access rights and powers are defined for the Federal Office for IT Security (BSI), and the 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 under the law as of “particular public interest”. Its trading systems would now be included within the scope of the legislation, which could potentially entail new liability risks, obligations and additional costs.

In the field of ongoing environmental, social and governance (ESG) regulation there are also a number of risks for our market data, derivatives and index business. They also include expected European and national legislative initiatives to regulate ESG data and ratings providers. 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 reinforced by the proposal announced for a European directive on sustainable corporate governance, and so represent revenue risks.

The Federal Financial Supervisory Authority (BaFin) regularly considers whether to classify Deutsche Börse AG as a financial holding company. We are currently not classified as a financial holding company. Any such classification could also affect our capital requirements.

Finally, it can be said that any further regulatory intervention that may take place in the context of the future development of COVID-19 could have an impact on our revenue.

In the context of the current geopolitical events in Ukraine and the potential resulting economic policy consequences, we have analysed as a Group which fundamental risks could have an impact on the individual business areas. This concerns all risks for Group companies that have business relationships with companies based in the affected countries (Ukraine, Russia), hold assets or have other connections of both an economic and technical nature. Due to the low level of business relationships with the affected countries and the resulting low number of potentially affected assets, it was determined at the time of completion of this report that Deutsche Börse Group as a whole is only exposed to a low level of direct economic risk. Indirect risks arising, e.g., from our customers' business activities in the countries concerned, as well as medium- and long-term risks that may arise, e.g., from further economic sanctions that are not yet foreseeable, are monitored on an ongoing basis and, if necessary, controlled by means of further risk mitigation measures.

Compliance – including measures against corruption and bribery
Responsible business operations imply adherence to laws and regulations; they are also based on the principle of integrity and ethically irreproachable conduct at all times. We have a compliance management system based on regulatory requirements, with the objectives of preventing misconduct and avoiding liability and reputational risks for the Group, its legal representatives, executives and staff. Beyond business-related compliance requirements, the focus is on strengthening a uniform compliance culture throughout the Group, especially with a view to enhancing compliance awareness. The compliance management system – under the responsibility of, and promoted by, the Executive Board of Deutsche Börse AG – therefore constitutes an indispensable element of good corporate governance with respect to compliance. Such a system provides the foundation for sustainable risk transparency; specifically, it facilitates risks in the areas of money laundering/terrorism financing, and other criminal acts (fraud), data protection, corruption prevention, as well as market manipulation, conflicts of interest and insider trading; it also monitors requirements concerning financial sanctions and embargoes.

The compliance management system applies to us and to the subsidiaries in Germany and abroad in which we hold a majority interest. Our Group-wide approach to compliance is intended to ensure that our Group companies respect applicable legislation and regulatory requirements.

The Chief Compliance Officers at the companies in the Group that are covered by bank regulations have functional reporting lines to the Group Chief Compliance Officer. The same applies to the Chief Compliance Officers of Qontigo, ECC/EEX and 360T. As a regulated entity under the Investment Advisors Act, ISS has established a compliance function and appointed a Chief Compliance Officer in accordance with legal requirements, although due to the business decision to report ISS at arm's length, there is currently no functional reporting line to the Chief Compliance Officer of the Group. However, as part of the implementation of the group-wide compliance approach, measures to implement compliance group standards (so-called group minimum standards) in ISS have already been initiated. The Group Chief Compliance Officer reports in turn directly to the Executive Board of Deutsche Börse AG. Compliance reporting includes all relevant compliance risk areas within the mandate of the compliance function.

We are continually developing our compliance management system in order to deal with rising complexity and increasing regulatory requirements. Corresponding measures enable us to identify and manage compliance risks. This applies particularly to money-laundering, financing of terrorism and other criminal acts (fraud), data protection, corruption prevention market manipulation, interest conflicts and insider trading as well as financial sanctions and embargoes.

We are guided by applicable regulatory law and regulatory requirements and the recommendations of internationally acknowledged standards relating to material compliance risk areas. Based on these standards, our compliance function identifies fields of action and measures to ensure the compliance management system continues to meet the requirements as they evolve.

As a member of the UN Global Compact we have committed to observe its principles, notably the principle to work against corruption in all its forms, which includes extortion and bribery. In line with our code of business conduct, the Group prohibits its employees from involving themselves in corruption, or from taking part in any actions which may lead to the impression that the Group promises, arranges, provides, receives, or asks for unlawful benefits. Bribery and facilitation payments are prohibited.

It is our Group's guiding principle that our actions and the decisions of all employees are taken objectively and with integrity. Management plays a particularly important role in this context. We are fully aware of what is known as the "tone from the top" for achieving a high level of awareness of the need to manage compliance risks – both within the Group and among market participants. In order to sustainably enshrine this guiding principle, and to prevent the Group and its staff from legal sanctions and reputational damage, Group Compliance has implemented a variety of preventative measures in a risk-oriented approach.

Compliance organisational structure

Group Compliance sets standards for the key compliance risks affecting all entities within the Group. In this context Group Compliance devises risk-oriented measures in order to contain and manage identified risks; to communicate risks, incidents, and the effectiveness of the measures taken; it ensures continuous improvement of the compliance management system by way of regular adjustments to the relevant internal policies and processes.

Key compliance topics are discussed in the Group Compliance Committee. Committee members are the senior managers of the business units and the relevant control functions for the Group as a whole.

Code of business conduct

Our Group's code of business conduct, which is communicated to all members of staff, summarises the most important aspects with regard to corporate ethics and compliance as well as appropriate conduct. The Code focuses on principles to guide decisions – not rules or lists of dos and don'ts. Moreover, Group Compliance provides employees with compliance-relevant information via the corresponding intranet pages, unless this is not possible for particular confidentiality reasons. For details we refer to the section "Corporate governance statement".

Compliance rules

Group Compliance has implemented Group-wide policies designed to ensure that the internal stakeholder groups acting on behalf of the Group comply with the behavioural rules set out in these policies. They are intended to prevent, detect and punish breaches of compliance policy. Group-wide communications via the intranet are geared towards providing employees (including members of the Executive Board and managers) with the necessary guidance for their daily work, and ensuring compliance.

Compliance training

Regular compliance training is an elementary part of promoting our compliance culture. Our employees around the world are trained regularly on the relevant compliance topics. We particularly cover money-laundering, financing of terrorism, other criminal acts (fraud), financial sanctions and embargoes, market manipulation, insider trading and data protection. Managers exposed to a higher compliance risk by virtue of their work receive additional training as required. Participation in training measures covering the compliance topics mentioned above is mandatory for our employees, as well as for managers.

Whistleblowing system

Deutsche Börse Group has established a whistleblowing system (BKMS), where employees can relay information about potential or actual breaches of prudential or regulatory rules and ethical standards, by phone or e-mail. The anonymity of whistleblowers is guaranteed. We cultivate an open approach to dealing with misconduct. For this reason, concerns are often also passed on directly to the responsible line manager, or to Group Compliance.

Analysis of compliance risks

In line with regulatory requirements we carry out risk analyses regularly and if needed on an ad hoc basis to understand and measure relevant risks, and to use the findings to take action. Such risk analyses and assessments comprise the Group’s own business activities as well as business relationships, market participants, products and services. Risk-mitigation measures are derived from the compliance risks identified.

In the context of the current geopolitical events in Ukraine and the potentially resulting economic consequences, the Group analyses which risks could have an impact on the individual business areas. This concerns all risks for Group companies that have business relationships with companies based in the affected countries (Ukraine, Russia), hold assets or have other connections of both an economic and technical nature. Deutsche Börse Group has implemented a robust and flexible system for managing potential sanctions and embargo risks. Dedicated sanctions experts carefully monitor current developments and are in regular communication with stakeholders and Deutsche Börse Group's business areas in order to be able to react to restrictions in a timely manner.

Key non-financial performance indicators: corruption prevention and data protection

		2021	2020
Corruption prevention			
Punished cases of corruption		0	0
Percentage of business units for which measures have been taken to address corruption risks	%	100	100
Number of employees who were trained in ABC measures (anti-bribery and corruption)[1]		7,177	1,394
Data protection			
Number of justified customer complaints relating to data protection		0	0

1) All employees of Deutsche Börse Group must repeat the web-based ABC training every two years. Since the course is updated and completed by employees in odd-numbered years, the number of courses completed in the even-numbered year 2020 is significantly lower.

Regulatory capital requirements and regulatory capital ratios

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, Eurex Securities Transactions Services GmbH and 360 Treasury Systems AG are also subject to specific provisions applicable to certain investment firms under BaFin 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 central counterparty at the same time as the solvency requirements; the higher requirement applies. Irrespective of its status as a specialist credit institution according to German law, European Commodity Clearing AG is only subject to EMIR capital requirements.

Since Clearstream Banking AG as well as Clearstream Banking S.A. are authorised as a central securities depositories both are subject to the capital requirements defined in Article 47 CSDR. These requirements apply to both Clearstream central securities depositories at the same time as the solvency requirements; the higher requirement applies. The additional authorisation for banking-type ancillary services under Article 54 CSDR means that Clearstream Banking AG and Clearstream Banking S.A. will in future have to comply with the additional capital surcharge for the provision of intra-day credit defined in Article 54 (3) d CSDR, in addition to the capital requirements mentioned above.

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).

Crypto Finance (Brokerage) AG is authorised as securities firm according to Article 41 of the Swiss Federal Act on Financial Institutions (FinIA) while Crypto Finance (Asset Management) AG is authorised as manager of collective investments according to the Swiss Collective Investment Schemes Act (CISA). Both are subject to the supervision by the Swiss Financial Market Supervisory Authority (FINMA).

Market risk exposures consist only of relatively small open foreign currency positions. As of 31 December 2021, the company Crypto Finance (Brokerage) AG has negligible market risk positions resulting from exposures to digital assets. 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 in particular to correspondingly volatile total capital ratios 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 risk 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, while the Clearstream companies apply the advanced measurement approach (AMA).

The specific provisions of the Investment Firm Regulation (IFR) that took effect in June 2021 and the new German Securities Institutions Act (Wertpapierinstitutsgesetz, WpIG) require the investment firms 360 Treasury Systems AG and Eurex Securities Transactions Services GmbH to calculate their capital requirement based on the higher of a) 25 per cent of the fixed overheads, b) what are known as K factors or c) a fixed minimum initial capital requirement. As a small, non-interlinked investment firm, Eurex Repo GmbH determines its own funds requirement based on the higher of a) 25 percent of the fixed overheads or b) its fixed minimum capital requirement. In the reporting year, the capital requirements based on fixed overheads were decisive for the companies mentioned. None of the Group companies subject to solvency supervision has either Additional Tier 1 or Tier 2 supplementary capital.

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

As at 31 December 2021, the bank-specific countercyclical buffer requirement stood at 0.05 per cent of risk-weighted assets for Clearstream Banking S.A., at 0.14 per cent for Clearstream Banking AG and at 0.05 per cent for Clearstream Holding Group, whereas for Eurex Clearing AG it was at 0.07 per cent. As at 31 December 2021, 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 systemic importance. Clearstream Banking S.A. has been defined by CSSF in accordance with regulation No. 20-07 as an "Other systemically relevant institute" (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 capital requirements of Clearstream Group as well of the subsidiaries Clearstream Banking AG and Clearstream Banking S.A. decreased in the reporting period. There were changes in capital requirements which are mainly related to operational risks, both at the single-entity and Group level.

In the medium to long term, the Clearstream Holding Group expects higher capital requirements at a regulatory group level for the following reasons:

- The capital requirements of CSDR will apply in full in future
- The successive introduction of capital requirements resulting from the 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 capital requirements increased compared with the previous year. Given the increase in revenue in the past years, capital requirements for operational risk rose according to the model. The capital requirements for credit and market risk increased as well.

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 increases 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 2021 €m	31 Dec 2020 €m	31 Dec 2021 €m	31 Dec 2020 €m	31 Dec 2021 €m	31 Dec 2020 €m
Clearstream Holding Group	348.6	452.6	83.2	83.5	431.8	536.1
Clearstream Banking S.A.	241.2	307.4	81.8	56.5	323.0	363.9
Clearstream Banking AG	118.1	145.2	6.7	5.1	124.8	150.3
Eurex Clearing AG	100.3	88.0	20.0	16.2	120.3	104.2

No capital contributions were made in 2021, but they are planned for the years ahead in order to strengthen the capital base.

Regulatory capital ratios according to CRR

	Own funds requirements		Regulatory equity		Total capital ratio	
	31 Dec 2021 €m	31 Dec 2020 €m	31 Dec 2021 €m	31 Dec 2020 €m	31 Dec 2021 %	31 Dec 2020 %
Clearstream Holding Group	431.8	536.1	1,790.6	1,677.7	33.2	25.0
Clearstream Banking S.A.	323.0	363.9	1,214.2	1,209.9	30.1	26.6
Clearstream Banking AG	124.8	150.3	420.1	419.9	26.9	22.4
Eurex Clearing AG	120.3	104.2	749.8	749.8	49.8	57.6

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 total of share capital and reserves is compared with the capital requirements and has to be at least the same.

Capital adequacy requirements under CSDR

	Clearstream Banking S.A.		Clearstream Banking AG	
	31 Dec 2021 €m	31 Dec 2020 €m	31 Dec 2021 €m	31 Dec 2020 €m
Own funds requirement for operational, credit and market risk	318.7	n/a	125.1	150.3
Other CSDR capital requirements	366.9	n/a	166.6	161.1
Total CSDR capital requirements under Article 47 CSDR	**685.6**	**n/a**	**291.7**	**311.4**
CSDR capital	**1,214.2**	**n/a**	**420.1**	**419.9**

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 statement of financial position was fully available to cover the risks according to Article 16 of EMIR, given that this equity fulfils the required liquidity standards. 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 increased by €8.0 million to €23.0 million and was also above the regulatory minimum.

Capital adequacy requirements under EMIR

	Eurex Clearing AG		European Commodity Clearing AG	
	31 Dec 2021 €m	31 Dec 2020 €m	31 Dec 2021 €m	31 Dec 2020 €m
Own funds requirement for operational, credit and market risk	120.3	104.2	35.1	28.8
Other EMIR capital requirements	135.5	86.6	58.5	56.1
Total EMIR capital requirements under Article 16 EMIR	**255.8**	**190.8**	**93.6**	**84.9**
Equity	749.8	749.8	158.0	131.9
EMIR deductions	0	0	0	0
Own contribution to default fund	– 200.0	– 200.0	– 23.0	– 15.0
EMIR capital adequacy	**549.8**	**549.8**	**135.0**	**116.9**

The Investment Firm Regulation requires Eurex Securities Transactions Services GmbH and 360 Treasury Systems AG to hold own funds of the higher of a) 25 per cent of the fixed overheads, b) a fixed minimum initial capital requirement of the entity or c) the capital requirements calculated based on the K factors. Eurex Repo GmbH determines its own funds requirements according to its classification based on the higher of a) or b). The capital requirement for ESTS, 360T and also for the Eurex Repo currently corresponds to 25 per cent of the respective fixed overheads 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 2021 €m	31 Dec 2020 €m	31 Dec 2021 €m	31 Dec 2020 €m	31 Dec 2021 €m	31 Dec 2020 €m
Eurex Repo GmbH	0	0.7	3.2	1.6	3.2	2.3
Eurex Securities Transactions Services GmbH	0	0	1.2	0	1.2	0
360 Treasury Systems AG	0	6.3	11.2	3.9	11.2	10.2

Compliance with own funds requirements

	Own funds requirements		Regulatory equity		Total capital ratio	
	31 Dec 2021 €m	31 Dec 2020 €m	31 Dec 2021 €m	31 Dec 2020 €m	31 Dec 2021 %	31 Dec 2020 %
Eurex Repo GmbH	3.2	2.3	25.0	27.6	789	95
Eurex Securities Transactions Services GmbH	1.2	0	35.0	0	2,963	0
360 Treasury Systems AG	11.2	10.2	62.4	39.9	559	31

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 2021 €m	31 Dec 2020 €m	31 Dec 2021 €m	31 Dec 2020 €m	31 Dec 2021 %	31 Dec 2020 %
REGIS-TR S.A.	6.4	6.5	11.5	10.7	179	165
EEX Asia Pte. Limited	1.1	0.5	2.3	1.8	209	360
Nodal Clear, LLC	28.2	24.5	31.5	31.9	112	130
Crypto Finance (Brokerage) AG	7.3	n/a	15.0	n/a	206	n/a
Crypto Finance (Asset Management) AG	0.3	n/a	6.1	n/a	2,033	n/a

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 financial year 2021. The aggregate total risk of Deutsche Börse Group across all risk types (operational, financial and business risk) was always matched by sufficient risk-bearing capacity.

As at 31 December 2021, the Group's REC amounted to €1,827 million, a decline of roughly 17 per cent year-on-year (31 December 2020: €2,203 million at the now valid 99.9 per cent confidence interval).

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 and the available liquidity are sufficient. There is currently no indication that the risk coverage amount has to be adjusted for 2022. Furthermore, it cannot identify any risk that would endanger the Group's existence as a going concern.

In 2022, we intend to continue strengthening and expanding its risk management and internal control system (ICS). This includes, for example, further expansion of information security management, methodological improvements in risk management and the ICS, and a closer coordination between control functions, also by means of a Group-wide governance, risk and compliance tool.

12. Report on opportunities

Organisation of opportunities management

Our opportunities management aims to identify, evaluate and assess opportunities as early as possible and to take appropriate measures in order to transform opportunities into business success.

We evaluate the organic and inorganic growth opportunities in the individual business areas continuously, i.e. over the course of the year. At Group level these opportunities are systematically assessed as part of the annual budgeting process and strategic reviews. The process begins with a careful analysis of the market environment, which considers both what the customer wants, as well as market developments, competitors and regulatory changes. Ideas for growth initiatives are developed further using uniform, Group-wide templates and subjected to a profitability analysis. On this basis, our Executive Board decides which initiatives are to be implemented.

Organic growth opportunities

We have a very broad portfolio of products and services with which we cover all areas of a market infrastructure provider's value chain. This makes us one of the most broadly based stock exchange organisations in the world. In order to maintain and expand this position we are pursuing a medium-term growth strategy called Compass 2023. Among other things we are focusing on organic growth opportunities in order to achieve our strategic goals. We make a basic distinction between secular and cyclical opportunities: secular opportunities arise for example as a result of regulatory changes, new client requirements (such as the growing demand for over-the-counter (OTC) transactions to on-exchange solutions) or from the trend to allocate an increasing portion of assets to passive investment strategies (e.g. index funds). We exploit these opportunities in a focused and active way. Cyclical opportunities on the other hand cannot be influenced directly by us and are driven by macroeconomic changes. In addition, we intend to seize long-term opportunities arising as a result of the technological transformation. They particularly include distributed ledger technology (DLT) and public cloud solutions for the operation of IT infrastructure.

Secular growth opportunities

When exploiting secular growth opportunities, we focus on innovative products, increasing market share and winning new customers. We expect to see the highest revenue growth in trading and clearing by 2023, due in part to new financial derivatives, the clearing of OTC derivatives and further growth in the trading of energy and gas products. Foreign exchange trading via 360T is also expected to provide a contribution to net revenue growth. Post-trading will focus on the further development of investment fund business. The growth focus in pre-trading lies in expanding the index, analytics and ESG business. The commercial potential of the initiatives mentioned here is described in more detail below.

New financial derivatives: We operate Eurex, one of the leading global derivative exchanges. In addition to a broad range of established international benchmark products, we have introduced a large number of new products in recent years, such as MSCI, total return, dividend and ESG derivatives. These new products reflect changes in customer preferences and regulatory requirements. We anticipate further strong growth in these and future products still to be launched in the years ahead.

Clearing of OTC derivatives: The liquidity problems experienced by major market participants during the financial crisis were triggered by the failure to settle bilateral OTC transactions that were mainly entered into on an unsecured basis. In light of this, the leading industrialised nations (G20) agreed to create an effective regulatory environment to make OTC derivatives transactions more transparent and more secure. Consequently, the European Union has created the European Market Infrastructure Regulation (EMIR). EMIR also involves the obligation to clear standardised OTC derivative transactions using a central counterparty. Eurex Clearing AG and its market partners have created an alternative for clearing interest rates swaps in the EU, and since then has continued to expand its notional outstanding volumes and market share.

Trading and clearing of power and gas products on EEX: European Energy Exchange AG (EEX) allows us to offer a broad product range for trading and clearing spot and derivatives contracts for power and gas as well as emission certificates. EEX has become the central market for energy in continental Europe and its product range includes, among others, the markets Germany, France, the Netherlands, Belgium, Italy and Spain. It is also active in the US market through its acquisition of Nodal Exchange. EEX's growth is mainly based on the growing importance of renewable energies for power generation. Owing to the high degree of fragmentation, as well as the inefficiency of OTC markets, the demand for on-exchange trading and clearing solutions has also increased over recent years. EEX believes it is well positioned in this changing competitive environment to achieve secular growth and gain additional market share.

Growth in foreign-exchange trading (360T): 360T® is a leading global platform for currency trading, whose broad customer base includes companies, buy-side customers and banks. By combining 360T's knowledge and experience in the foreign exchange market with our IT expertise, we have opened up additional revenue potential. We have made progress with various measures for achieving synergies, including the launch of FX futures and clearing services. We also benefit from a long-term secular trend: even though, at present, the vast majority of daily foreign-exchange trading volumes is still executed OTC, demand for transparent, electronic multi-bank trading platforms is rising.

Cross-border settlement of investment funds: Our clients can use our settlement and custody services for their entire fund portfolio – covering traditional investment funds, exchange-traded funds (ETFs) as well as hedge funds. Given that supervisory authorities are also calling for more efficient settlement and custody solutions in order to guarantee maximum security for client assets under custody, we expect to acquire additional client portfolios in the future by means of outsourcing agreements. We are also continuously expanding our range of products and services. We have, for example, significantly expanded our range of fund services to include the management of distribution agreements, as well as data compilation through acquisitions. In this way, we expect to generate additional net revenue by realising revenue synergies.

Expansion of the index and analytics business: Our objective in the index business is to give the already established European index provider STOXX an even more global profile, in order to develop and market other indices worldwide (in addition to its DAX® and STOXX® index families). In addition, Deutsche Börse's index business will continue to take advantage of the structural trend towards passive investment products (ETFs). An increasing number of private clients and asset managers now follow this trend; not only are the costs lower, but many active investment strategies have been returning under-average performance. In order to support these trends more effectively we have acquired Axioma, a leading provider of portfolio and risk management solutions. The combination created Qontigo, a fully integrated leading information provider for institutional investors, which meets the growing market demand for products and analysis in this area.

ESG: The trend towards sustainable business and investing represents an increasingly important secular growth opportunity for us, which has been accelerated by the COVID-19 pandemic. Our aim is to support market participants with high-quality ESG data, analytics, specialised ESG indices and the corresponding trading and hedging options. A big first step in this direction was taken in 2021 with the acquisition of Institutional Shareholder Services (ISS). We therefore expect further secular growth to come from developing new products and winning new customers across our entire Company.

Cyclical opportunities
In addition to its secular growth opportunities, we have cyclical opportunities, for instance as a result of positive macroeconomic developments. We do not have any direct control over these cyclical opportunities, but they do have the potential to increase our net revenue significantly in the medium term.

- The volumes of interest rate derivatives traded on the Group's derivatives markets could rise if speculation on trends in long-term yields on German and other European government bonds grows, and if the spread between the various European government bonds continues to narrow.
- Net interest income at Clearstream, which is based on cash deposits from our customers, would profit from a change in global low interest rate policies and higher short-term rates.
- In the spot and future market segment – Xetra and Eurex – an economic recovery after the COVID-19 pandemic and a lasting increase in investor confidence in capital markets could lead to more normal market volatility and increase trading volumes.

Technological opportunities
New developments such as cloud services, in the context of artificial intelligence (AI), big data, robotics, blockchain technology, combined with the potential for innovation offered by fintech companies, are driving change in the financial sector. This new wave of technology might help overcome barriers to market harmonisation, while creating additional efficiency and mitigating risks. The trend has been reinforced by the new environment resulting from the COVID-19 pandemic and is expected to continue in the years to come. Digitisation trends will accelerate, and the challenge for established providers is to find the right path with regard to new business models and innovative technologies.

We have optimised our internal processes particularly with regard to cloud services. HR processes, purchasing and settlement of travel expenses, among others, are now processed in the cloud. This has led to a significant streamlining of processes, and also has a positive effect on the Group's costs. We are also working on transferring services and processes with clients to the cloud. For instance, the introduction of new trading platforms and updating of existing infrastructure might be tested faster and better beforehand by clients in the cloud. This would make our processes significantly more agile, as new releases could be introduced at more frequent intervals, allowing us to respond better to clients' requirements. We have signed agreements with a number of key cloud service providers, positioning ourselves at the forefront of cloud use in the European financial services sector.

Distributed ledger technology (DLT) represents another technological opportunity. It is considered a disruptive technology at times – but at present, the financial services sector is increasingly exploring its opportunities. Thanks to its decentralised nature, it facilitates direct interaction between participants, thus offering the potential for simplifying complex processes. Established market infrastructure providers such as Deutsche Börse Group, which covers the entire value creation chain from a single source, play an important role when it comes to tapping this potential – meeting existing industry standards at the same time. Besides legal and regulatory requirements, this also involves adhering to security standards, as well as limiting risks and ensuring cost efficiency.

M&A growth opportunities

Inorganic growth is an equally important part of Compass 2023. We focus on areas that are closely related to our strategic growth areas, which include the index and analytics business, ESG, commodities, forex trading, fixed income trading and investment fund services. The aim is to accelerate growth in these areas by means of mergers and acquisitions and make our businesses even more scalable.

13. Report on expected developments

The forecast describes Deutsche Börse Group's expected performance for the 2022 financial year. It contains statements and information on events in the future and is based on the company's expectations and assumptions at the time of publication of this corporate report. In turn, these are subject to known and unknown opportunities, risks and uncertainties. Numerous factors, many of which are outside the company's control, influence the Group's success, its business strategy and its financial results. Should opportunities, risks or uncertainties materialise or should one of the assumptions made turn out to be incorrect, the Group's actual performance could deviate either positively or negatively from the expectations and assumptions contained in the forward-looking statements and information contained in this report on expected developments.

Developments in the operating environment

Macroeconomic environment
As expected, the global economy recovered relatively well from the impact of COVID-19 pandemic over the course of 2021, and we are anticipating further economic growth for the forecast period. It is likely to be somewhat slower than the growth rates seen in 2021, however, because rising inflation and the expectation of tighter monetary policy by central banks could have a restraining effect. In addition, the intensifying conflict between Russia and Ukraine could have a negative impact on the macroeconomic environment.

Future development of results of operations

Given our diversified business model and multiple sources of revenue and despite the extraordinary macroeconomic environment, we believe we are very well positioned to further improve our earnings in the medium and long term. This expectation is based partly on the secular growth opportunities that we intend to exploit (for details, see the "Report on opportunities"), as well as on additional expected inorganic growth.

As in previous years, we expect net revenue from secular growth opportunities to increase by at least 5 per cent in the forecast period. We are driving this growth through investment. By doing so, we aim to shift further market share from over-the-counter trading and clearing to the on-exchange segment and to further expand our positions in existing asset classes by introducing new products and functionalities and acquiring new customers. We are also expecting an additional contribution to net revenue from takeovers, particularly the acquisition of ISS on 25 February 2021. Business areas dependent on cyclical factors should also see first slightly positive effects on cyclical net revenue due to lower market volatility in 2021 and possible US interest rate rises in 2022. In total, we anticipate net revenue of approximately €3.8 billion for the forecast period. For the ESG net revenue[10] included therein we expect growth of more than 10 per cent for the same period.

[10] ESG net revenue according to the internal definition of Deutsche Börse Group – see "Definition of our ESG net revenue".

Within the context of our growth strategy, we pursue clearly defined principles for managing operating costs. We achieve the necessary flexibility largely by making continuous improvements to our operating processes. We are expecting earnings before interest, tax, depreciation and amortisation (EBITDA) to rise to around €2.2 billion in the forecast period. This would put us right on track towards our medium-term growth targets of 10 per cent per year on average for net revenue and EBITDA over the period from 2019 to 2023.

Forecast for results of operations 2022

	Basis 2021	Forecast 2022
Net revenue	€3,509.5 million	~€3.8 billion
Earnings before interest, tax, depreciation and amortisation (EBITDA)	€2,043.1 million	~€2.2 billion
ESG net revenue growth[1]	210% incl. ISS acquisition	>10%

1) ESG net revenue according to the internal definition of Deutsche Börse Group – see “Definition of our ESG net revenue”.

Development of non-financial performance indicators

Initiatives to promote the transparency and security of the markets will continue to be a key focus during the forecast period, ensuring that we add value for society. As far as the forecast development of non-financial performance indicators for 2021 is concerned, system availability customer facing IT was brought back into line with the high targets by means of additional back-up measures, which became part of everyday operations. We therefore expect that the system availability (customer facing IT) will remain high in the forecast period.

Being an attractive employer is important for our sustained success. We want to attract top talents and retain them for the long term. The measures described in the chapter “Our Employees” put us in a good position and we are confident that we can maintain or improve on our employee satisfaction of more than 71.5 per cent.

Deutsche Börse AG's Executive Board has defined target quotas for women on the two management levels beneath the Executive Board, in accordance with section 76 (4) of the AktG, in each case referring to Deutsche Börse AG. By 31 December 2022, the proportion of women holding positions in the first and second management levels beneath the Executive Board is planned to reach 15 per cent and 22 per cent, respectively.

Moreover, the Executive Board adopted a voluntary commitment to increase the share of women holding middle and upper management positions to 22 per cent by the end of 2022, and of women holding lower management positions to 30 per cent during the same period. We have extended the scope of our voluntary commitment over and above the legal requirements. The defined target refers to Deutsche Börse Group worldwide.

The assessment of independent ESG rating agencies is an important benchmark for our ESG efforts. We continuously analyse our performance and take action accordingly. Over the forecast period we expect that we will be able to maintain our good position above the 90th percentile of the ESG ratings.

Furthermore, we ensure the climate-neutrality of our Group by avoiding at least 70 per cent of our CO_2 emissions per workspace by 2022 and compensate for the remaining emissions by means of emissions reduction projects. This corresponds with the objective of our climate strategy to become climate-neutral on a net basis by 2025. All our efforts will be reviewed by the Science Based Target initiative (SBTi) by the end of 2023.

Forecast for non-financial key performance indicators 2022

	Basis 2021	Forecast 2022
System availability (customer facing IT)	99.9%	>99.5%
Employee satisfaction	75%	>71.5%
Women in leadership positions[1]	21%	22%
ESG ratings	95th percentile	>90th percentile
CO_2 emissions per workspace vs. 2019[2]	–66%	–70%

1) Group-wide target in senior management.
2) Unaudited figure.

Future development of the Group's financial position

We expect that cash flow from operating activities, which is our primary source of financing, will remain significantly positive in future. We expect that two significant factors will influence changes in liquidity: Firstly, we plan to invest around €200 million in intangible assets and property, plant and equipment at Group level. These investments will serve primarily to develop new products and services in our growth areas and to enhance existing ones. Secondly, we will propose a dividend of €3.20 per share to the Annual General Meeting to be held in May 2022. This would represent a cash outflow of about €587 million. Apart from the above, we did not expect any other material factors to impact the Group's liquidity at the time the combined management report was prepared. As in previous years, we assume that we will have a sound liquidity base in the forecast period due to positive cash flow from operating activities, adequate credit lines (for details see "Note 24 to the consolidated financial statements"), and our flexible management and planning systems.

We generally aim to distribute dividends equivalent to between 40 and 60 per cent of net profit for the period attributable to the shareholders of Deutsche Börse AG. Within this range, we manage the actual distribution ratio mainly in relation to our business performance and based on continuity considerations. In addition, we plan to invest the remaining available funds primarily in the continued inorganic development of the Group. Should we be unable to invest these funds, additional distributions, particularly share buy-backs, represent another opportunity for the use of funds. To maintain its strong credit ratings at Group level, we aim for a ratio of net debt to EBITDA of no more than 1.75, and a ratio of free funds from operations to net debt of at least 50 per cent.

Overall assessment by the Executive Board

We believe the Group remains very well positioned in terms of international competition, thanks to its comprehensive offering along the securities trading value chain and its innovative strength. This being the case, we expect to see a positive trend in our results of operations over the long term. Measures taken as part of our growth strategy should further accelerate this growth. In this context, we aim to become more agile and effective and sharpen our client focus, in order to become the global market infrastructure provider of choice, with a top ranking in all our business areas. We endeavour to expand our secular growth areas further, and to increase their contribution to net revenue again by at least 5 per cent. Taking other cyclical and consolidation effects into account, we are planning an increase in net revenue to around €3.8 billion in the forecast period. We expect EBITDA to go up to some €2.2 billion in the forecast period. Overall, we assume on this basis that cash flow from operating activities will be clearly positive and that, as in previous years, the liquidity base will be sound. The overall assessment by the Executive Board is valid as at the publication date for this combined management report.

14. Report on post-balance sheet date events

Deutsche Börse AG has successfully placed a corporate hybrid bond in the amount of €500,0 million on 16 February 2022. The bond has a term of 26.25 years with a first call date after 6 years and a coupon of 2.0 per cent annually until June 2028.

The hybrid bond will be used to refinance last year’s M&A activities.

15. Corporate governance statement

Deutsche Börse Group attaches great importance to the principles of good corporate governance and control. In this statement, we report on corporate governance at Deutsche Börse AG in accordance with principle 22 of the Deutscher Corporate Governance Kodex (the "Code", German Corporate Governance Code). The statement contains the corporate governance statement pursuant to sections 289f and 315d Handelsgesetzbuch (HGB, German Commercial Code).

Declaration of Conformity pursuant to section 161 Aktiengesetz (AktG, German Stock Corporation Act)

On 8 December 2021, the Executive Board and Supervisory Board of Deutsche Börse AG issued the following Declaration of Conformity:

"Declaration by the Executive Board and the Supervisory Board of Deutsche Börse AG regarding the German Corporate Governance Code in accordance with section 161 of the German Stock Corporation Act

The following Declaration of Conformity refers to the current version of the German Corporate Governance Code dated 16 December 2019 (GCGC), which was published in the Federal Gazette on 20 March 2020.

The Executive Board and the Supervisory Board of Deutsche Börse AG declare that the recommendations of the GCGC have been complied with in full in the financial year 2021 to date and will continue to be complied with in the future.

In the period since the last Declaration of Conformity dated 3 December 2020 until 31 December 2020, recommendation G.1, first indent GCGC was not complied with insofar as the Executive Board service contracts not newly concluded or extended in 2020 have only contained a total cap also including ancillary benefits since their revision as of 1 January 2021.

In detail:

Recommendation G.1, first indent DCGK recommends, among other things, that the remuneration system should specify what amount the total remuneration may not exceed (maximum remuneration). Already with the introduction of the adjusted remuneration system for the Executive Board on 1 January 2020, the annual remuneration comprising fixed and variable remuneration components, pension benefits and ancillary benefits for each Executive Board member was capped at €9.5 million (total cap), after ancillary benefits had previously not been included in the total cap. This means that recommendation G.1, first indent of the GCGC has already been complied with in respect of the Executive Board service contracts newly concluded or extended since 1 January 2020. All other Executive Board service contracts were revised accordingly on 1 January 2021 based on the new remuneration system 2021, so that recommendation G.1 GCCG has been complied with in full since then."

The annual declaration of conformity pursuant to section 161 AktG can also be found online at www.deutsche-boerse.com > Investor Relations > Corporate Governance > Declaration of Conformity. The declarations of conformity for the past five years are also available there.

Disclosures on overriding statutory provisions
The Executive Board and Supervisory Board of Deutsche Börse AG declare in accordance with recommendation F.4 GCGC that recommendation D.5 GCGC was not applicable to the company in 2021 because of the overriding statutory requirement of section 4b Stock Exchange Act. Recommendation D.5 GCGC states that the Supervisory Board shall form a Nomination Committee composed exclusively of shareholder representatives. In accordance with Section 4b of the German Stock Exchange Act, however, the Nomination Committee also assists the Supervisory Board of Deutsche Börse AG in selecting candidates for the Executive Board. As this task shall not be performed exclusively by shareholder representatives of the Supervisory Board, and in line with the practice to date, the Nomination Committee also includes employee representatives.

Disclosures on suggestions of the Code
The Code consists of both recommendations (denoted in the text by the use of the word "shall"), which are reported in the Declaration of Conformity in accordance with section 161 AktG, and suggestions (denoted in the text by the use of the word "should"). Deutsche Börse AG fully complies with them.

Publicly available information in accordance with section 289f (2) no. 1a HGB

The 2021 remuneration report and the auditors' statement pursuant to section 162 AktG, the underlying remuneration system pursuant to section 87a (1) and (2) sentence 1 AktG as well as the latest resolution on remuneration pursuant to section 113 (3) AktG will be available at www.deutsche-boerse.com > Investor Relations > Corporate Governance > Remuneration.

Information on corporate governance practices

Conduct policies
Deutsche Börse Group's global orientation means that binding policies and standards of conduct must apply at all of the Group's locations around the world. Specifically, the main objectives of these principles for collaboration are to ensure responsibility, respect and mutual esteem. The Group also adheres to these principles when implementing its business model. Communications with clients, investors, employees and the general public are based on timely information and transparency. In addition to focusing on generating profit, Deutsche Börse Group's business is managed sustainably in accordance with recognised social standards.

Code of business conduct
Acting responsibly means having values that are shared by all employees throughout the Group. Deutsche Börse AG therefore has a code of business conduct that is reviewed every year. This document, which is adopted by the Executive Board and applies throughout the Group, defines the foundations of key ethical and legal standards, including – but not limited to – the following topics:

- Compliance with legislation and regulations; whistleblowing
- Confidentiality and the handling of sensitive information
- Conflicts of interest
- Prevention of insider trading and market manipulation; personal account dealings
- Prevention of corruption
- Risk management
- Environmental awareness
- Equal opportunities and protection against undesirable behaviour
- Corporate responsibility; human rights; ethical conduct

The code of business conduct applies to members of the Executive Board, all other executives and all employees of Deutsche Börse Group. In addition to specifying concrete rules, the code of business conduct provides general guidance as to how employees can contribute to implementing the defined values in their everyday working life. The goal of the code of business conduct is to provide guidance on working together in the company on a day-to-day basis, to help resolve any conflicts and to resolve ethical and legal challenges. All newly hired employees receive the code of business conduct as part of their employment contract documentation. The code of business conduct is an integral part of the relationship between employer and employees at Deutsche Börse Group. Breaches may lead to disciplinary action. The document is available on www.deutsche-boerse.com > Sustainability > Our ESG profile > Employees > Guiding principles.

Code of conduct for suppliers

Deutsche Börse Group not only requires its management and staff to adhere to high standards – it demands the same from its suppliers and service providers. The code of conduct for suppliers requires them to respect human rights and employee rights and comply with minimum standards. Implementing a resolution of the Executive Board, the code of conduct for suppliers was amended in 2016 to include the requirements set out in the UK Modern Slavery Act, applicable to all corporations conducting business in the United Kingdom. Most suppliers have signed up to these conditions; all other key suppliers have made voluntary commitments, which correspond to, or in fact, exceed Deutsche Börse Group's standards. Service providers and suppliers must sign this code or enter into an equivalent voluntary commitment before they can do business with Deutsche Börse Group. The code of conduct is reviewed regularly in the light of current developments and amended if necessary. It is available on Deutsche Börse Group's website www.deutsche-boerse.com > Sustainability > Our ESG Profile > Procurement management.

Sustainability and values

Our business activities are based on the legal frameworks and ethical standards of the different countries in which Deutsche Börse Group operates. A key way in which we underscore the values we consider important is by joining initiatives and organisations that advocate generally accepted ethical standards. Relevant memberships are as follows:

United Nations Global Compact www.unglobalcompact.org: this voluntary business initiative established by the United Nations aims to achieve a more sustainable and more equitable global economy. At the heart of the compact are ten principles covering the areas of human rights, labour, environment protection and anti-corruption. Deutsche Börse Group has submitted annual communications on progress (COPs) on its implementation of the UN Global Compact since 2009.

Diversity Charter www.charta-der-vielfalt.de: as a signatory to the Diversity Charter, the company has committed to acknowledging, respecting and promoting the diversity of its workforce, customers and business associates – irrespective of their age, gender, disability, race, religion, nationality, ethnic background, sexual orientation or identity.

International Labour Organization www.ilo.org: this UN agency is the international organisation responsible for drawing up and overseeing international labour standards; it brings together representatives of governments, employees and employers to promote the joint development of policies and programmes. Deutsche Börse Group has signed up to the ILO's labour standards and hence has agreed to abide by them.

Sustainability in corporate governance

Sustainability is of significant importance for the corporate strategy of Deutsche Börse Group. It is therefore an essential element of corporate governance at the level of both the Executive Board and the Supervisory Board. The Executive Board of Deutsche Börse AG takes all strategic decisions concerning sustainability matters at Deutsche Börse Group. It is supported on the one hand by the interdisciplinary

Group Sustainability Board, which is chaired by the CFO. This board takes fundamental decisions, alone or in coordination with the Executive Board, on company initiatives relating to environmental, social and governance topics (ESG). It also reviews and evaluates sustainability projects and defines quantifiable targets and timelines for them. The Group ESG Strategy, which reports to the CEO, provides support by coordinating overarching ESG product initiatives, managing the ESG reporting and continuously monitoring the ESG profile and climate strategy of Deutsche Börse AG.

At the level of the Supervisory Board, the responsibilities of the existing Strategy Committee were expanded in the reporting year to reflect the strategic importance of sustainability and the Strategy and Sustainability Committee was formed. In addition to embedding ESG in the work of the Supervisory Board in this way, it is particularly important for the board as a whole and in the other Supervisory Board committees, especially the Audit Committee, the Risk Committee and the Nomination Committee. Current, relevant sustainability aspects also form part of the training programme for the Executive Board and Supervisory Board and are dealt with in workshops and seminars.

Further information on this subject can be found online at www.deutsche-boerse.com > Sustainability. More information about the Supervisory Board committee Strategy and Sustainability can be found in the chapter "Supervisory Board committees".

Sector-specific policies

Deutsche Börse Group's pivotal role in the financial sector requires that it handles information – and especially sensitive data and facts – responsibly. A number of rules are in force throughout the Group to ensure that employees comply with this. These cover both legal requirements and special policies applicable to the relevant industry segments, such as the whistleblowing system and risk and control management policies.

Whistleblowing system

Deutsche Börse Group plays an active role in the fight against breaches of rules and regulations. One example is Deutsche Börse Group's whistleblowing system, which provides a channel to report non-compliant behaviour. Deutsche Börse Group uses the Business Keeper Monitoring System (BKMS®), an online application that enables employees, clients and third parties to report matters that could be criminal offences and incidents of non-compliance by employees or third parties concerning the business of Deutsche Börse Group. Reports can be in their own name or anonymously and can be made around the clock.

Further information regarding the whistleblowing system can be found at www.deutsche-boerse.com > Our Company > Contact > Whistleblower system.

Risk and control management policies

Functioning control systems are an important part of stable business processes. Deutsche Börse Group's enterprise-wide control systems are embedded in an overarching framework. This comprises, among other things, the legal requirements, the recommendations of the German Corporate Governance Code, international regulations and recommendations and other company-specific policies. The executives responsible for the different elements of the control system are in close contact with each other and with the Executive Board, and report regularly to the Supervisory Board or its committees. Equally, the Group has an enterprise-wide risk management system that covers and provides mandatory rules for functions, processes and responsibilities. Details of the internal control system and risk management at Deutsche Börse Group can be found in the section "Risk management".

Working practices of the Executive Board and the Supervisory Board

An important fundamental principle of the German Stock Corporation Act is the dual board system – which assigns separate, independent responsibilities to the Executive Board and the Supervisory Board. These responsibilities and their implementation at Deutsche Börse AG are set out in detail in the following paragraphs.

Both boards perform their duties in the interests of the company and with the aim of achieving a sustainable, long-term increase in value. Their actions are based on the principle of responsible corporate governance. Therefore, Deutsche Börse AG's Executive Board and Supervisory Board work closely together in a spirit of mutual trust, with the Executive Board providing the Supervisory Board with comprehensive information on the company's and the Group's position and the course of business in a regular and timely manner. In addition, the Executive Board regularly informs the Supervisory Board concerning issues relating to corporate planning, the risk situation and risk management, compliance and the company's control systems. The strategic orientation of the company is examined in detail and agreed upon with the Supervisory Board. Implementation of the relevant measures is discussed at regular intervals. The Chief Executive Officer reports to the Supervisory Board without undue delay, orally or in writing, on matters that are of special importance to the company.

In addition, the CEO keeps the Chair of the Supervisory Board continuously and regularly informed of the current developments affecting the company's business, significant transactions, upcoming decisions and the long-term outlook and discusses these issues with him or her. The Supervisory Board may also request reports from the Executive Board at any time, especially on matters and business transactions at Deutsche Börse AG and subsidiaries that have a significant impact on Deutsche Börse AG's position. The bylaws for the Executive Board and Supervisory Board govern the corresponding information rights and obligations of the Executive Board and Supervisory Board in detail.

Deutsche Börse AG's Executive Board

The Executive Board manages Deutsche Börse AG and Deutsche Börse Group; it had six members during the reporting period. The main duties of the Executive Board include defining the Group's corporate goals and sustainable strategic orientation, managing and monitoring the operating units, as well as establishing and monitoring an efficient risk management system. The Executive Board is responsible for preparing the annual and consolidated financial statements of Deutsche Börse AG, as well as for producing financial information during the course of the year. In addition, it must ensure the company's compliance with legal requirements and official regulations.

The members of the Executive Board are jointly responsible for all aspects of management. Irrespective of this collective responsibility, the individual members manage the company's business areas assigned to them in the Executive Board's schedule of responsibilities independently and are personally responsible for them. In addition to the business areas, the functional areas of responsibility are that of the Chief Executive Officer (CEO), the Chief Financial Officer (CFO), the Chief Information Officer/ Chief Operating Officer (CIO/COO) and HR & Compliance. The business areas cover the operating business units, such as the company's cash market activities, the derivatives business, securities settlement and custody and the market data and financial information business. Details can be found in the "Overview of Deutsche Börse Group – Organisational structure" section.

Further details of the Executive Board's work are set out in the bylaws that the Supervisory Board has adopted for the Executive Board. Among other things, these list issues that are reserved for the entire Executive Board, special measures requiring the approval of the Supervisory Board, other procedural details and the arrangements for passing resolutions. The Executive Board holds regular meetings; these are convened by the CEO, who coordinates the Executive Board's work. Any Executive Board member can require a meeting to be convened. In accordance with its bylaws, the entire Executive Board normally takes decisions on the basis of resolutions passed by a simple majority of the members voting on them in each case. If a vote is tied, the CEO has the casting vote.

More information on the Executive Board, its composition, members' individual appointments and biographies can be found at www.deutsche-boerse.com > Investor Relations > Corporate Governance > Executive Board.

Deutsche Börse AG's Supervisory Board

The Supervisory Board supervises and advises the Executive Board in its management of the company. It supports the Executive Board in significant business decisions and provides assistance on strategically important issues. The Supervisory Board has specified measures requiring its approval in the bylaws for the Executive Board. In addition, the Supervisory Board is responsible for appointing the members of the Executive Board, deciding on their total remuneration and examining Deutsche Börse AG's annual and consolidated financial statements and the combined management report. Details of the Supervisory Board's work during the 2021 financial year can be found in the report of the Supervisory Board.

The Supervisory Board consists of 16 members, made up of an equal number of shareholder representatives and employee representatives in line with the German Mitbestimmungsgesetz (MitbestG, German Co-determination Act). The term of office of the current members ends at the Annual General Meeting in 2024. The same applies to the employee representatives elected to the Supervisory Board of Deutsche Börse AG in the reporting year. The election procedure was interrupted by the COVID-19 pandemic and was completed on 17 November 2021. In the period between the Annual General Meeting on 19 May 2021 and the close of the election procedure the employee representatives were appointed as Supervisory Board members by the district court.

The Supervisory Board holds at least six regular meetings every year. In addition, extraordinary meetings are held as required. The committees also hold regular meetings. Unless mandatory statutory provisions or the Articles of Associations call for a different procedure, the Supervisory Board passes its resolutions by a simple majority. If a vote is tied, the Chair has the casting vote. The work of the Supervisory Board and its committees is defined by the Rules of Procedure for the Supervisory Board, which is available at www.deutsche-boerse.com > Investor Relations > Corporate Governance > Supervisory Board > Rules of Procedure.

The Supervisory Board reviews the knowledge, skill and experience of the Executive Board and Supervisory Board and their members regularly, at least once a year, and examines the structure, size, composition and performance of the Executive Board and Supervisory Board. Its review is based on concrete targets. The Supervisory Board also regularly, at least once a year, reviews the effectiveness of its work, discusses opportunities for improvement and decides on suitable measures if necessary. The concrete targets are described in the chapter "Targets for composition and qualification requirements of the Supervisory Board" and the annual effectiveness test is described in the chapter "Examination of the effectiveness of Supervisory Board work".

The Supervisory Board Chair is in regular contact with the representatives of shareholders and employees on the Supervisory Board, in addition to the scheduled meetings.

Supervisory Board committees

The Supervisory Board's goal in establishing committees is to improve the efficiency of its work by examining complex matters in smaller groups that prepare them for the plenary meeting of the Supervisory Board. Additionally, the Supervisory Board has delegated individual decision-making powers to the committees, to the extent that this is legally permissible. The Supervisory Board had seven committees in the reporting period. The responsibilities of the existing Strategy Committee were expanded to form a Strategy and Sustainability Committee. For details of the committees, please refer to the tables "Supervisory Board committees in the reporting year: composition and responsibilities". Their individual responsibilities are governed by the Supervisory Board's bylaws. The committees' rules of procedure correspond to those for the plenary meeting of the Supervisory Board. Details of the current duties and members of the individual committees can be found online at www.deutsche-boerse.com > Corporate Governance > Investor Relations > Supervisory Board > Committees.

The chairs of the individual committees report to the plenary meeting about the subjects addressed and resolutions passed in the committee meetings. Information on the Supervisory Board's concrete work and meetings during the reporting period can be found in the report of the Supervisory Board.

More information on the Supervisory Board and its committees, the individual members and their appointments and biographies, can be found at: www.deutsche-boerse.com > Corporate Governance > Investor Relations > Supervisory Board.

Supervisory Board committees in the reporting year: composition and responsibilities

Audit Committee

Members	Composition
▪ Barbara Lambert (Chair) ▪ Nadine Absenger[1] (until 19 May 2021) ▪ Markus Beck[1] (until 17 November 2021) ▪ Katrin Behrens[1] (since 1 December 2021) ▪ Andreas Gottschling ▪ Oliver Greie[1] (from 19 May 2021 to 17 November 2021) ▪ Susann Just-Marx[1] (since 1 December 2021) ▪ Achim Karle[1] (since 1 December 2021) ▪ Michael Rüdiger ▪ Jutta Stuhlfauth[1] (until 17 November 2021)	▪ At least four members who are elected by the Supervisory Board ▪ At least one member with financial reporting expertise and one other member with auditing expertise[2] ▪ Prerequisites for the chair of the committee: the person concerned must be independent, and must have specialist knowledge and experience of applying accounting principles as well as internal control and risk management processes (financial expert) ▪ Persons who cannot chair the committee: the Chair of the Supervisory Board; former members of the company's Executive Board whose appointment ended less than two years ago **Responsibilities** ▪ Deals with issues relating to the preparation of the annual budget and financial topics, particularly capital management ▪ Deals with issues relating to the adequacy and effectiveness of the company's control systems – in particular, to risk management, compliance and internal audit ▪ Deals with audit reports and financial reporting issues, including oversight of the financial reporting process ▪ Half-yearly financial reports, plus any quarterly financial reports, discusses the results of the reviews with the auditors ▪ Examines the annual financial statements and the management report, the consolidated financial statements and the group management report, discusses the audit report with the external auditors and prepares the Supervisory Board's resolutions adopting the annual financial statements and approving the consolidated financial statements, as well as the resolution on the Executive Board's proposal on the appropriation of profit ▪ Prepares the Supervisory Board's recommendation to the Annual General Meeting on the election of the external auditors of the annual financial statements, the consolidated financial statements and the half-yearly financial report (to the extent that the latter is audited or reviewed by external auditors) and makes corresponding recommendations to the Supervisory Board ▪ Reviews the non-financial reporting (sections 289b, 315b HGB) ▪ Monitors the audit, particularly the selection and the independence of the external auditors, the quality of the audit and the additional services provided by the auditors ▪ Issues the engagement letter to the external auditor of the annual financial statements and the consolidated financial statements – including, in particular, the review or audit of half-yearly financial reports, reviews the non-financial reporting and determines focal areas of the audit and the audit fee ▪ Prepares the Supervisory Board's resolution approving the statement on the German Corporate Governance Code pursuant to section 161 of the AktG and the corporate governance statement in accordance with section 289f of the HGB ▪ Control procedures on related-party transactions pursuant to section 111a (2) sentence 2 AktG

1) Employee representatives.
2) The by section 100 (5) AktG required expertise in auditing is covered by Ms Barbara Lambert and the expertise in financial reporting is covered by Mr Michael Rüdiger.The curricula vitae can be found at: www.deutsche-boerse.com > Investor Relations > Corporate Governance > Supervisory Board.

Nomination Committee

Members	Composition
▪ Martin Jetter (Chair) ▪ Nadine Absenger[1] (since 19 May 2021) ▪ Markus Beck[1] ▪ Anja Greenwood[1] (since 1 December 2021) ▪ Michael Rüdiger ▪ Clara-Christina Streit (since 19 May 2021) ▪ Jutta Stuhlfauth[1] (until 17 November 2021) ▪ Gerd Tausendfreund[1] (until 19 May 2021) ▪ Amy Yip (until 19 May 2021)	▪ Chaired by the Chair of the Supervisory Board ▪ At least five other members who are elected by the Supervisory Board **Responsibilities** ▪ Addresses succession planning for the Executive Board ▪ Develops a diversity concept for the Supervisory Board ▪ Deals with the annual assessment of the structure, size, composition and performance of the Executive Board and Supervisory Board, as well as possible improvements ▪ Deals with the annual assessment of the qualification requirements of individual members of the Executive Board and Supervisory Board, and the Executive Board and Supervisory Board as a whole ▪ Reviews the policy for selection and appointment of members of the Executive Board and makes recommendations to the Supervisory Board in this regard ▪ Proposes suitable candidates to the Supervisory Board for inclusion in the Supervisory Board's election proposal to the Annual General Meeting (the proposal is submitted by shareholder representatives), including the regular review of the concrete targets and a job description on which proposals are based ▪ Enters into, amends or terminates service agreements within the framework defined by the Supervisory Board ▪ Deals with aggregate remuneration and retirement benefits of individual Executive Board members and determines payments to surviving dependants and any other similar payments; regularly reviews the reasonableness of Executive Board remuneration and develops proposals for any adjustments where required ▪ Deals with the remuneration system for the Executive Board and Supervisory Board and the remuneration report prepared in accordance with section 162 AktG ▪ Approves appointments of members of Deutsche Börse AG's Executive Board to other executive boards, supervisory boards, advisory boards and similar boards, as well as other part-time work and honorary appointments, including any exemptions from the approval requirement ▪ Approves the grant or revocation of general powers of attorney ▪ Approves cases in which the Executive Board grants employees retirement pensions or other individually negotiated retirement benefits, or proposes to enter into employer/works council agreements establishing pension plans ▪ Decides on deferring publication of insider information and on drafting ad hoc notifications on information for which the Supervisory Board is responsible ▪ Other tasks and duties set forth in section 4b (5) of the BörsG

1) Employee representatives.

Risk Committee

Members	Composition
▪ Andreas Gottschling (Chair) ▪ Susann Just-Marx[1] ▪ Cornelis Kruijssen[1] (until 17 November 2021) ▪ Barbara Lambert ▪ Daniel Vollstedt[1] (since 1 December 2021)	▪ At least four members who are elected by the Supervisory Board **Responsibilities** ▪ Reviews the risk management framework including the risk appetite and the risk management roadmap ▪ Takes note of and reviews the periodic risk management and compliance reports ▪ Oversees monitoring of the Group's operational, financial and business risks ▪ Takes note of and discusses the annual reports on significant risks and the risk management systems at regulated Group entities, to the extent legally permissible

1) Employee representatives

Strategy Committee (until 22 June 2021)

Members	Composition
▪ Martin Jetter (Chair) ▪ Susann Just-Marx[1] ▪ Achim Karle[1] ▪ Carsten Schäfer[1] ▪ Charles Stonehill ▪ Clara-Christina Streit (until 19 May 2021) ▪ Chong Lee Tan (since 19 May 2021)	▪ Chaired by the Chair of the Supervisory Board ▪ At least five other members who are elected by the Supervisory Board **Responsibilities** ▪ Advises the Executive Board on matters of strategic importance to the company and its affiliates ▪ Addresses fundamental strategic and business issues, as well as projects important to Deutsche Börse Group

1) Employee representatives.

Strategy and Sustainability Committee (from 22 June 2021)

Members	Composition
▪ Martin Jetter (Chair) ▪ Anja Greenwood[1] (since 1 December 2021) ▪ Susann Just-Marx[1] (until 17 November 2021) ▪ Achim Karle[1] ▪ Peter Sack[1] (since 1 December 2021) ▪ Carsten Schäfer[1] (until 17 November 2021) ▪ Charles Stonehill ▪ Chong Lee Tan	▪ Chaired by the Chair of the Supervisory Board ▪ At least five other members who are elected by the Supervisory Board **Responsibilities** ▪ Advises the Executive Board on matters of strategic importance to the company and its affiliates ▪ Addresses fundamental strategic and business issues and deals with the group's purpose ▪ Deals with sustainable corporate governance and business activities of Deutsche Börse Group in the areas environmental, social and governance (ESG) criteria ▪ Deals with significant projects for Deutsche Börse Group

1) Employee representatives.

Technology Committee

Members	Composition
▪ Karl-Heinz Flöther (Chair) ▪ Andreas Gottschling (since 19 May 2021) ▪ Achim Karle[1] ▪ Cornelis Kruijssen[1] (until 17 November 2021) ▪ Peter Sack[1] (since 1 December 2021) ▪ Carsten Schäfer[1] (until 17 November 2021) ▪ Charles Stonehill ▪ Daniel Vollstedt[1] (since 1 December 2021) ▪ Amy Yip (until 19 May 2021)	▪ At least four members who are elected by the Supervisory Board **Responsibilities** ▪ Supports the Supervisory Board in meeting its supervisory duties with respect to the information technology used to execute the Group's business strategy and with respect to information security ▪ Advises on IT strategy and architecture ▪ Oversees monitoring of technological innovations, the provision of IT services, the technical performance and stability of IT systems, operational IT risks, and information security services and risks

1) Employee representatives.

Chairman's Committee

Members	Composition
▪ Martin Jetter (Chair) ▪ Nadine Absenger[1] ▪ Markus Beck[1] (since 8 December 2021) ▪ Clara-Christina Streit ▪ Jutta Stuhlfauth[1] (until 17 November 2021)	▪ Chaired by the Chair of the Supervisory Board ▪ Deputy Chair of the Supervisory Board as well as one shareholder representative and one employee representative who are elected by the Supervisory Board **Responsibilities** ▪ Time-sensitive affairs

1) Employee representatives

Mediation Committee

Members	Composition
▪ Martin Jetter (Chair) ▪ Markus Beck[1] (since 8 December 2021) ▪ Katrin Behrens[1] (since 8 December 2021) ▪ Karl-Heinz Flöther ▪ Susann Just-Marx[1] (until 17 November 2021) ▪ Jutta Stuhlfauth[1] (until 17 November 2021)	▪ Chaired by the Chair of the Supervisory Board ▪ Deputy Chairperson of the Supervisory Board as well as one shareholder representative and one employee representative each **Responsibilities** ▪ Tasks and duties pursuant to section 27 (3) MitbestG

1) Employee representatives.

Targets for composition and qualification requirements of the Supervisory Board

In accordance with recommendation C.1 of the Code, the Supervisory Board has adopted a catalogue of specific targets concerning its composition that should serve above all as a basis for the nomination of future members. These targets are reviewed regularly and adjusted as necessary. They include qualification requirements as well as diversity targets. Furthermore, members shall have sufficient time, as well as the personal integrity and suitability of character, to exercise their office. In addition, more than half the shareholder representatives on the Supervisory Board shall be independent.

In the reporting year, the Supervisory Board, on the recommendation of the Nomination Committee, added the following general qualification requirements and confirmed that the targets had been met. The Supervisory Board, supported by the Nomination Committee, also examined the targets for the overall board and for the individual members and confirmed that they had been met.

Qualification requirements

Given their knowledge, skills and professional experience, members of the Supervisory Board shall have the ability to perform the duties of a supervisory board member in a company with international business activities. The Supervisory Board has determined individual (basic) as well as general qualification requirements. Basic requirements are derived from the business model, the concrete targets, as well as from specific regulations applicable to Deutsche Börse Group.

Individual (basic) qualification requirements
Ideally, each Supervisory Board member holds the following basic qualifications:

- Understanding of commercial issues
- Analytical and strategic skills
- Understanding of the corporate governance system
- Knowledge of the financial services sector
- Understanding of Deutsche Börse AG's activities
- Understanding of Deutsche Börse Group's structure
- Understanding of the member's own position and responsibilities

General qualification requirements
The general qualifications refer to the Supervisory Board in its entirety. At least two of its members should have sound knowledge, especially concerning the following topics:

- Capital markets, business models of stock exchanges and data business
- Accounting, finance, audit
- Risk management and compliance
- Information technology and security, digitalisation
- Clearing, settlement and custody business
- Regulatory requirements

The current composition of the Supervisory Board fulfils these criteria concerning the qualification of its members.

Supervisory Board members' general qualification requirements

	Capital markets, business models of stock exchanges and data business	Accounting, finance, audit	Risk management and compliance	Information technology and security, digitalisation	Clearing, settlement and custody business	Regulatory requirements
Martin Jetter (Chair)	+		+	+		+
Karl-Heinz Flöther	+	+		+		
Andreas Gottschling		+	+			+
Barbara Lambert		+	+	+		+
Michael Rüdiger	+	+	+		+	+
Charles Stonehill	+		+	+	+	+
Clara-Christina Streit	+	+			+	+
Chong Lee Tan	+	+				

Independence of Supervisory Board members
In accordance with recommendation C.6 of the Code, the Supervisory Board shall be comprised of what it considers to be an appropriate number of independent shareholder representatives. The shareholder representatives on the Supervisory Board therefore decided that at least half the shareholder representatives on the Supervisory Board shall be independent. Supervisory Board members are considered to be independent within the meaning of C.6 of the Code if they are independent of the company and its Executive Board and independent of any controlling shareholder. In particular, Supervisory Board members are no longer to be considered independent if they have a personal or business relationship with the company or its Executive Board that may cause a substantial (and not merely temporary) conflict of interest. According to recommendation C.7 of the Code, more than half the shareholder representatives shall be independent of the company and the Executive Board.

In the opinion of the shareholder representatives on the Supervisory Board, all of them are independent.

Diversity concept for the Executive Board and the Supervisory Board

The diversity concept for the Executive Board and the Supervisory Board, as adopted by the Supervisory Board in accordance with section 289f (2) no. 6 HGB, has the objective of ensuring a wide range of perspectives and experience through the composition of both bodies. The concept is implemented within the scope of selecting and appointing new Executive Board members or regarding proposals for election of new Supervisory Board members.

Flexible age limit and term of office
The Supervisory Board considers the flexible age limit stipulated in the bylaws (generally 70 years) when nominating candidates for election by the Annual General Meeting. Furthermore, the Supervisory Board's bylaws provide for a general limitation to members' maximum term of office to twelve years, which the Supervisory Board shall also consider in its nominations of candidates to the Annual General Meeting.

The flexible age limit for members of the Executive Board provides for the term of office to expire at the end of the month during which a member reaches the age of 60 years. From the month during which an Executive Board member has reached the age of 60, reappointment is permitted for a period of one year in each case, provided that the last term of office shall expire at the end of the month during which the Executive Board member reaches the age of 65. When appointing members of the Executive Board, the Supervisory Board pursues the objective of achieving an optimal composition of the Executive Board from the company's perspective. In this context, experience and industry knowledge, as well as professional and personal qualifications, play a major role. Depending on the Executive Board position to be filled, it is not just the scope and depth of skills that is decisive, but also whether the specific skills are up to date. The flexible age limit has been deliberately worded to preserve the Supervisory Board's flexibility in taking decisions on appointments.

At present, no Executive Board member has passed the age limit of 65 years.

Theodor Weimer's term of office as Chairman of Deutsche Börse AG's Executive Board runs until 31 December 2024. Theodor Weimer will reach the age of 65 in 2024. Gregor Pottmeyer's term of office as CFO of Deutsche Börse AG was extended until 30 September 2025. Mr Pottmeyer will reach the age of 60 in 2022. While maintaining the general rule on a flexible age limit, the Supervisory Board decided in view of their long-standing experience and knowledge of the sector and professional and personal qualifications, not to renew Mr Weimer's and Mr Pottmeyer's term of office solely on an annual basis once they reached the age of 60.

Share of women holding management positions
Deutsche Börse Group is an international company. Working at our company means collaborating with colleagues across 69 locations from more than 100 nations. We take pride in the wealth of cultural, professional, and personal backgrounds of our colleagues around the globe. We are committed to maintaining, supporting, and fostering the diverse and inclusive culture of Deutsche Börse AG across all diversity dimensions.

Regulation requires that in this report we especially reflect on a particular aspect of diversity: the share of women holding management positions.

As of today, Deutsche Börse AG is already in full compliance with statutory law regarding to the required share of women in both the Executive Board and the Supervisory Board. This is as well particularly true for the enhanced diversity requirements for the Executive Board introduced in German law in the year 2021.

30 percent of the shareholder representatives of the Supervisory Board are women and the Supervisory Board is determined to further increase this share.

For the Executive Board, the Supervisory Board is alike determined to further increase the share of women, while taking the current appointments into consideration. Currently, there is one female member on the board.

Future personnel decisions will take this into account.

In detail: With regard to the Supervisory Board, the legally binding gender quota of 30 per cent in accordance with section 96 (2) AktG applies. In order to prevent the possible discrimination of either shareholder representatives or employee representatives, and in order to increase the planning security in the relevant election procedures, the shareholder representatives on the Supervisory Board have opposed the overall compliance of the quota in accordance with section 96 (2) (sentence 2) AktG. Thus, the minimum proportion of 30 per cent is to be complied with for each gender with regard to the shareholder representatives and the employee representatives. Based on the statutory calculation method, this means that at least two women and two men from each the shareholder representatives and from the employee representatives must be on the Supervisory Board. Currently, there are two women from the shareholder representatives and four women from the employee representatives. The legally prescribed gender quota is thus complied with.

For the Executive Board, the Act to Supplement and Amend the Regulations for the Equal Participation of Women in Leadership Positions in the Private and Public Sector (FüPoG II) dated 10 June 2021 has introduced a statutory minimum participation requirement. Executive Boards of listed companies with more than three Executive Board members are required to have at least one woman and one man on the board (sec. 76 para. 3a AktG (new version)). This statutory minimum participation requirement replaces the obligation of companies to set a legally non-binding target quota. Although FüPoG II grants a grace period for compliance with the enhanced rules Deutsche Börse AG does already fulfil the new statutory requirement and does also report in accordance with section 289f para. 2 no. 5a HGB (new version).

In accordance with previous legal standards, Deutsche Börse AG's Supervisory Board had defined a target quota for women on the Executive Board in accordance with section 111 (5) AktG (old version). The first minimum target – 20 per cent of the Executive Board members were to be women – was complied with by the end of the implementation period on 30 June 2017. The quota of women on the Executive Board was 20 per cent at this time. Effective 1 July 2017, the Supervisory Board decided to extend the 20 per cent target quota of women on the Executive Board until 31 December 2021. This quota, however, declined due to the increase of the Executive Board to six members as of 1 July 2018, despite the fact that the actual number of women on the Executive Board did not change. The quota of women on the Executive Board on 31 December 2021 was 16.7 per cent.

International profile
The composition of the Executive Board and the Supervisory Board shall reflect the company's international activities. With Barbara Lambert, Charles Stonehill, Clara-Christina Streit and Chong Lee Tan, there are four shareholder representatives on the Supervisory Board who are not or not exclusively German citizens. Cornelis Kruijssen, employee representative on the Supervisory Board until 17 November 2021, has Dutch nationality. In addition, many of the members of the Supervisory Board have long-term professional experience in the international field or are working abroad on a permanent basis. The Supervisory Board will therefore continue to meet the objectives concerning its international composition.

The same applies to the Executive Board, where Stephan Leithner holds non-German citizenship, and whose members have gained long-standing international working experience as well.

Educational and professional background
The Supervisory Board has set itself the objective of considering an appropriate range of educational and professional backgrounds regarding its own composition, as well as regarding the composition of the Executive Board. The composition of both the Supervisory Board and the Executive Board reflect these objectives. In addition to possessing professional experience in the financial services industry, members of the Executive Board and the Supervisory Board also have a professional background in consultancy, the IT sector, auditing, administration and regulation. In terms of academic education, most members have business, economics or legal degrees, in addition to backgrounds in IT, engineering and other areas. Education and professional experience thus also contribute to fulfilling the previously mentioned qualification requirements for Supervisory Board members.

The composition of both Deutsche Börse AG's Supervisory Board and Executive Board is in line with the objectives stated above. Please refer to www.deutsche-boerse.com > Investor Relations > Corporate Governance > Supervisory Board for further information concerning the members of the Supervisory Board and its committees. For further information concerning the members of the Executive Board, please see www.deutsche-boerse.com > Investor Relations > Corporate Governance > Executive Board.

Preparing the election of a shareholder representative to the Supervisory Board

The Supervisory Board's Nomination Committee – whose task it is to propose suitable candidates to the Supervisory Board for its proposal to the Annual General Meeting – has discussed the matter of a successor to Karl-Heinz Flöther, who is expected to leave the Supervisory Board in May 2022. Mr Flöther decided to step down because he will then have been a Supervisory Board member for ten years since 16 May 2012.

When selecting appropriate candidates, the committee has taken into account the above criteria. After screening and holding several interviews with the candidates, the Nomination Committee has decided to propose Shannon A. Johnston to the Supervisory Board as the candidate for election at the Annual General Meeting.

Further information about the candidate including a CV will be published with the invitation to the ordinary Annual General Meeting of Deutsche Börse AG on 18 May 2022 and can also be found before the AGM at www.deutsche-boerse.com > Investor Relations > Annual General Meeting.

Training and professional development measures for members of the Supervisory Board

As a matter of principle, Supervisory Board members are responsible for their continuing professional development. Deutsche Börse AG follows recommendation D.12 of the Code and the guidelines of the European Securities and Markets Authority (ESMA) on management bodies of market operators and data reporting services providers, and supports Supervisory Board members in this endeavour. For example, it organises targeted introductory events for new Supervisory Board members and workshops on selected strategy issues as well as on professional topics. In addition to one strategy and two technology workshops, the Supervisory Board held a workshop on risk and compliance matters in the reporting period. In individual cases, Deutsche Börse AG assumes the costs incurred for third-party training, as part of its own training programme "Qualified Supervisory Board" for Supervisory Board members, for instance.

Examination of the effectiveness of Supervisory Board work

Deutsche Börse AG regards regular reviews of the effectiveness of Supervisory Board work – in accordance with recommendation D.13 of the Code – as a key component of good corporate governance. The annual self-assessment is supported by an external service provider every third year, most recently in 2019. The 2021 effectiveness examination was completed in the third quarter by means of a structured questionnaire and focusing on the tasks and composition of the Supervisory Board, co-operation between Supervisory Board members and between the Executive Board and the Supervisory Board, Supervisory Board meetings and Supervisory Board committees. In the reporting year the questionnaire was expanded to include current topics regarding ESG criteria in the work of the Supervisory Board, the format of meetings, conference technology and attendance fees. The review yielded positive results, both in terms of overall effectiveness as well as regarding the audited subject areas. Where it identifies room for improvement, optimising proposals were discussed by the Supervisory Board and measures for their execution implemented.

In 2020 the Supervisory Board discussed the efficiency of its work at the initiative of the newly elected Supervisory Board Chair Martin Jetter. Under his leadership the members of the Steering Committee, the Chair of the Audit Committee and the Chair of the Risk Committee developed concrete measures to increase the time available to individual Supervisory Board members for exercising their advisory function on business and strategy-related topics. A review of how the corresponding organisational measures had been implemented showed that they had largely been put into practice.

Long-term succession planning for the Executive Board

Together with the Executive Board, the Supervisory Board ensures that long-term succession planning takes place. For this purpose the Supervisory Board, or its Nomination Committee, regularly – at least once a year – concerns itself with potential candidates for the Executive Board. The Chair of the Executive Board is involved in these considerations, provided that the discussions do not refer to their own succession. The Supervisory Board prepares an applicant profile for vacant Executive Board positions. The Supervisory Board takes care to ensure that the knowledge, expertise and experience of all Executive Board members is diverse and well balanced, and adheres to the adopted diversity concept. Moreover, the Supervisory Board ensures it is informed regularly about the succession planning at the first level beneath the Executive Board, and provides advice to the Executive Board in this regard.

Target figures for the proportion of female executives beneath the Executive Board

Deutsche Börse AG's Executive Board has defined target quotas for women on the two management levels beneath the Executive Board, in accordance with section 76 (4) AktG, in each case referring to Deutsche Börse AG. By 31 December 2021, the proportion of women holding positions in the first and second management levels beneath the Executive Board was planned to reach 15 per cent and 20 per cent, respectively. As of 31 December 2021, the share of women holding positions on the first and second management levels beneath the Executive Board at Deutsche Börse AG in Germany was 14 per cent and 22 per cent, respectively.

Moreover, the Executive Board had adopted a voluntary commitment to Group-wide increase in the share of women holding management positions (first three management levels below the Executive Board) to 20 per cent by 31 December 2021, and of women holding lower management positions to 30 per cent during the same period. This voluntary commitment in fact went further than the statutory obligation. Firstly, the target figures determined in this context relate to Deutsche Börse Group worldwide. Secondly, the definition of management levels/positions was expanded to include heads of teams, for example. On a global level, as at 31 December 2021, these quotas stood at 21 per cent for upper management levels and 30 per cent for lower management positions.

Shareholder representation, transparent reporting and communication

Shareholders exercise their rights at the Annual General Meeting (AGM). In the spirit of good corporate governance, Deutsche Börse AG aims to make it as easy as possible for shareholders to exercise their shareholder rights. For instance, Deutsche Börse AG shareholders may follow the AGM over the internet and can be represented at the AGM by proxies nominated by Deutsche Börse AG. These proxies exercise voting rights solely in accordance with shareholders' instructions. Additionally, shareholders may exercise their voting rights by post or online. Among other things, the AGM elects the shareholder representatives to the Supervisory Board and decides on formal approval for the actions of the Executive Board and the Supervisory Board. It also passes resolutions on the appropriation of the unappropriated surplus, resolves on capitalisation measures and approves intercompany agreements and amendments to Deutsche Börse AG's Articles of Association and appoints the external auditors. Ordinary AGMs – at which the Executive Board and the Supervisory Board give an account for the past financial year – take place once a year.

In view of the ongoing effects of the COVID-19 pandemic the Executive Board decided in agreement with the Supervisory Board to hold the Annual General Meeting once again as a virtual event in the reporting year, without the physical presence of shareholders or their proxies as provided for by section 1 (2) sentence 1 (6) Gesetz über Maßnahmen im Gesellschafts-, Genossenschafts-, Vereins-, Stiftungs- und Wohnungseigentumsrecht zur Bekämpfung der Auswirkungen der COVID-19-Pandemie (Act on Measures in Corporate, Cooperative, Association, Foundation and Residential Property Law to Combat the Effects of the COVID-19 pandemic) (extended and amended by Art. 11 of the Act of 22 December 2020, BGBl. I p. 3332). Shareholders were able to follow the entire Annual General Meeting live online and exercise their voting rights by means of postal voting or appointing the company proxies. Additionally, the company voluntarily published the speeches by the Chairs of the Executive Board and Supervisory Board ahead of the Annual General Meeting, enabling shareholders to submit questions about them in advance too. Questions could be submitted to the company electronically up to one day before the Annual General Meeting and were answered in full during the meeting.

Additional new functions were also offered in the reporting year to make the virtual AGM more interactive. Here Deutsche Börse AG goes well beyond the minimum statutory requirements in the spirit of transparency and communication with our shareholders. Shareholders had the opportunity to address any further questions to the company during the AGM by using electronic communications technology. The company also gave shareholders or their proxies the opportunity to comment on the agenda beforehand, in writing or by video message.

To maximise transparency and ensure equal access to information, Deutsche Börse AG's corporate communications generally follow the rule that all target groups should receive all relevant information simultaneously. Deutsche Börse AG's financial calendar informs shareholders, analysts, shareholders' associations, the media and interested members of the public of key events such as the date of the AGM, or publication dates for financial performance indicators.

Ad hoc disclosures, information on directors' dealings and voting rights notifications, corporate reports and interim reports, and company news can all be found on Deutsche Börse's website www.deutsche-boerse.com. Deutsche Börse AG provides information about its annual and consolidated financial statements as well as interim reports in conference calls for analysts and investors. Furthermore, a regular investor day is held and Deutsche Börse continuously outlines its strategy and business developments to everyone who is interested, abiding by the principle that all target groups worldwide must be informed at the same time.

Additionally, Deutsche Börse AG submitted a COP for 2021 to the UN Global Compact. Good corporate governance is one of Deutsche Börse Group's core concerns. The Group has complied with the Global Compact's principles for many years. Public records of this have been available since the company officially joined the initiative in 2009: www.deutsche-boerse.com > Sustainability > Our ESG profile > Global initiatives > UN Global Compact.

Accounting and auditing

Deutsche Börse AG's annual report provides shareholders and interested members of the public with detailed information on Deutsche Börse Group's business performance during the reporting period. Additional information is published in its half-yearly financial report and two quarterly statements. The annual financial statement documents and the annual report are published within 90 days of the end of the financial year (31 December); intra-year financial information (half-yearly financial report and quarterly statements) is made available within 45 days of the end of the relevant quarter or six-month period. Following preparations by the Audit Committee, the annual and consolidated financial statements are discussed by the entire Supervisory Board and with the external auditors, examined, and then approved. The Executive Board discusses the half-yearly report and the quarterly statements for the first and third quarters with the Supervisory Board's Audit Committee prior to their publication. The half-yearly financial report is reviewed by the external auditors.

Following an extensive selection process by the Supervisory Board, the Annual General Meeting 2021 elected PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft, Frankfurt am Main, (PwC) as the new auditors for the annual and consolidated financial statements 2021 and for the auditor's review of the half-yearly financial report in the reporting year. PwC was also engaged to perform a review of the contents of the remuneration report during the 2021 financial year. The auditors responsible are Marc Billeb and Dr Michael Rönnberg. The Supervisory Board's proposal was based on a corresponding recommendation by the Audit Committee, which had obtained the necessary statement of independence from PwC before the election. This states that there are no personal, business, financial or other relationships between the auditor, its governing bodies and audit managers on the one hand, and the company and the members of its Executive and Supervisory Boards on the other, that could give cause to doubt the auditor's independence. The Audit Committee checked that this continued to be the case during the reporting period. It also oversaw the financial reporting process in 2021. The Supervisory Board was informed in a timely manner of the committee's work and the insights gained; there were no material findings. Information on audit services and fees is provided in "Note 6 to the consolidated financial statements".

16. Deutsche Börse AG (disclosures based on HGB)

The annual financial statements of Deutsche Börse AG are prepared in accordance with the provisions of the German Commercial Code (Handelsgesetzbuch, HGB) and the supplementary provisions of the German Stock Corporation Act (Aktiengesetz, AktG) and are the underlying basis for the explanations that follow.

Business and operating environment

General position
Deutsche Börse AG is the parent company of Deutsche Börse Group. The parent company's business activities include first and foremost the cash and derivatives markets, which are reflected in the Eurex (financial derivatives) and Xetra (cash equities) segments. Deutsche Börse AG also operates essential parts of Deutsche Börse Group's information technology. The development of Deutsche Börse Group's Clearstream (post-trading) segment is reflected in Deutsche Börse AG's business development, primarily due to the profit and loss transfer agreement with Clearstream Holding AG. Contributions from the IFS (investment fund services) segment of Deutsche Börse Group, in contrast, play a lesser role for Deutsche Börse AG. Despite this, the business and the operating environment of Deutsche Börse AG are essentially the same as those of Deutsche Börse Group. They are described in the section "Macroeconomic and sector-specific environment".

Deutsche Börse AG's course of business in the reporting period
Deutsche Börse AG's revenues fell by 5.0 per cent in the 2021 financial year, which was in line with the company's expectations. By contrast, total costs (staff costs, amortisation of intangible assets and depreciation of property, plant and equipment and other operating expenses) rose by 4.8 per cent. Net profit was down by 18.8 per cent compared with the previous year. Low market volatility and thus lower activity among market participants led to cyclical headwinds in the trading-related segments (Eurex and Xetra). In the previous reporting year, dividend income also included non-recurring positive effects. Based on these developments, the Executive Board of Deutsche Börse AG assesses the development in financial year 2021 in context as solid.

Performance figures for Deutsche Börse AG

	2021 €m	2020 €m	Change %
Sales revenue	1,485.0	1,563.3	– 5.0
Total costs	1,003.8	957.7	4.8
Net income from equity investments	652.5	765.2	– 14.7
EBITDA	1,233.9	1,470.2	– 16.1
Net profit for the period	943.3	1,161.9	– 18.8
Earnings per share (€)[1]	5.14	6.33	– 18.8

1) Calculation based on weighted average of shares outstanding

Results of operations of Deutsche Börse AG

Deutsche Börse AG's net revenue decreased by 5.0 per cent in 2021 to €1,485.0 million (2020: €1,563.3 million). At €922.7 million, the largest contribution to revenue came from the Eurex (financial derivatives) segment (2020: €1,017.7 million). The breakdown of revenue by company segment is provided in the "Sales revenue by segment" table. The "Sales revenue by geographical region" table shows the distribution of sales by geographical regions.

For more information on the development of the Eurex (financial derivatives) segment, please refer to the "Eurex (financial derivatives) segment" section.

The revenue contributed by the EEX (commodities) and 360T (foreign exchange) segments is generated mainly by IT services. Therefore, the explanations in the "EEX (commodities) segment" and "360T (foreign exchange) segment" sections relate only indirectly to Deutsche Börse AG. The result of operations for the Qontigo segment (index and analytics business) is presented in the section "Qontigo segment (index and analytics business). It should be noted that the business development of the STOXX Ltd. subsidiary does not directly impact upon the business performance of Deutsche Börse AG. Comments on the business development in the Xetra (cash equities) segment can largely be found in the "Xetra (cash equities) segment" section. Revenue attributable to the Clearstream (post-trading) and IFS (investment fund services) segments result from the IT services Deutsche Börse AG provides to companies belonging to the Clearstream Holding subgroup.

Other operating income went down to €39.8 million during the year under review (2020: €50.4 million).

Income for financial year 2021 includes transfer income of €256.3 million from other companies in the Group (2020: €232.8 million).

The company's total costs of €1,003.8 million were up 4.8 per cent year-on-year (2020: €957.7 million). For a breakdown, please refer to the table "Overview of total costs". Staff costs rose by 6.3 per cent year-on-year during the year under review, to €258.4 million (2020: €243.1 million). The higher staff costs are mainly due to the increase in the number of employees. Staff numbers increased from an average of 1,572 in the prior year to 1,664 in the 2021 financial year.

Amortisation of intangible assets and depreciation of property, plant and equipment increased to a total of €65.1 million in the year under review (2020: €63.2 million).

Other operating expenses were up 4.4 per cent year-on-year, to €680.3 million (2020: €651.4 million).

Total expenses for 2021 include €347.4 million in internal Group transfer expenses (2020: €333.7 million).

Deutsche Börse AG's result from equity investments for the 2021 financial year totalled €652.5 million (2020: €765.2 million). Among others, it consisted of dividend income of €298.1 million (2020: €348.2 million) and income from the transfer of profits of €349.4 million (2020: €401.4 million).

Earnings before interest, tax, depreciation and amortisation (EBITDA) fell to €1,233.9 million (2020: €1,470.2 million). Net profit for the period amounted to €943.3 million, a fall of 18.8 per cent (2020: €1,161.9 million).

Sales revenue by segment

	2021 €m	2020 €m	Change %
Eurex (financial derivatives)	922.7	1,017.7	– 9.3
EEX (commodities)	22.1	18.2	21.4
360T (foreign exchange)	0.7	0.6	16.7
Xetra (securities trading)	384.6	387.3	– 0.7
Clearstream (post-trading)	122.3	111.9	9.3
IFS (investment fund services)	26.7	23.7	12.7
Qontigo (index and analytics business)	5.9	3.9	51.3
Total	**1,485.0**	**1,563.3**	**– 5.0**

Sales revenue by geographical regions

	2021 €m	2020 €m	Change %
Germany	478.4	468.3	0.6
Other European Union	480.5	517.6	– 2.4
Other Europe	424.9	478.7	– 3.4
America	92.5	92.0	0.0
Asia/Pacific	8.7	6,7	0.1
Total	**1,485.0**	**1,563.3**	**– 5.0**

Overview of total costs

	2021 €m	2020 €m	Change %
Staff costs	258.4	243.1	6.3
Depreciation and amortisation	65.1	63.2	3.0
Other operating expenses	680.3	651.4	4.4
Total	**1,003.8**	**957.7**	**4.8**

Development of profitability

Deutsche Börse AG's return on equity expresses the ratio of net income after taxes to average equity available to the company during the course of 2021. Return on equity declined from 37.5 per cent in 2020 to 26.2 per cent in the year under review.

Financial position of Deutsche Börse AG

As at 31 December 2021, cash and cash equivalents amounted to €215.5 million (2020: €518.4 million). This includes balances on current accounts, fixed-term deposits and other short-term investments, whereby the bulk is held in cash.

Deutsche Börse AG has external credit lines available of €600.0 million (2020: €605.0 million), which were unused as at 31 December 2021. Moreover, the company has a commercial paper programme in place, which allows for flexible and short-term financings of up to €2.5 billion, in various currencies. Commercial paper with a nominal value of €801.0 million (2020: €0.0 million) was in circulation at year-end.

Through a Group-wide cash-pooling system, Deutsche Börse AG ensures an optimum allocation of liquidity throughout Deutsche Börse Group; in this way, the parent entity makes sure that all subsidiaries are in a position to honour their payment obligations at any time.

Deutsche Börse AG has issued three corporate bonds with a nominal value of €600 million each and three corporate bonds with a nominal value of €500 million each. For more details concerning these bonds, please refer to the "Financial position" section.

In the 2021 financial year, Deutsche Börse AG generated cash flow from operating activities of €906.7 million (2020: €889.9 million).

Cash flow from investing activities amounted to €–2,978.6 million (2020: €–366.9 million). The decline is related particularly to the investments made in the reporting year. The equity investments in Institutional Shareholder Services Inc. increased by €1,665.4 million, in Clearstream Fund Centre AG by €735.2 million and in Crypto Finance AG by €132.1 million.

Cash flow from financing activities amounted to €1,261.9 million in the year under review (2020: €– 521.5 million). A dividend of €550.6 million was paid for the 2020 financial year. It was offset by the issue of bonds with a nominal value of €1,000 million and commercial paper with a nominal value of €801 million. Cash and cash equivalents amounted to €–761.2 million as of the reporting date 31 December 2021 (2020: €48.8 million). It is made up of liquid funds of €215.5 million (2020: €518.4 million), less cash-pooling liabilities of €976.6 million (2020: €469.6 million).

Cash flow statement (condensed)

	2021 €m	2020 €m
Cash flow from operating activities	906.7	889.9
Cash flow from investing activities	– 2,978.6	– 366.9
Cash flow from financing activities	1,261.9	– 521.5
Cash and cash equivalents as at 31 December	**– 761.2**	**48.8**

Assets of Deutsche Börse AG

As at 31 December 2021, the non-current assets of Deutsche Börse AG amounted to €8,559.5 million (2020: €5,672.4 million). At €7,842.1 million, most of the non-current assets consisted of shares in affiliated companies (2020: €5,309.3 million), mainly the investments in Clearstream Holding AG, Institutional Shareholder Services, Inc., Clearstream Fund Centre AG, 360 Treasury Systems AG, Eurex Frankfurt AG and Qontigo GmbH.

Deutsche Börse AG's investments in intangible assets and property, plant and equipment totalled €61.5 million during the year under review (2020: €61.4 million), unchanged year-on-year. Depreciation and amortisation in 2021 amounted to €65.1 million (2020: €63.2 million).

Receivables from and liabilities to affiliated companies include invoices for intra-Group services and amounts invested by Deutsche Börse AG within the scope of cash-pooling arrangements. The receivables from affiliated companies relate to invoices for intra-Group services, but primarily to Clearstream Holding AG for the company's profit transfer of €349.4 million. Liabilities to affiliated companies resulted mainly from cash-pooling amounting to €976.5 million (2020: €469.6 million) and trade liabilities of €48.8 million (2020: €135.3 million).

Working capital amounted to €–1,852.1 million in 2021 (2020: €–249.6 million). The change is mainly due to higher liabilities under cash-pooling agreements and the issue of commercial paper.

Non-current assets (condensed)

	2021 €m	2020 €m
Intangible assets	116.8	109.2
Property, plant and equipment	72.1	83.2
Financial assets	8,370.6	5,480.0
Non-current assets as at 31 December	**8,559.5**	**5,672.4**

Deutsche Börse AG employees

The number of employees (as defined by HGB)[11] at Deutsche Börse AG rose by 50 in the reporting year and totalled 1,686 as at 31 December 2021 (31 December 2020: 1,636). The average number of employees at Deutsche Börse AG in the 2021 financial year was 1,664 (2020: 1,572).

During the 2021 financial year, 86 employees left Deutsche Börse AG, resulting in a staff turnover rate of 5 per cent.

On 31 December 2021, Deutsche Börse AG had employees at six locations around the world. Information on the countries, regions, the employees' age structure and length of service are provided in the tables that follow.

Employees per country/region

	31 Dec 2021	%
Germany	1,658	98.3
Great Britain	15	0.9
France	8	0.5
Other European countries	3	0.2
Asia	2	0.1
Total Deutsche Börse AG	**1,686**	**100**

Age structure of employees

	31 Dec 2021	%
Under 30 years	193	11.5
30–39 years	558	33.1
40–49 years	418	24.8
More than 50 years	517	30.6
Total Deutsche Börse AG	**1,686**	**100**

Employee length of service

	31 Dec 2021	%
Under 5 years	710	42.1
5–15 years	539	32.0
More than 15 years	437	25.9
Total Deutsche Börse AG	**1,686**	**100**

[11] Employees do not include the company's legal representatives, apprentices and employees on parental leave.

Remuneration report of Deutsche Börse AG

The principles governing the structure and design of the remuneration system at Deutsche Börse AG are the same as those for Deutsche Börse Group, so reference is made to the "Remuneration report" which will be published alongside with the annual report.

Corporate governance statement in accordance with to section 289f HGB

The corporate governance statement in accordance with section 289f HGB is the same as that for Deutsche Börse Group. Reference is therefore made to the section "Corporate governance statement".

Opportunities and risks facing Deutsche Börse AG

The opportunities and risks of Deutsche Börse AG and the activities and processes to manage these are largely the same as for Deutsche Börse Group, so reference is made to the "Risk management" and the "Report on opportunities". As a rule, Deutsche Börse AG shares the opportunities and risks of its equity investments and subsidiaries in accordance with its equity interest. Risks that could potentially threaten the existence of the Eurex Clearing AG subsidiary would also have a direct influence on Deutsche Börse AG based on a letter of comfort issued by Deutsche Börse AG. As of the reporting date, there were no risks jeopardising the company's existence. Further information on the letter of comfort issued to Eurex Clearing AG is available in the section "Other financial obligations and off-balance sheet transactions" in the notes to the annual financial statements of Deutsche Börse AG.

The description of the internal control system (ICS), required by section 289 (4) HGB, is provided in the "Risk management" section.

Forecast for Deutsche Börse AG

The expected developments in Deutsche Börse AG's business are largely subject to the same factors as those influencing Deutsche Börse Group. However, Deutsche Börse AG's sales revenue is significantly influenced by the trading-related segments Eurex and Xetra. These are mainly generated by passing on revenue via Eurex Frankfurt AG (EFAG) and Eurex Clearing AG (ECAG) (so-called "Betriebsführungskonstrukt").

Against the background of new transfer pricing (TP) rules (applicable as of 1 January 2022), comprehensive transfer pricing analysis for the Eurex business was undertaken in the second half of 2021. The analysis showed that the transfer pricing set-up used for the Eurex business can be maintained in principle. However certain adjustments (TP adjustments) are necessary:

- Increase of EFAG's and ECAG's cost+ plus margin for operation of the Eurex business to 13 per cent (so far 7 per cent) and pay additional returns for product development activities and ECAG's risk bearing capital;
- introduction of a dynamic profit split mechanism between DBAG and EGAG reflecting the Eurex revenues derived from the Swiss and German customer base, respectively.

As a result of the TP adjustments EFAG and ECAG shall receive a higher remuneration for operation of the Eurex business from financial year (FY) 2022 onwards. The remaining Eurex profits (after compensation of EFAG and ECAG) shall be split between DBAG and EGAG at an expected distribution key of 88/12 (instead of 85/15 applied in previous FY). This will have a negative impact on EBITDA for the periods from 2022 onwards. Compared with the reporting year, this is expected to have a negative effect of approximately €26 million on Deutsche Börse AG's EBITDA in 2022.

Additional factors influencing Deutsche Börse AG's future results of operations are income from investments in affiliated companies and income from profit and loss transfer agreements.

Deutsche Börse AG expects sales revenue to grow to approximately €1.60 billion and EBITDA to grow to approximately €1.25 billion in 2022.

Further disclosures on Deutsche Börse AG are provided in the "Report on expected developments".

17. Takeover-related disclosures

Disclosures in accordance with sections 289a sentence 1 and 315a sentence 1 of the German Commercial Code (HGB) and explanatory notes
Deutsche Börse AG makes the following disclosure in accordance with sections 289a sentence 1 and 315a sentence 1 of the German Commercial Code (HGB) as at 31 December 2021:

The share capital of Deutsche Börse AG amounted to €190.0 million on the above-mentioned reporting date and was composed of 190 million no-par value registered shares. There are no other classes of shares besides these ordinary shares.

The share capital has been contingently increased by up to €17.8 million by issuing up to 17.8 million no-par value registered shares (contingent capital 2019). The contingent capital increase will only be implemented to the extent that holders of convertible bonds or of warrants attaching to bonds with warrants issued by the Company or by a Group company in the period until 7 May 2024 on the basis of the authorisation granted to the Executive Board by resolution of the Annual General Meeting of 8 May 2019 on Item 8 (b) of the agenda exercise their conversion or option rights, that they meet their conversion or option obligations, or that shares are tendered, and no other means are used to settle such rights or obligations. More details can be found in Article 4 (7) of the Articles of Association of Deutsche Börse AG.

The Executive Board is only aware of those restrictions on voting rights that arise from Aktiengesetz (AktG, German Stock Corporation Act). Those shares affected by section 136 AktG are therefore excluded from voting rights. Furthermore, shares held by Deutsche Börse AG as treasury shares are exempted from the exercise of any rights according to section 71b AktG.

Under Wertpapierhandelsgesetz (WpHG, German Securities Trading Act), any investor whose shareholding reaches, exceeds or falls below specified voting right thresholds as a result of purchase, sale or any other transaction is required to notify the company and Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin, German Federal Financial Supervisory Authority). The lowest threshold for this disclosure requirement is 3 per cent. Deutsche Börse AG is not aware of any direct or indirect equity interests in its capital exceeding 10 per cent of the voting rights.

There are no shares with special provisions granting the holder control rights.

Employees holding shares in Deutsche Börse AG exercise their rights in the same way as other shareholders in accordance with the statutory provisions and the Articles of Association.

Members of the Executive Board are appointed and dismissed in accordance with sections 84 and 85 AktG and with Article 6 of the Articles of Association of Deutsche Börse AG. Amendments to the Articles of Association of Deutsche Börse AG are adopted by resolution of the Annual General Meeting in accordance with section 119 (1) No. 6 AktG. Under Article 12 (4) of the Articles of Association of Deutsche Börse AG, the Supervisory Board has the power to make changes to the Articles of Association that relate to the wording only. In accordance with Article 18 (1) of the Articles of Association of Deutsche Börse AG, resolutions of the Annual General Meeting are passed by a simple majority of the votes cast, unless otherwise required by AktG. Insofar as AktG additionally prescribes a majority of the share capital represented at the time of a resolution, a simple majority of the share capital represented is sufficient where this is legally permissible.

Subject to the approval of the Supervisory Board, the Executive Board is authorised to increase the share capital by up to a total of €19.0 million on one or more occasions in the period up to 18 May 2026 by issuing new no-par value registered shares in exchange for cash and/or non-cash contributions (authorised capital I). Shareholders must be granted pre-emptive rights. However, subject to approval by the Supervisory Board, the Executive Board may exclude shareholders' pre-emptive rights with respect to fractional amounts. However, according to the authorisation, the Executive Board may only exclude shareholders' pre-emptive rights if the total number of shares that are issued during the term of authorisation and that exclude shareholders' pre-emptive rights does not exceed 10 per cent of the share capital. Full authorisation, and particularly the conditions under which shareholders' pre-emptive rights can be excluded, is derived from Article 4 (3) of the Articles of Association of Deutsche Börse AG.

The Executive Board is also authorised to increase the share capital by up to a total of €19.0 million on one or more occasions in the period up to 18 May 2025, subject to the approval of the Supervisory Board, by issuing new no-par value registered shares against cash and/or non-cash contributions (authorised capital II). Shareholders must be granted pre-emptive rights, which the Executive Board can exclude in certain cases, subject to the approval of the Supervisory Board in each case. The Executive Board is authorised to exclude shareholders' pre-emptive rights: (1) in the case of cash capital increases, provided that the issue price of the new shares is not significantly lower than the quoted price, and the total number of shares issued under exclusion of shareholders' pre-emptive rights does not exceed 10 per cent of the share capital; (2) in the case of physical capital increases in exchange for non-cash contributions for the purpose of acquiring companies, parts of companies, interests in companies, or other assets; or (3) with respect to fractional amounts. However, according to the authorisation, the Executive Board may only exclude shareholders' pre-emptive rights if the total number of shares that are issued during the term of authorisation and that exclude shareholders' pre-emptive rights does not exceed 10 per cent of the share capital. The full authorisation, and particularly the conditions under which shareholders' pre-emptive rights can be excluded, is derived from Article 4 (4) of the Articles of Association of Deutsche Börse AG.

In addition, the Executive Board is authorised to increase the share capital by up to a total of €19.0 million on one or more occasions in the period up to 18 May 2024, subject to the approval of the Supervisory Board, by issuing new no-par value registered shares in exchange for cash contributions (authorised capital III). Shareholders must be granted pre-emptive rights, which the Executive Board can exclude, subject to the approval of the Supervisory Board, only for fractional amounts. However, according to the authorisation, the Executive Board may only exclude shareholders’ pre-emptive rights if the total number of shares that are issued during the term of authorisation and that exclude shareholders’ pre-emptive rights does not exceed 10 per cent of the share capital. The exact content of this authorisation is derived from Article 4 (5) of the Articles of Association of Deutsche Börse AG.

Furthermore, the Executive Board is authorised to increase the share capital by up to a total of €6.0 million on one or more occasions in the period up to 16 May 2022, subject to the approval of the Supervisory Board, by issuing new no-par value registered shares against cash and/or non-cash contributions (authorised capital IV). Shareholders must be granted pre-emptive rights unless the Executive Board makes use of the authorisation granted to it to exclude such rights, subject to the approval of the Supervisory Board. The Executive Board is authorised to exclude shareholders’ pre-emptive rights for fractional amounts with the approval of the Supervisory Board. However, according to the authorisation, the Executive Board may only exclude shareholders' pre-emptive rights if the total number of shares issued during the term of the authorisation, excluding pre-emptive rights, does not exceed 20 per cent of the share capital. The full authorisation is derived from Article 4 (6) of the Articles of Association of Deutsche Börse AG.

The Executive Board is authorised to purchase treasury shares up to 10 per cent of the share capital. However, the acquired shares, together with any treasury shares acquired for other reasons that are held by the company or attributed to it in accordance with sections 71a et seq. AktG, may at no time exceed 10 per cent of the company’s share capital. The authorisation to acquire treasury shares is valid until 7 May 2024 and may be exercised by the company in full or in part on one or more occasions. However, it may also be exercised by dependent companies, by companies in which Deutsche Börse AG holds a majority interest or by third parties on its or their behalf. The Executive Board may elect to acquire the shares (1) on the stock exchange, (2) via a public tender offer addressed to all shareholders or via a public request for offers of sale addressed to the company’s shareholders, (3) by issuing tender rights to shareholders or (4) using derivatives (put options, call options, forward purchases or a combination of put options, call options and forward purchases). The full and exact wording of the authorisation to acquire treasury shares, and particularly the permissible uses to which the shares may be put, can be found in items 6 and 7 of the agenda for the Annual General Meeting held on 8 May 2019.

The following material agreements of the Company are subject to a change-of-control clause following a takeover bid:

- On 28 March 2017, Deutsche Börse AG and its subsidiary Clearstream Banking S.A. entered into a multicurrency revolving facility agreement with a banking syndicate for a working capital credit totalling up to €750.0 million. If there is a change of control, the credit relationship between Deutsche Börse AG and the lenders can be reviewed in negotiations within a period of no more than 60 days. In this process, each lender has the right, at its own discretion, to terminate its credit commitment and demand partial or full repayment of the amounts owing to it. A change of control occurs if Deutsche Börse AG no longer directly or indirectly holds the majority of Clearstream Banking S.A. or if a person or a group of persons acting in concert acquires more than 50 per cent of the voting shares of Deutsche Börse AG.
- Under the terms of Deutsche Börse AG's €600.0 million fixed-rate bond issue 2020/2047 (hybrid bond), Deutsche Börse AG has a termination right in the event of a change of control (as defined in the terms of the bond), which, if exercised, entitles Deutsche Börse AG to redeem the bonds at par, plus accrued interest. If Deutsche Börse AG does not exercise this termination right, the affected bonds' coupon will increase by an additional 500 basis points per annum. A change of control occurs if a person or a group of persons acting in concert, or third parties acting on their behalf, has or have acquired more than 50 per cent of the shares of Deutsche Börse AG or the number of Deutsche Börse AG shares required to exercise more than 50 per cent of the voting rights at Annual General Meetings of Deutsche Börse AG. In addition, the relevant bond terms require that the change of control must adversely affect the long-term rating given to Deutsche Börse AG by Moody's Investors Services, Inc., S&P Global Ratings or Fitch Ratings Limited. Further details can be found in the applicable bond terms.
- According to the terms of Deutsche Börse AG's €600.0 million fixed-rate bond issue 2012/2022, the terms of Deutsche Börse AG's €500.0 million fixed-rate bond issue 2015/2025, the terms of Deutsche Börse AG's €600.0 million fixed-rate bond issue 2018/2028, the terms of Deutsche Börse AG's €500.0 million fixed-rate bond issue 2021/2026, and the terms of Deutsche Börse AG's €500.0 million fixed-rate bond issue 2021/2031, the holders of the respective bonds have a termination right in the event of a change of control (as defined in the terms of the respective bond). If these termination rights are exercised, the bonds are repayable at par plus any accrued interest. A change of control occurs if a person or a group of persons acting in concert, or third parties acting on their behalf, has or have acquired more than 50 per cent of the shares of Deutsche Börse AG or the number of Deutsche Börse AG shares required to exercise more than 50 per cent of the voting rights at Annual General Meetings of Deutsche Börse AG. In addition, the respective bond terms require that the change of control must adversely affect the rating given to one of the preferential unsecured debt instruments of Deutsche Börse AG by Moody's Investors Services, Inc., S&P Global Ratings or Fitch Ratings Limited. Further details can be found in the applicable bond terms.

Frankfurt/Main, 28 February 2022
Deutsche Börse AG

Theodor Weimer | Christoph Böhm | Thomas Book

Heike Eckert | Stephan Leithner | Gregor Pottmeyer

Deutsche Börse Group

Consolidated financial statemnets and notes

as at 31 December 2021

Consolidated income statement

for the period 1 January to 31 December 2021

	Note	2021 €m	2020 €m
Sales revenue	4	4,218.8	3,519.3
Treasury result from banking and similar business	4	142.7	196.6
Other operating income	4	85.1	40.5
Total revenue		**4,446.6**	**3,756.4**
Volume-related costs	4	– 937.1	– 542.6
Net revenue (total revenue less volume-related costs)		**3,509.5**	**3,213.8**
Staff costs	5	– 1,002.1	– 822.9
Other operating expenses	6	– 549.5	– 545.8
Operating costs		**– 1,551.6**	**– 1,368.7**
Result from financial investments	7	85.2	24.3
Result of the equity method measurement of associates		38.6	21.5
Other result		46.6	2.8
Earnings before interest, tax, depreciation, and amortisation (EBITDA)		**2,043.1**	**1,869.4**
Depreciation, amortisation and impairment losses	10	– 293.7	– 264.3
Earnings before interest and tax (EBIT)		**1,749.4**	**1,605.1**
Financial income	8	32.9	26.0
Financial expense	8	– 73.0	– 102.9
Earnings before tax (EBT)		**1,709.3**	**1,528.2**
Tax expense	9	– 444.4	– 403.1
Net profit for the period		**1,264.9**	**1,125.1**
thereof attributable to Deutsche Börse AG shareholders		1,209.7	1,079.9
thereof attributable to non-controlling interests		55.2	45.2
Earnings per share (basic) (€)	**22**	**6.59**	**5.89**
Earnings per share (diluted) (€)	**22**	**6.58**	**5.89**

Consolidated statement of comprehensive income

for the period 1 January to 31 December 2021

	Note	2021 €m	2020 €m
Net profit for the period reported in consolidated income statement		**1,264.9**	**1,125.1**
Items that will not be reclassified to profit or loss:			
Changes from defined benefit obligations		61.0	– 25.2
Equity investments measured at fair value through OCI		52.2	25.7
Other		– 4.8	– 0.4
Deferred taxes	15	– 29.1	– 0.4
		79.3	**– 0.3**
Items that may be reclassified subsequently to profit or loss:			
Exchange rate differences	15	269.0	– 106.2
Other comprehensive income from investments using the equity method		– 0.3	– 0.4
Remeasurement of cash flow hedges		52.7	– 40.3
Deferred taxes	15	– 3.4	0.1
		318.0	**– 146.8**
Other comprehensive income after tax		**397.3**	**– 147.1**
Total comprehensive income		**1,662.2**	**978.0**
thereof attributable to Deutsche Börse AG shareholders		1,570.3	950.4
thereof attributable to non-controlling interests		91.9	27.6

Consolidated balance sheet

as at 31 December 2021

Assets

	Note	31 Dec 2021 €m	31 Dec 2020 €m
NON-CURRENT ASSETS		**20,462.4**	**14,570.5**[1]
Intangible assets	**10**	**8,162.9**	**5,723.2**
Software		553.2	383.8
Goodwill		5,596.0	3,957.6
Payments on account and assets under development		100.1	126.3
Other intangible assets		1,913.6	1,255.4
Property, plant and equipment	**11**	**593.7**	**530.4**
Land and buildings		438.0	369.2
Fixtures and fittings		57.0	52.4
Computer hardware, operating and office equipment		90.1	101.7
Payments on account and construction in progress		8.5	7.0
Financial assets	**12**	**11,460.4**	**8,059.8**
Equity investments measured at FVOCI			
Strategic investments		224.3	107.0
Debt instruments		2.8	4.4
Debt financial assets measured at amortised cost		1,634.7	997.5
Financial assets at FVPL			
Financial instruments held by central counterparties		9,442.4	6,908.5[1]
Other financial debt assets at FVPL		156.2	42.4
Investment in associates		88.9	89.5
Other non-current assets		16.8	6.0
Deferred tax assets	9	139.8	161.7
CURRENT ASSETS		**202,457.0**	**138,107.4**[1]
Debt financial assets measured at FVOCI	12	1.5	0.5
Debt financial assets measured at amortised cost	12		
Trade receivables		969.4	616.6
Other financial assets at amortised cost		15,799.6	16,225.1
Restricted bank balances		78,542.0	38,420.1
Other cash and bank balances		1,029.6	1,467.3
Financial assets at FVPL	12		
Financial instruments held by central counterparties		103,195.7	80,704.5[1]
Other financial assets at FVPL		116.0	15.8
Income tax assets	9	115.5	109.5
Other current assets	14	2,675.6	548.1
Assets held for sale	2	11.9	0
Total assets		**222,919.3**	**152,677.9**[1]

1) Due to a correction of the previous year's figures, non-current assets decreased by €26.2 million and current assets by €63.6 million. Current and non-current liabilities decreased correspondingly.

Equity and liabilities

	Note	31 Dec 2021 €m	31 Dec 2020 €m
EQUITY	15		
Subscribed capital		190.0	190.0
Share premium		1,359.6	1,352.4
Treasury shares		– 458.2	– 465.2
Revaluation surplus		– 61.7	– 196.3
Retained earnings		6,163.8	5,287.4
Shareholders' equity		**7,193.6**	**6,168.3**
Non-controlling interests		548.8	387.8
Total equity		**7,742.4**	**6,556.1**
NON-CURRENT LIABILITIES		13,623.0	11,005.2[1]
Provisions for pensions and other employee benefits	17, 18	149.0	222.4
Other non-current provisions	18, 19	127.2	168.0
Financial liabilities measured at amortised cost	12	3,539.9	3,474.4
Financial liabilities at FVPL	12		
Financial instruments held by central counterparties		9,442.4	6,908.5[1]
Other financial liabilities at FVPL		8.4	1.5
Other non-current liabilities	20	17.5	13.9
Deferred tax liabilities	9	338.5	216.7
CURRENT LIABILITIES		201,554.0	135,116.6[1]
Income tax liabilities		244.6	267.1
Other current provisions	19	335.3	313.7
Financial liabilities at amortised cost	12		
Trade payables		704.4	388.6
Other financial liabilities at amortised cost		15,914.3	14,630.0
Cash deposits by market participants		78,292.5	38,188.8
Financial liabilities at FVPL	12		
Financial instruments held by central counterparties		103,267.7	80,609.5[1]
Other financial liabilities at FVPL		4.7	174.1
Other current liabilities	20	2,788.6	544.7
Liabilities held for sale	2	1.9	0
Total liabilities		**215,177.0**	**146,121.8[1]**
Total equity and liabilities		**222,919.3**	**152,677.9[1]**

1) Due to a correction of the previous year's figures, non-current assets decreased by € 26.2 million and current assets by € 63.6 million. Current and non-current liabilities decreased correspondingly.

Consolidated cash flow statement

for the period 1 January to 31 December 2021

	Note	2021 €m	2020 €m
Net profit for the period		1,264.9	1,125.1
Depreciation, amortisation and impairment losses	10, 11	293.7	264.3
(Decrease)/increase in non-current provisions		– 53.1	– 61.8
Deferred tax income	9	– 0.1	– 11.9
Cash flows from derivatives		– 6.4	0
Other non-cash income		– 163.6	143.6
Changes in working capital, net of non-cash items:		– 154.4	82.8
Decrease/(increase) in receivables and other assets		– 358.2	– 78.6
Increase/(decrease) in current liabilities		206.6	163.5
Increase in non-current liabilities		– 2.8	– 2.1
Net loss on disposal of non-current assets		0.3	– 19.0
Cash flows from operating activities excluding CCP positions		**1,181.4**	**1,523.0**
Changes in liabilities from CCP positions		– 2,552.8	– 832.8
Changes in receivables from CCP positions		2,280.3	721.8
Cash flows from operating activities	**21**	**908.9**	**1,412.0**
Payments to acquire intangible assets		– 168.6	– 134.3
Payments to acquire property, plant and equipment		– 37.8	– 61.2
Payments to acquire non-current financial instruments		– 1,359.3	– 601.2
Payments to acquire investments in associates		– 12.0	– 26.4
Payments to acquire subsidiaries, net of cash acquired		– 1,843.0	– 448.5
Effects of the disposal of (shares in) subsidiaries, net of cash disposed		0	20.2
(Net increase)/net decrease in current receivables and securities from banking business with an original term greater than three months		506.0	– 341.5
Net increase/(net decrease) in current liabilities from banking business with an original term greater than three months		229.3	177.4
Proceeds from disposals of non-current financial instruments		516.5	625.3
Proceeds from disposals of intangible assets		0.9	2.5
Cash flows from investing activities	**21**	**– 2,168.0**	**– 787.7**
Proceeds from sale of treasury shares		8.7	9.1
Payments to non-controlling interests		– 40.9	– 26.6
Proceeds from long-term financing		999.1	945.5
Repayment of long-term financing		– 356.0	– 602.9
Repayment of short-term financing		– 1,900.0	0
Proceeds from short-term financing		2,701.0	0
Finance lease payments		– 62.6	– 47.4
Dividends paid	16	– 550.6	– 531.9
Cash flows from financing activities	**21**	**798.7**	**– 254.2**
Net change in cash and cash equivalents		**– 460.5**	**370.0**

	Notes	2021 €m	2020 €m
Net change in cash and cash equivalents (brought forward)		**– 460.5**	**370.0**
Effect of exchange rate differences		– 6.3	– 8.9
Cash and cash equivalents at beginning of period		2,506.7	2,145.5
Cash and cash equivalents at end of period	21	**2,040.0**	**2,506.7**
Interest-similar income received		441.2	526.1
Dividends received		10.2	5.4
Interest paid		– 340.9	– 352.4
Income tax paid		– 470.7	– 381.8

Consolidated statement of changes in equity

for the period 1 January to 31 December 2021

	Attributable to Deutsche Börse AG shareholders							
	Subscribed capital €m	Share premium €m	Treasury shares €m	Revaluation surplus €m	Retained earnings €m	Shareholders' equity €m	Non-controlling interests €m	Total equity €m
Balance as at 1 January 2020	**190.0**	**1,344.7**	**– 471.8**	**– 155.8[1]**	**4,828.2[1]**	**5,735.3**	**375.3**	**6,110.6**
Net profit for the period	–	–	–	–	1,079.9	1,079.9	45.2	1,125.1
Other comprehensive income after tax	–	–	–	– 40.5	– 89.0	– 129.5	– 17.6	– 147.2
Total comprehensive income	**–**	**–**	**–**	**– 40.5**	**990.9**	**950.4**	**27.6**	**978.0**
Other adjustments	–	–	–	–	0.2	0.2	– 0.2	0.0
Sales under the Group Share Plan	–	7.7	6.6	–	–	14.3	–	14.3
Changes from business combinations	–	–	–	–	–	–	11.7	11.7
Dividends paid	–	–	–	–	– 531.9	– 531.9	– 26.6	– 558.5
Transactions with shareholders	**–**	**7.7**	**6.6**	**–**	**– 531.7**	**– 517.4**	**– 15.1**	**– 532.5**
Balance as at 31 December 2020	**190.0**	**1,352.4**	**– 465.2**	**– 196.3[1]**	**5,287.4[1]**	**6,168.3**	**387.8**	**6,556.1**
Balance as at 1 January 2021	**190.0**	**1,352.4**	**– 465.2**	**– 196.3[1]**	**5,287.4[1]**	**6,168.3**	**387.8**	**6,556.1**
Profit for the period	–	–	–	–	1,209.7	1,209.7	55.2	1,264.9
Other comprehensive income	–	–	–	133.3	227.3	360.6	36.7	397.3
Total comprehensive income	**–**	**–**	**–**	**133.3**	**1,437.0**	**1,570.3**	**91.9**	**1,662.2**
Other adjustments	–	–	–	–	1.2	1.2	0.1	1.2
Sales under the Group Share Plan	–	7.2	7.0	–	–	14.2	–	14.2
Increase in share-based payments	–	–	–	1.3	–	1.3	–	1.3
Changes due to capital increases/decreases	–	–	–	–	–	–	0.4	0.4
Changes from business combinations	–	–	–	–	– 11.1	– 11.1	98.9	87.8
Dividends paid	–	–	–	–	– 550.6	– 550.6	– 30.3	– 580.9
Transactions with shareholders	**–**	**7.2**	**7.0**	**1.3**	**– 560.6**	**– 545.0**	**69.1**	**– 476.0**
Balance as at 31 December 2021	**190.0**	**1,359.6**	**– 458.2**	**– 61.7**	**6,163.8**	**7,193.6**	**548.8**	**7,742.4**

1) Adjustment of revaluation reserve and retained earnings see Note 15.

Notes to the consolidated financial statements

Basis of preparation

1. General principles

Company information

Deutsche Börse AG is the parent company of Deutsche Börse Group. Deutsche Börse AG (the "company") has its registered office in Frankfurt/Main, Germany, and is registered in the commercial register B of the Frankfurt/Main Local Court (Amtsgericht Frankfurt am Main) under HRB 32232. Deutsche Börse AG and its subsidiaries operate cash and derivatives markets. Its business areas range from pre-IPO and growth financing services, the admission of securities to listing, through trading, clearing and settlement, down to custody of securities. Furthermore, IT services are provided and market information distributed. Moreover, Deutsche Börse AG has a stock exchange licence and certain subsidiaries of Deutsche Börse AG have a banking licence and offer banking services to customers. Eurex Clearing AG is a central counterparty, a bank and its role is to mitigate performance risks for buyers and sellers. For details regarding internal organisation and reporting, see Fundamental information about the Group in the combined management report.

Basis of reporting

The 2021 consolidated financial statements have been prepared in compliance with the International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board (IASB) and the related interpretations issued by the International Financial Reporting Interpretations Committee (IFRIC), as adopted by the European Union in accordance with Regulation No. 1606/2002 of the European Parliament and of the Council on the application of international accounting standards.

The disclosures required in accordance with Handelsgesetzbuch (HGB, German Commercial Code) section 315e (1) have been presented in the notes to the consolidated financial statements.

The consolidated income statement is structured using the nature of expense method.

Deutsche Börse AG's consolidated financial statements have been prepared in euros, the functional currency of Deutsche Börse AG. Unless stated otherwise, all amounts are shown in millions of euros (€m). Due to rounding, actual amounts may differ from unrounded or disclosed figures.

Information about capital management, which is also part of these consolidated financial statements, is included in the chapter Regulatory capital requirements and regulatory capital ratios in section Risk management in the combined management report.

All accounting policies, estimates, measurement uncertainties, and discretionary judgements referring to a specific subject matter are described in the corresponding note. Such disclosures are focused on applicable accounting options under IFRSs. Deutsche Börse Group does not present the underlying published IFRS guidelines, unless this is considered crucial to enhance transparency. The annual financial statements of subsidiaries included in the consolidated financial statements have been prepared on the basis of the Group-wide accounting policies based on IFRS that are described in the following. They were applied consistently to the periods shown.

Assets and liabilities, items in the consolidated statement of comprehensive income, and disclosure requirements are listed separately if they are material. We define as material a proportion of around 10 per cent of the relevant total.

New accounting standards – implemented in the year under review

All the mandatory standards and interpretations endorsed by the European Commission were applied by us in the reporting year 2021. They were not applied earlier than required.

Standard/amendment/interpretation

		Application date	Effects on Deutsche Börse Group
IFRS 4	Amendments to IFRS 4: Insurance Contracts	1 Jan 2021	none
IFRS 9, IAS 39, IFRS 7 and others	IBOR Reform 2: Amendment of IFRS 9, IAS 39, IFRS 7 and other standards	1 Jan 2021	none
IFRS 16	Amendments due to COVID-19-related lease concessions beyond 30 June 2021	1 Apr 2021	None

New accounting standards – not yet implemented

The IASB issued the following new or amended standards and interpretations, which were not applied in the consolidated financial statements, because endorsement by the EU was still pending or the application was not mandatory. The new or amended standards and interpretations must be applied for financial years beginning on or after the effective date. Even though early application may be permitted for some standards, Deutsche Börse Group does usually not use any early application options.

Standard/amendment/interpretation

		Application date	Effects on Deutsche Börse Group
IAS 1	Amendments in classifcation of liabilities as current or non-current	1 Jan 2023	See notes under this table
IAS 1	Amendment to IAS 1 and IFRS Guidance Document 2 on Materiality	1 Jan 2023	See notes under this table
IFRS 3	Amendments to IFRS 3 relating to a reference in the Conceptual Framework	1 Jan 2022	None
IAS 8	Amendments relating to accounting estimates	1 Jan 2023	None
IAS 12	Amendments in relation to deferred taxes that relate to assets and liabilities arising from a single transaction	1 Jan 2023	See notes under this table
IAS 16	Amendments to IAS 16: Clarifications	1 Jan 2022	None
IFRS 17	Insurance Contracts	1 Jan 2023	See notes under this table
IFRS 17, IFRS 9	First-time Adoption of IFRS 17 and IFRS 9 – Comparative Information	1 Jan 2023	None
IAS 37	Amendments to IAS 37 include the definition of what costs an entity includes when assessing whether a contract will be loss-making	1 Jan 2022	None
Annual Improvement Cycle 2018–2020	The annual improvements resulted in amendments to IFRS 1, IFRS 9, IAS 41 and IFRS 16	1 Jan 2022	None

Amendment to IAS 1 “Classification of liabilities as current or non-current”
The amendments only relate to the presentation of liabilities in the statement of financial position – not the amount or the timing of recognition of assets, liabilities, income and expenses or disclosure made by entities about these items. The amendments clarify that liabilities must be classified as current or non-current on the basis of the rights that are in existence at the reporting date. We are currently analysing the potential impact of the amendments on the presentation of the consolidated financial statements.

The amendment to IAS 1 and IFRS guidance document 2 on materiality
The amendment to IAS 1 supplements guidelines for determining disclosures on accounting methods in an entity’s financial statements and explains how an entity can identify material accounting policies. We are currently analysing potential additions to the disclosures in the notes.

The amendments to deferred tax related to assets and liabilities arising from a single transaction
The amendment to IAS 12 clarifies that the exemption from recognising deferred taxes on the initial recognition of an asset or liability outside a business combination does not apply to transactions in which equal amounts of deductible and taxable temporary differences arise on initial recognition. This amendment generally matches our approach. Potential effects on the financial performance and financial position of the Group are being analysed, however.

IFRS 17 "Insurance Contracts"
IFRS 17 establishes the principles for the recognition, measurement, presentation and disclosure of insurance contracts. The objective of IFRS 17 is to ensure that an entity provides information to consistently represent insurance contracts. According to the standard, insurance liabilities shall be measured at the current fulfilment cash flows instead of historical costs. Furthermore, the objective is to form a uniform basis regarding the recognition, measurement and presentation of insurance contracts, including the notes. The effective date was deferred. The standard is now applicable in the EU for financial years beginning on or after 1 January 2023. The standard was endorsed by the EU on 23 November 2021. On the basis of our analysis we are not expecting any effect on the financial position and financial performance

2. Consolidation principles

Intra-Group assets and liabilities are eliminated. Income arising from intra-Group transactions is netted against the corresponding expenses. Intercompany profits or losses arising from deliveries of intra-Group goods and services, as well as dividends distributed within the Group are eliminated. Deferred taxes for consolidation adjustments are recognised where these are expected to reverse in subsequent years.

Interests in equity attributable to non-controlling shareholders are presented under "non-controlling interests" within equity. Where these are classified as "puttable instruments", they are reported under "liabilities" at cost.

Currency translation

Transactions denominated in a currency other than a company's functional currency are translated into the functional currency at the spot exchange rate applicable at the transaction date. Monetary balance sheet items in foreign currencies are measured at the exchange rate on the reporting date. Non-monetary balance sheet items recognised at historical cost are measured at the exchange rate on the transaction date. By contrast, non-monetary balance sheet items measured at fair value are translated at the exchange rate prevailing at the valuation date. Exchange rate differences for monetary balance sheet items are recognised either as other operating income or expenses or as the treasury result from banking and similar business or as net income from financial investments in the period in which they arise, unless the underlying transactions are hedged. In the case of equity instruments designated at FVOCI, the exchange rate differences are recognised in other comprehensive income. Exchange rate differences for non-monetary balance sheet items at fair value are recognised in other comprehensive income. Gains and losses from a monetary item that forms part of a net investment in a foreign operation are recognised directly in "retained earnings".

Balance sheet items of entities whose functional currency is not the euro are translated into the reporting currency as follows: assets and liabilities are translated into euro at the spot rate and equity items at historical rates. Resulting exchange differences are recognised directly in “retained earnings”. When the relevant subsidiary is sold, these exchange rate differences are recognised in the net profit for the period in which the deconsolidation gain or loss is realised.

The following euro exchange rates of consequence to Deutsche Börse Group were applied:

Exchange rates

		Average rate 2021	Average rate 2020	Closing price as at 31 Dec 2021	Closing price as at 31 Dec 2020
Swiss franc	CHF (Fr.)	1.0800	1.0713	1.0337	1.0832
US dollars	USD (US$)	1.1821	1.1477	1.1317	1.2299
Czech koruna	CZK (Kč)	25.6569	26.5249	24.8605	26.2698
Singapore dollar	SGD (S$)	1.5871	1.5791	1.5277	1.6254
British pound	GBP (£)	0.8589	0.8908	0.8371	0.8999

Any goodwill arising on the acquisition of a foreign operation and any fair value adjustments to the carrying amounts of assets and liabilities arising from initial consolidation are reported in the functional currency of the foreign operation and translated at the closing rate.

Net investments in a foreign operation

Translation differences from a monetary item that is part of a net investment of Deutsche Börse Group in a foreign operation are initially recognised in other comprehensive income and reclassified to profit or loss when the net investment is sold.

Subsidiaries and business combinations

Deutsche Börse AG and all subsidiaries directly or indirectly controlled by Deutsche Börse AG are included in the consolidated financial statements. Deutsche Börse AG controls a company if it is exposed to variable returns resulting from its involvement with the company in question or has rights to such returns and is able to influence them by using its power over the company.

Initial consolidation of subsidiaries in the course of business combinations uses the purchase method. The acquiree's identifiable assets, liabilities and contingent liabilities are recognised at their acquisition date fair values. Any excess of cost over the acquirer's interest in the fair value of the subsidiary's net identifiable assets is recognised as goodwill. Goodwill is reported in subsequent periods at cost less accumulated impairment losses. Non-controlling interests are measured at their relevant interest of the acquiree's net identifiable assets at acquisition date.

Deutsche Börse AG's equity interests in subsidiaries and associates included in the consolidated financial statements as at 31 December 2021 are presented in the list of shareholdings in note 34.

Essential acquisitions

Acquisition of Institutional Shareholder Services Inc., Rockville, USA (ISS)
In the first quarter 2021, Deutsche Börse AG completed the acquisition of 81.2 per cent of the shares in ISS for a price of €1,653.3 million (USD 1,978.9 million), thereby assuming control. The business operations of ISS and the Group are a perfect fit. Together the two companies will meet the steadily growing demand for detailed data, research solutions and analysis of non-financial information, particularly relating to ESG criteria. ISS is included in the segment reporting as a separate operating segment as of the closing date of the transaction on 25 February 2021.

Initial recognition of ISS, a provider of governance solutions, ESG data and analytics, in the consolidated financial statements took place using the purchase method. Significant synergies are expected from the transaction, particularly revenue synergies, which is reflected in the goodwill resulting from the transaction.

The identifiable assets and liabilities of ISS are recognised at fair value on the acquisition date. Any excess of cost over the acquirer's interest in the fair value of the subsidiary's net identifiable assets is recognised as goodwill. Goodwill is reported in subsequent periods at cost less accumulated impairment losses.

The preliminary purchase price allocation as at the acquisition date was as follows:

Goodwill resulting from the business combination with Institutional Shareholder Services Inc., Rockville, USA (ISS)

	Preliminary goodwill calculation 25 Feb 2021 €m
Consideration transferred	
Purchase price in cash	903.4
Settlement of option programmes	66.8
Payment to escrow account[1]	22.9
Transaction costs for seller[2]	25.9
Debt repayment	584.5
Contingent purchase price components at fair value	26.5
Sponsor call right[3]	– 8.7
Cash flow hedge[4]	32.0
Total consideration	**1,653.3**
Acquired assets and liabilities	
Customer relationships	476.9
Trade names	107.6
Software	30.2
Software in development	2.2
Property, plant and equipment	89.9
Other non-current assets	5.4
Deferred tax assets	1.6
Other current assets	9.1
Trade receivables	35.5
Acquired bank balances	200.1
Deferred tax liabilities	– 83.3
Other non-current liabilities	– 69.5
Contract liabilities	– 103.8
Other current liabilities	– 226.4
Non-controlling interests[5]	– 67.0
Total assets and liabilities acquired	**408.5**
Goodwill (not tax-deductible)	**1,244.8**

1) Purchase price payments to an escrow account until final settlement
2) Original costs of seller
3) A call right was purchased for €8.7 million that is recognised as a financial instrument in accordance with IFRS 9 rather than in accordance with IFRS 3.
4) Reclassification of effective portion of cash flow hedge for the purchase price to acquisition cost of the investment
5) The non-controlling interests are calculated on the basis of the acquired net assets, excluding goodwill.

The full consolidation of ISS resulted in an increase in net revenues of €222.4 million as well as in an increase in profit after tax of €15.7 million. If the company had been fully consolidated as at 1 January 2021, this would have resulted in an increase in net revenues of €257.7 million as well as in an increase in profit after tax of €18.0 million.

The contingent purchase price component is based on an increase in company value within the first three years and the resulting obligation has no upper limit. It is classified as a financial liability in accordance with IFRS 9.

Goodwill amounts to €1,340.1 million as at 31 December 2021. The change compared to the acquisition date results from exchange rate differences amounting to €95.3 million.

The purchase price allocation was based on a preliminary basis, as it was not yet possible to make a final determination, particularly with regards to taxes.

Acquisition of the 2nd tranche of Clearstream Fund Centre AG, Zurich, Switzerland (CFC)
On 1 June 2021 Deutsche Börse AG completed the acquisition of the remaining 48.8 per cent of the CHF shares in CFC (formerly Fondcenter AG) from UBS Group (UBS) for a purchase price of CHF 390 million (€356 million). A further 51.2 per cent of the shares in CFC were sold within the Group by Clearstream Holding AG to Deutsche Börse AG, making it the sole owner of the Zurich-based fund distribution platform. Deutsche Börse Group acquired the first 51.2 per cent of CFC from UBS in September 2020. The transaction included the right to buy the remaining shares at a later date. Deutsche Börse Group had recognised the related financial liability before acquiring the 2nd tranche, accounting for it at the expected settlement amount using the effective interest method (in the category "financial liabilities measured at amortised cost"). No non-controlling interests were recognised, in accordance with the anticipated acquisition method. The remeasurement of the financial liability on the basis of the agreed purchase price resulted in income of €39.9 million, which is shown in the item "Other operating income".

Acquisition of Crypto Finance AG., Zurich, Switzerland
Deutsche Börse AG completed the acquisition of 57.5 per cent of the shares in Crypto Finance AG for a price of €77.3 million (CHF 87.4 million) on 15 December 2021, thereby assuming control. In the course of a capital increase against cash, Deutsche Börse AG increased its capital share to 67.5 per cent. The business operations of Crypto Finance and the Group are a perfect fit. With this acquisition Deutsche Börse has a direct entry point for investments in digital assets, including post-trading and custody services. Crypto Finance was allocated to the Xetra segment (cash market) when the transaction was concluded.

Crypto Finance, a FINMA-regulated provider of trading, custody and investment services for digital assets, was included in the consolidated financial statements for the first time using the purchase method. Significant synergies are expected from the transaction, particularly revenue synergies, which is reflected in the goodwill resulting from the transaction.

The identifiable assets and liabilities of Crypto Financ are recognised at fair value on the acquisition date. Any excess of cost over the acquirer's interest in the fair value of the subsidiary's net identifiable assets is recognised as goodwill. Goodwill is reported in subsequent periods at cost less accumulated impairment losses.

The preliminary purchase price allocation as at the acquisition date was as follows:

Goodwill resulting from the business combination with Crypto Finance AG, Zurich, Switzerland (Crypto Finance)

	Preliminary goodwill calculation 15 Dec 2021 €m
Consideration transferred	
Purchase price in cash	89.4
Call option[1]	– 5.7
Cash flow hedge[2]	– 6.5
Total consideration	**77.3**
Acquired assets and liabilities	
Customer relationships	16.0
Tradename	3.6
Software	4.4
Property, plant and equipment	0.2
Deferred tax assets	0.9
Acquired bank balances	23.5
Current assets	19.0
Non-current liabilities	– 2.2
Current liabilities	– 14.5
Deferred tax liabilities on temporary differences	– 3.0
Non-controlling interests[3]	– 20.8
Total assets and liabilities acquired	**27.1**
	0
Goodwill (not tax-deductible)	**50.2**

1) A call option in the amount of €5.7 million was acquired, which is accounted outside the scope of IFRS 3 as a financial instrument under IFRS 9.
2) Reclassification of the effective portion of the cash flow hedge of the purchase price to the cost of the investment
3) Non-controlling interests are calculated on the basis of the acquired net assets excluding goodwill.

The full consolidation of Crypto Finance resulted in an increase in net revenues of €1.6 million as well as in an increase in profit after tax of €0.1 million. If the company had been fully consolidated as at 1 January 2021, this would have resulted in an increase in net revenues of €18.3 million as well as in an increase of profit after tax of €2.2 million.

The purchase price allocation was based on a preliminary basis, as it was not yet possible to make a final determination, particularly with regards to taxes and the valuation of intangible assets.

Acquisition of Discovery Data Holdings Inc., New Jersey, USA (Discovery Data)
On 9 December 2021, Institutional Shareholder Services Inc. completed the acquisition of 100 per cent of the shares in Discovery Data Holdings, Inc. for a price of €201.4 million (USD 228.0 million), thereby assuming control. The business operations of Discovery Data and the Group are a perfect fit. Together the two companies will serve the growing demand for detailed data, research solutions and analytics. Discovery Data was allocated to the ISS segment when the transaction was concluded.

Discovery Data, a global provider of data solutions and analytics, was included in the consolidated financial statements using the purchase method. Significant synergies are expected from the transaction, particularly revenue synergies, which is reflected in the goodwill resulting from the transaction.

The identifiable assets and liabilities of Discovery Data are recognised at fair value on the acquisition date. Any excess of cost over the acquirer's interest in the fair value of the subsidiary's net identifiable assets is recognised as goodwill. Goodwill is reported in subsequent periods at cost less accumulated impairment losses.

The preliminary purchase price allocation as at the acquisition date was as follows:

Goodwill resulting from the business combination with Discovery Data Holdings Inc., New Jersey, USA (Discovery Data)

	Preliminary goodwill calculation 9 Dec 2021 €m
Consideration transferred	
Purchase price in cash	201.4
Total consideration	**201.4**
Acquired assets and liabilities	
Customer relationships	33.4
Trade names	2.8
Database	36.0
Software	8.7
Property, plant and equipment	0.6
Other non-current assets	0.1
Acquired bank balances	18.0
Other current assets (without cash)	3.7
Deferred tax liabilities	– 14.4
Other non-current and current liabilities	– 0.4
Contract liabilities	– 9.4
Other current liabilities	– 18.1
Total assets and liabilities acquired	**61.2**
Goodwill (not tax-deductible)	**140.2**

The consolidation of Discovery Data resulted in an increase in net revenues of €1.3 million as well as in a decrease in profit after tax of €– 0.3 million. If the company had been consolidated as at 1 January 2021, this would have resulted in an increase in net revenues of €18.6 million as well as in an decrease of profit after tax of €– 5.9 million.

The purchase price allocation was based on a preliminary basis, as it was not yet possible to make a final determination, particularly with regards to taxes and the valuation of intangible assets.

Disposals

Disposal Régis-T.R. S.A., Luxembourg, Luxembourg (REGIS-TR)

At the beginning of September 2021, Clearstream International S.A. signed a binding agreement on the sale of REGIS-TR S.A., Luxembourg, Luxembourg, and Clearstream Holding AG on the sale of REGIS-TR UK Ltd, London, United Kingdom, to the SIX Group. Both entities, assigned to the Clearstream segment, were therefore classified as disposal groups as of the same date. We expect the transaction to be closed in the first quarter of 2022.

The assets and liabilities of the disposal group are held at their carrying amount, which is lower than their fair value less costs to sell, and shown separately in the statement of financial position under the items “Assets held for sale” and “Liabilities held for sale”.

No impairment losses were recognised since the agreed sales price is higher than the carrying amount of the disposal group. From the date of reclassification, intangible assets and property, plant and equipment are no longer depreciated or amortised.

Assets and liabilities held for sale

	31.12.2021 €m
Intangible assets	11.7
Property, plant and equipment	0.2
Other non-current assets	0.0
Assets held for sale (total)	**11.9**
Provisions for pensions and other employee benefits	0.3
Financial liabilities	0.1
Deferred tax liabilities	1.4
Liabilities held for sale (total)	**1.9**

Associates

Investments in associates and joint ventures are measured at cost on initial recognition and accounted for using the equity method upon subsequent measurement. Where Deutsche Börse Group’s share of the voting rights in a company amounts to less than 20 per cent, our significant influence is exercised through the Group’s representation on the supervisory board or the board of directors.

3. Adjustments

Segment reporting
We modified our segment reporting in the first quarter of 2021, adding the segment Institutional Shareholder Services (ISS). The business operations of ISS are now reported in the new segment ISS. The separate reporting corresponds to the internal management and reporting structure and increases transparency as well as value of information for users of the financial statements.

Internally developed software
Deutsche Börse AG reviewed its amortisation period for internally developed software in the first quarter. The useful lives applied the previous year were five years for internally developed software releases and seven years for newly developed systems.

The review showed that the fundamental useful life for internally developed software releases is seven years and for newly developed systems ten years. We therefore decided to bring the amortisation period into line with the useful life of the assets. The change took place as of 1 January 2021. Amortisation in 2021 would have been €74.7 million instead of €42.1 million if the useful lives had not been modified.

Notes on the consolidated income statement

4. Net revenue

Recognition of income and expenses

Overall, Deutsche Börse Group's net revenue comprised the following items:

- Revenue,
- result of treasury activities in banking and similar business,
- other operating income and
- volume-related costs.

Revenue recognition
This section comprises details on revenue from contracts with customers. They particularly include performance obligations and methods of revenue recognition. Revenue is measured on the basis of the consideration agreed in a customer contract. The Group recognises revenue when it transfers control over goods or services to the customer. For information on contract assets and liabilities see Note 13. Revenue is recognised in Deutsche Börse Group's segments as follows:

Eurex (financial derivatives)
Revenue in the derivatives business (mainly equity, interest rate and share index derivatives) is generated primarily from fees that are charged for transactions with regard to the matching/registration, administration and regulation of order book and off-book transactions on Eurex Germany. Fees, as well as any reductions are specified in price lists and circulars. Rebates depend mainly on monthly volumes or the monthly fulfilment of liquidity provisioning obligations in certain products or product groups. Administration fees of financial derivatives are recognised over time as the service is provided until the transaction has been closed, terminated or has matured. Revenue for transactions in listed derivatives is recognised as soon as contracts are matched/registered and there is no unfulfilled obligation towards the customer. Receivables are recognised when the promised service is provided at a specific point in time or monthly based on the utilisation in the respective month and the claim to the consideration solely depends on the course of time. Transaction fees are invoiced on a monthly basis and are payable when invoiced. Since discounts are generally granted on a monthly basis, the recognition of a contractual liability is not necessary. Payments are generally debited directly from the clearing member immediately after invoicing.

Revenue is also generated with clearing and settlement services for over-the-counter (OTC) transactions. This mainly comes in the form of booking and management fees. Fees for these transactions and the related discounts are also specified in price lists and circulars of Eurex Clearing AG. In the case of OTC transactions, posting fees are recognised at novation on a monthly basis. These fees are recognised at a specific point in time; namely, when the promised service is transferred at a specific point in time and the entitlement to consideration depends solely on the passage of time. OTC administrative fees are recognised over time as the service is provided until the transaction has been closed, terminated or has matured. A receivable is recognised monthly based on the usage within the respective month, provided that the respective position is still open at month end. In general, the payments are directly debited from the clearing member.

In addition, infrastructure fees are charged for the technical connections to the trading and clearing systems of Deutsche Börse Group. The customer has use of the company's service and uses the service as it is performed over the life of the contract. As the smallest reporting period is the same as the contract term, the percentage of completion equals 100 per cent. The infrastructure revenue generated from this is usually realised monthly with invoicing.

Market participants subscribe to real-time trading and market signals or licence these services for their own use, processing or dissemination. The customer simultaneously receives and consumes the benefits provided by the entity's performance during the contract term. Customers report their usage, and fees are charged in the month after usage. Deutsche Börse Group puts together monthly estimates that are based on the trend of the preceding months. Revenue estimates are revised when warranted by the circumstances. Increases and decreases in estimated revenue are reflected in the consolidated income statement in the period in which the circumstances that give rise to the revision become known by the management. Revenue is recognised based on the price specified in the price list. Customers are invoiced on a monthly basis and consideration is payable when invoiced.

EEX (commodities)

Its product portfolio comprises contracts on power, natural gas and emission allowances, as well as freight rates and agricultural products. Revenue is generated primarily from fees that are charged for exchange trading and clearing of commodity products. Transaction fees are specified in the price list. Rebates are granted primarily in the form of monthly rebates for the provision of a certain volume or level of liquidity. These types of rebates are dependent upon the total monthly volume or the monthly fulfilment of certain liquidity provision obligations. Revenue is recognised as soon as contracts are matched/registered and there is no unfulfilled obligation towards the customer as the service has already been performed by this point in time. EEX recognises receivables when the promised service is provided at a certain time and the entitlement to consideration depends solely on the passage of time. Most of the invoiced amounts are debited directly from the clearing members. Infrastructure fees and Market Data Services are accounted for in the same way as described in the section "Eurex (financial derivatives)".

360T (foreign exchange)

360T is a provider of optimised services covering the entire trading process of foreign-exchange products and generates commission income from trading fees. In addition, 360T generates other fees in the form of access fees to use the trading platform, installation fees from the onboarding of customers on its trading platform, as well as user set-up fees and fees for the programming and maintenance of necessary interfaces. Revenue is recognised when the contractually agreed service is provided to the customer. Revenue from the use of the platform and maintenance fees are recognised on a pro-rata basis. Access fees, transaction fees, as well as trading platform fees, contain different discount schedules on a monthly basis. Such discounts are considered accordingly in the month in which the services are rendered and reduce the sales revenue of such period. They are invoiced on a monthly basis. Maintenance fees are invoiced on an annual basis.

Xetra (securities trading)

As a general rule, securities intended for trading on the regulated market of Frankfurter Wertpapierbörse (FWB, the Frankfurt Stock Exchange) are subject to the admission and listing or inclusion, resolved by FWB's Management. Deutsche Börse AG, as the operator of the public-sector exchange, charges fees for the admission, listing, inclusion and quotation of securities on the regulated market. Fees charged for the admission and inclusion of securities with definite maturities on the regulated market are realised using the projected useful lives of the underlying securities. Accordingly, the fees charged for the listing of securities on the regulated unofficial market are realised using the projected useful lives of the underlying securities. The method for measuring the percentage of completion of the performance obligation on the basis of projected useful lives is considered appropriate within the meaning of IFRS 15. Invoicing is made on a quarterly basis and receivables are payable upon receipt of invoice.

Listing fees are levied for the activity of all bodies of FWB, which supervise the trading and the settlement of trades as well as ensure the proper functioning of all trading activities (permanent possibility to make use of exchange facilities). Listing fees are recurring fees, which are charged for a service that is delivered over time. Accordingly, revenue is realised on a pro-rata basis. Revenue from fees for listings on the regulated unofficial market is realised in a similar manner. This revenue is presented under "Listing revenue".

Contracts for trading and clearing cash market products, contracts for trading data and market signals and contracts for infrastructure services in the Xetra (securities trading) segment are accounted for in the same way as described in the section Eurex (financial derivatives).

Clearstream (post-trading)

Clearstream provides post-trading infrastructure and services; it offers transaction settlement services as well as administration and custody of securities. The fees are calculated in accordance with the prices set in the price list as well as with any relevant discounts granted. In accordance with the general terms and conditions, the customer authorises direct debiting and consequently no financing component has been identified. Customers in the custody business receive the benefit from the service provided and consume it at the same time as the performance is fulfilled during the contract period. The revenue generated from this is generally realised on a monthly basis upon invoicing.

Fees collected for the administration of securities, for corporate events for securities and for settlement services are recognised when the agreed service is provided to the customer. This occurs when instructions are received and the transactions are processed. The service has been fulfilled at this point in time. Receivables are recognised if the agreed service is rendered at a specific point in time and the claim to the consideration solely depends on the course of time. Since discounts are generally granted on a monthly basis, the recognition of a contractual liability is not necessary. Customers are invoiced on a monthly basis and consideration is payable when invoiced.

Via Clearstream, we offer a wide range of global securities financing (GSF) services. These include collateral management and securities lending services. Customers of collateral management services simultaneously receive and consume the benefits with the company's performance of the service. Revenue is recognised over time concurrent with the provision of collateral management services. Services in the securities lending business, on the other hand, are provided at a specific point in time.

In addition, infrastructure fees are charged for the technical connections to our custody and clearing systems. They are accounted for in the same way as described in the section "Eurex (financial derivatives)".

IFS (Investment Fund Services)

The segment provides services to standardise fund processing and to increase efficiency and safety in the investment fund sector. The services offered comprise order routing, settlement and asset administration, as well as custody services. By acquiring Clearstream Fund Centre AG, IFS has expanded its range of services related to the distribution and placement of collective investment funds in Germany and abroad. Service and distribution agreements are signed with the fund providers or asset managers. A trailer fee is charged and recognised in "Funds distribution". Service fees are also charged for the management of distribution contracts and for granting access to the fund platform. Revenue is recognised when the promised service is transferred to the customer. This occurs when instructions are received and the transactions are processed. The service has been fulfilled at this point in time. Revenue is recognised based on the price specified in the price list and reduced by the corresponding rebates. Customers are invoiced on a monthly basis and consideration is payable when invoiced.

Qontigo (index and analytics business)

The Qontigo segment comprises the index and analytics business. The index offering ranges from blue-chip, benchmark, strategy, sustainability to smart-beta indices. The Group generates revenue from calculating and marketing indices, which financial market participants use as underlyings for financial instruments or as a benchmark for the performance of investment funds. In its analytics business Qontigo offers its clients risk-analytics and portfolio-construction tools.

Customers in the index business simultaneously receive and consume all of the benefits provided during the contract term. The recognition of revenue for index licences is based on fixed payments, variable payments (usage-based volumes; mostly assets under management) or a combination of the two. For variable payments, customers report their usage and fees are invoiced in the quarter after usage; monthly estimates are recognised. This is determined either based on the customer’s average usage over the previous twelve months, adjusted to take into account current developments in the markets or based on the real data in the markets on a customer level.

Revenue estimates are revised when warranted by the circumstances. Increases and decreases in estimated revenue are reflected in the consolidated income statement in the period in which the circumstances that give rise to the revision become known by the management. For two fee components (minimum fee and usage-based fee), a contract liability is recognised and reduced each month based on the usage that has been recognised each month. Customers are invoiced on a quarterly basis and consideration is payable when invoiced.

Customers of the analytics business either receive the right to access the intellectual property or receive the right to use the intellectual property. The intellectual property licences are granted for software products, which are subsequently referred to as “SaaS Front Office” and “SaaS Middle Office”. Revenue generated with SaaS Front Office fees is recognised at a specific point in time because all contractual obligations are fulfilled, and the customer obtains control of the asset, as soon as the licence key is transferred to the customer. SaaS Middle Office fees are recognised over time, i.e. the contractual term. Fees are also charged for the maintenance and servicing (summarised as "Maintenance") of the software products, which are realised over the contract term. For this purpose, the transaction price for maintenance is calculated and allocated according to the "expected cost plus a margin" approach. This revenue is presented under “Axioma”.

Additional costs are capitalised for multi-year contracts when initiating a contract.

ISS (Institutional Shareholder Services)

The ISS segment offers corporate governance solutions, ESG data and analytics services. Net revenue aggregated as ESG revenue is generated in the business units Corporate Solutions, ESG Analytics and Governance Solutions. Net revenue aggregated as non-ESG revenue is generated in the business units Market Intelligence, Media, FWW (fund data), LiquidMetrics and SCAS (Securities Class Action Service). Most of this revenue stems from fixed-term contracts and recurring services. Revenue is recognised over time when the contractually agreed service is provided to the customer. Fees are generally charged in advance, either before the licence starts or periodically over the term of the licence. Proxy voting services are provided at a point in time and revenue is recognised when the contractually agreed service is provided to the client.

The other revenue stems from non-recurring service contracts. The performance obligations for advertising services and event sponsoring are settled when the service is provided, i.e. when the publication takes place or the advert is published. Performance obligations for advisory services are settled over time on the basis of the service rendered up to the reporting date. Measurement of the percentage of completion follows the invoicing.

Performance-related fees for services in connection with securities and class-action litigation are variable consideration and are only recognised when all the conditions have been met and no uncertainty remains concerning the variable consideration that is beyond the control of the entity. This is the case when the lawsuit has been won or a settlement has been reached. Fees for exceeding the minimum volumes for proxy research and services in connection with the exercise of voting rights are also variable consideration.

Since neither the volume that will be used nor the price of these services can be determined with reasonable certainty when the contract starts, the variable portion of the consideration is restricted up to the date of full performance and only recognised when the transaction price can be determined.

Consideration is generally due 30 days after the invoice date. At the start of the contract ISS expects that the period between providing the service and receiving the consideration from the clients is at most one year, so there is no significant financing component.

Additional costs are capitalised for multi-year contracts when initiating a contract.

Result of treasury activities in banking and similar business
The treasury result of banking and similar business stems mainly from investing surplus liquidity and from the fair value measurement of foreign exchange transactions. It also includes income from exchange rate differences resulting from finance instruments in the banking business. Given the currently prevailing interest rate anomaly, we also generate interest income from customer balances held with us (in a negative interest rate environment). Furthermore, this item comprises interest payments made on customer balances (positive interest rate environment) as well as cash investments (negative interest rate environment) and fees for providing customer credit lines. Interest income and interest expenses are calculated, allocated and realised when due, with the applicable effective interest rate on a daily basis.

Other operating income
Other operating income is income not directly attributable to our typical business model. Other operating income is usually realised when all chances and risks have been transferred. Other operating income comprises, for instance from, income from subleasing property, agency contracts as well as the reversal of impairments recognised on trade receivables. In addition, valuation effects, such as income from exchange rate differences from non-banking business, are reported under other operating income.

Volume-related costs
The item "volume-related costs" consists of expenses directly related to revenue and which depend directly on the following factors:

- The number of certain trading and settlement transactions,
- The custody volume and volume of global securities financing,
- The amount of purchased data,
- The sales commissions to distribution partners for the distribution of capital investments,
- Revenue sharing agreements and maker-taker price models.

Volume-related costs are not incurred if the corresponding revenue is no longer generated.

Composition of net revenue (part 1)

	Sales revenue		Treasury result from banking and similar business	
	2021 €m	2020 €m	2021 €m	2020 €m
Eurex (financial derivatives)				
Equity index derivatives	450.1	600.3	0	0
Interest rate derivatives	228.6	203.4	0	0
Equity derivatives	59.0	56.9	0	0
OTC Clearing	55.8	50.0	0	0
Margin fees	24.2	22.6	74.1	83.4
Infrastructure	88.5	84.2	0	0
Eurex Data	62.5	62.1	0	0
Other	50.7	33.5	0	0
	1,019.4	**1,113.0**	**74.1**	**83.4**
EEX (commodities)				
Power derivatives	128.0	128.0	1.2	1.4
Power spot	71.1	72.7	0	0
Gas	65.2	54.5	0	0
Annual fees	20.0	17.0	0	0
Technical connection fees	10.7	10.2	0	0
Market Data Services	10.5	7.7	0	0
Other	44.9	35.6	15.7	3.8
	350.4	**325.7**	**16.9**	**5.2**
360T (foreign exchange)				
Trading	88.6	86.7	0	0
Other	24.6	20.8	0	0
	113.2	**107.5**	**0**	**0**
Xetra (cash equities)				
Trading and clearing	226.9	237.3	0.4	0
Listing	19.4	18.0	0	0
Xetra Data	116.6	113.6	0	0
Regulatory services	9.9	12.7	0	0
Infrastructure	42.8	43.9	0	0
	415.6	**425.5**	**0.4**	**0**

Composition of net revenue (part 2)

	Other operating income		Volume-related costs		Net revenue	
	2021 €m	2020 €m	2021 €m	2020 €m	2021 €m	2020 €m
Eurex (financial derivatives)						
Equity index derivatives	0.1	0.1	– 60.3	– 59.9	389.9	540.5
Interest rate derivatives	0.1	0.1	– 3.0	– 3.4	225.7	200.1
Equity derivatives	0.0	0.1	– 9.5	– 8.6	49.5	48.4
OTC Clearing	23.9	22.3	– 22.6	– 17.4	57.1	54.9
Margin fees	– 30.2	– 20.6	– 0.1	0.0	68.0	85.4
Infrastructure	0.0	0.0	– 0.5	– 0.2	88.0	84.0
Eurex Data	10.9	8.7	– 10.4	– 11.0	63.0	59.8
Other	11.9	7.3	– 8.0	– 3.6	54.6	37.2
	16.7	**18.0**	**– 114.4**	**– 104.1**	**995.8**	**1,110.3**
EEX (commodities)						
Power derivatives	0.0	0.5	– 10.9	– 14.1	118.3	115.8
Power spot	0.0	0.0	0.0	– 0.6	71.1	72.1
Gas	0.0	0.0	– 10.3	– 11.5	54.9	43.0
Annual fees	0.0	0.0	0.0	0.0	20.0	17.0
Technical connection fees	0.0	0.0	0.0	0.0	10.7	10.2
Market Data Services	0.0	0.0	– 1.5	0.0	9.0	7.7
Other	1.1	1.6	– 4.2	– 4.6	57.5	36.4
	1.1	**2.1**	**– 26.9**	**– 30.8**	**341.5**	**302.2**
360T (foreign exchange)						
Trading	0.0	0.0	– 4.3	– 4.8	84.3	81.9
Other	0.0	0.4	– 1.1	– 1.6	23.5	19.6
	0	**0.4**	**– 5.4**	**– 6.4**	**107.8**	**101.5**
Xetra (cash equities)						
Trading and clearing	0.9	1.0	– 38.0	– 35.0	190.2	203.3
Listing	2.7	1.7	– 0.9	– 0.8	21.2	18.9
Xetra Data	0.1	6.9	– 23.8	– 27.0	92.9	93.5
Regulatory services	7.0	20.4	– 1.1	– 0.9	15.8	32.2
Infrastructure	1.2	0.0	– 0.1	– 0.1	43.9	43.8
	11.9	**30.0**	**– 63.9**	**– 63.8**	**364.0**	**391.7**

Composition of net revenue (part 3)

	Sales revenue		Treasury result from banking and similar business	
	2021 €m	2020 €m	2021 €m	2020 €m
Clearstream (post-trading)				
Custody	597.4	565.6	– 0.2	0.0
Settlement	193.0	180.8	0.0	0.0
Net interest income from banking business	0	0	50.8	100.8
Third-party services	23.9	23.9	0.0	0.0
GSF lending services	54.1	54.3	0.0	0.0
GSF collateral management	51.6	52.9	0.0	0.0
Connectivity ICSD	80.3	74.4	0.0	0.0
Other	47.4	47.9	0.7	7.3
	1,047.7	**999.8**	**51.3**	**108.1**
IFS (investment fund services)				
Custody	119.5	92.1	0.0	0.0
Settlement	96.2	78.6	0.0	0.0
Connectivity	35.5	26.0	0.0	0.0
Funds distribution[1]	531.9	101.2	0.0	0.0
Other	29.4	36.7	0.0	– 0.1
	812.5	**334.6**	**0**	**– 0.1**
Qontigo (index and analytics business)				
ETF licences	46.0	39.6	0.0	0.0
Exchange licences	36.9	37.8	0.0	0.0
Other licences	116.2	114.8	0.0	0.0
Axioma	90.8	85.7	0.0	0.0
	289.9	**277.9**	**0**	**0**
ISS (Institutional Shareholder Services)				
ESG	166.9	n/a	0.0	n/a
Non-ESG	70.3	n/a	0.0	n/a
	237.2	**n/a**	**0**	**n/a**
Total	**4,285.9**	**3,584.0**	**142.7**	**196.6**
Consolidation of internal revenue	**– 67.1**	**– 64.7**	**0.0**	**0.0**
thereof Eurex	– 0.1	– 0.1	0	0
thereof EEX	0.0	0	0	0
thereof 360T	0.0	0	0	0
thereof Xetra	– 5.4	– 5.7	0	0
thereof Clearstream	– 9.9	– 7.4	0	0
thereof IFS	– 0.4	– 0.3	0	0
thereof Qontigo	– 50.3	– 51.2	0	0
thereof ISS	– 1.0	0	0	0
Group	**4,218.8**	**3,519.3**	**142.7**	**196.6**

1) Clearstream Fund Centre was only included in the Group from 30 September 2020, which means that comparability is not possible.

Composition of net revenue (part 4)

	Other operating income		Volume-related costs		Net revenue	
	2021 €m	2020 €m	2021 €m	2020 €m	2021 €m	2020 €m
Clearstream (post-trading)						
Custody	1.9	0.2	–153.9	–148.3	**445.2**	417.5
Settlement	0.4	0.6	–73.2	–66.6	**120.2**	114.8
Net interest income from banking business	0.0	0.0	–0.8	–0.3	**50.0**	100.5
Third Parties	0.0	0.0	-0.1	–0.1	**23.8**	23.8
GSF Lending services	0.0	0.0	–24.5	–29.0	**29.6**	25.3
GSF Collateral management	0.0	0.0	-0.3	–1.3	**51.3**	51.6
Connectivity ICSD	0.0	0.0	–6.6	–5.3	**73.7**	69.1
Other	20.7	0.8	–27.2	–31.4	**41.6**	24.6
	23.0	**1.6**	**– 286.6**	**– 282.3**	**835.4**	**827.2**
IFS (investment fund services)						
Custody	0.0	0.0	-6.5	–4.7	**113.0**	87.4
Settlement	0.0	0.0	-6.0	–6.6	**90.2**	72.0
Connectivity	0.0	0.0	-1.6	–1.4	**33.9**	24.6
Funds distribution[1]	0.1	0.3	-454.4	–87.1	**77.6**	14.4
Other	39.4	0.1	-1.1	–2.3	**67.7**	34.4
	39.5	**0.4**	**– 469.6**	**– 102.1**	**382.4**	**232.8**
Qontigo (index and analytics business)						
ETF licences	0.0	0.0	-4.7	–4.9	**41.3**	34.7
Exchange licences	0.0	0.0	-3.0	–3.1	**33.9**	34.7
Other licences	0.6	0.0	-9.2	–9.2	**107.6**	105.6
Axioma	0.1	1.7	-15.0	–14.3	**75.9**	73.1
	0.7	**1.7**	**– 31.9**	**– 31.5**	**258.7**	**248.1**
ISS (Institutional Shareholder Services)						
ESG	0.0	n/a	-8.7	n/a	**158.2**	n/a
Non-ESG	1.1	n/a	-5.7	n/a	**65.7**	n/a
	1.1	**n/a**	**– 14.4**	**n/a**	**223.9**	**n/a**
Total	**94.0**	**54.2**	**– 1,013.1**	**– 621.0**	**3,509.5**	**3,213.8**
Consolidation of internal revenue	**– 8.9**	**– 13.7**	**76.0**	**78.4**	**0.0**	**0**
thereof Eurex	– 8.9	– 8.7	55.6	55.3	46.6	46.5
thereof EEX	0	0	0	0	0	0
thereof 360T	0	0	0	0	0	0
thereof Xetra	0	– 5.0	17.5	21.6	12.1	10.9
thereof Clearstream	0	0	2.9	1.5	– 7.0	– 5.9
thereof IFS	0	0	0	0	– 0.4	– 0.3
thereof Qontigo	0	0	0	0	– 50.3	– 51.2
thereof ISS	0	0	0	0	– 1.0	0
Group	**85.1**	**40.5**	**– 937.1**	**– 542.6**	**3,509.5**	**3,213.8**

1) Clearstream Fund Centre was only included in the Group from 30 September 2020, which means that comparability is not possible.

Revenue recognised in the financial year from performance obligations fulfilled or partially fulfilled in prior periods amounted to €12.3 million (2020: €17.1 million).

Composition of treasury result from banking and similar business

	2021 €m	2020 €m
Interest income from positive interest environment		
Debt financial assets measured at amortised cost	19.9	64.9
Interest expenses from positive interest environment		
Financial liabilities measured at amortised cost	– 33.4	– 31.3
Interest income from negative interest environment		
Debt financial assets measured at amortised cost	373.6	378.2
Interest expenses from negative interest environment		
Financial liabilities measured at amortised cost	– 239.5	– 256.0
Net interest income	**120.6**	**155.8**
Result from fair value valuation of foreign currency derivatives	20.6	33.4
Other currency result	1.5	7.3
Total	**142.7**	**196.6**

Other operating income

Other operating income of €85.1 million (2020: €40.5 million) related mainly to valuation of the acquisition of the second Clearstream Fund Centre tranche in the amount of €39.7 million, a receivable for reimbursement of costs in the amount of €17.1 million and the valuation of a contingent purchase price component in the amount of €7.0 million. Further effects result from income from exchange rate differences of €4.5 million (2020: €6.0 million), income from management services of €1.9 million (2020: €1.3 million).

5. Staff costs

Composition of staff costs

	2021 €m	2020 €m
Wages and salaries	827.2	682.2
Social security contributions, retirement and other benefits	174.9	140.7
Total	**1,002.1**	**822.9**

Wages and salaries comprise costs associated with the efficiency programme of €25.4 million (2020: €36.4 million).

6. Other operating expenses

Composition of other operating expenses

	2021 €m	2020 €m
Costs for IT service providers and other consulting services	196.6	248.2
IT costs	152.7	139.3
Non-recoverable input tax	59.7	40.0
Premises expenses	37.4	31.8
Insurance premiums, contributions and fees	29.1	21.6
Advertising and marketing costs	15.9	15.6
Travel, entertainment and corporate hospitality expenses	4.3	5.8
Cost of exchange rate differences	4.6	5.7
Voluntary social benefits	5.3	4.4
Supervisory Board remuneration	4.6	4.1
Short-term leases	2.9	3.0
Miscellaneous	36.5	26.2
Total	**549.5**	**545.8**

Composition of fees paid to the auditor (PwC)

	2021	
	PwC network €m	thereof PwC GmbH €m
Statutory audit services	6.8	4.1
Other assurance or valuation services	0.6	0.2
Tax advisory services	0.4	0.2
Other services	0	0
Total	**7.8**	**4.5**

Composition of fees paid to the auditor (KPMG)

	2020	
	KPMG network €m	thereof KPMG AG[1] €m
Statutory audit services	6.1	3.9
Other assurance or valuation services	0.6	0.5
Tax advisory services	0.8	0.2
Other services	0.2	0
Total	**7.7**	**4.6**

1) Additional values added for the appointed auditor.

In the financial year 2021, after an extensive selection process by the Supervisory Board, the Annual General Meeting elected PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft, Frankfurt/Main, (PwC) as the new auditors for the annual and consolidated financial statements 2021 as well as for the review of the half-year financial report in the reporting year. Fees paid for "statutory audit services" rendered by PwC mainly comprise the audit of the consolidated financial statements and the annual financial statements of Deutsche Börse AG as well as various audits of the annual financial statements of subsidiaries. Audit-integrated reviews of interim financial statements were performed. Other assurance services relate to ISAE 3000 reports and statutory or contractual audit services. Tax advisory services comprise support services for the preparation of tax returns and the assessment of and advice on tax matters. Quality assurance support services were provided for Deutsche Börse AG as part of other services.

7. Result from financial investments

Net income from financial investments comprises measurement effects, dividend payments, distributions, foreign currency translation effects and write-downs on financial investments. Gains and losses on financial investments at FVPL are recognised on a net basis in the period in which they arise. Distributions from funds and dividends are recognised in profit or loss when the Group's right to receive payments is established and when such dividends are not capital repayments.

Composition of result from financial investments

	2021 €m	2020 €m
Result of the equity method measurement of associates	38.6	21.5
Result of strategic investments measured at fair value through other comprehensive income (dividends)	0	0.3
Result of financial investments measured at amortised cost	0	– 5.3
Result of financial investments measured at fair value through profit or loss	53.0	2.9
Result of derivatives	– 5.0	5.2
Result of hedge accounting	– 1.4	– 0.2
Total	**85.2**	**24.3**

In addition to the result of the equity valuation the net income from associates also includes impairment losses. Impairment losses of €0.2 million were recognised in the reporting year on the investment in enermarket GmbH (2020: none). The increase in the result of the equity method measurement of associates compared with the previous year is mainly attributable to the valuation of Tradegate AG Wertpapierhandlesbank in the amount of € 28.2 million and Clarity AI Inc. in the amount of € 10.5 million, both of which showed a positive business performance in the reporting year.

In 2021, the investment Clarity AI Inc., which was previously measured at equity, was reclassified to the category "measured at fair value through profit or loss". The fair value measurement resulted in a -valuation effect of €34.5 million. Furthermore, this item includes € 18.5 million in valuation effects from fund units measured at fair value through profit or loss. For changes in financial investments see Note 12.

8. Financial result

The financial result comprises interest income and expenses which are not attributable to the Group's banking business and are therefore not recognised in net revenue. Interest income and expense are recognised using the effective interest method over the respective financial instrument's term to maturity. Interest income is recognised when it is probable that the economic benefits associated with the transaction will flow to the entity and the income can be measured reliably. Interest expense is recognised in the period in which it is incurred.

Composition of financial income

	2021 €m	2020 €m
Interest income from financial assets measured at fair value through other comprehensive income	0.1	0.1
Interest income from financial assets measured at amortised cost	5.1	0.4
Interest income from financial liabilities measured at amortised cost	2.2	0
Interest income from financial assets measured at fair value through profit or loss	0.1	0.1
Interest income on tax refunds	24.2	25.3
Other interest income and similar income	1.2	0.1
Total	**32.9**	**26.0**

Composition of financial expense

	2021 €m	2020 €m
Interest expense from financial assets measured at amortised cost	1.2	3.9
Interest expense from financial liabilities measured at amortised cost	39.8	49.7
Transaction cost of financial liabilities measured at amortised cost	2.3	3.4
Interest expense on taxes	20.8	35.8
Interest expense on lease liabilities	5.2	5.5
Expense of the unwinding of the discount on pension provisions	1.4	1.8
Other interest expense	2.2	2.8
Total	**73.0**	**102.9**

The financial result benefited from a one-time effect resulting from the adjustment of the expected interest rate (~3 per cent for interest periods as of 2019) for possible tax repayments in the amount of €4.8 million due to the decision of the Federal Constitutional Court of 8 July 2021.

9. Taxes

Deutsche Börse Group is subject to the tax laws of those countries in which it operates and generates income. If it is probable that the tax authorities will not accept the disclosed amounts or the legal assessments on which the Group's tax declarations are based (uncertain tax positions), tax liabilities are recognised based on the best possible estimate of expected cash outflows. Tax assets are recognised if it is considered likely that they will be realised. The recognition of uncertain tax positions is reassessed if there is a change in the underlying facts or their legal assessment (e.g. change in case law).

Deferred tax assets and liabilities are computed using the balance sheet liability approach. The deferred tax calculation is based on temporary differences between the carrying amounts of assets and liabilities in the IFRS financial statements and their tax base that will lead to a future tax liability or benefit when assets are used or sold or liabilities are settled. These differences are used to calculate deferred tax assets or liabilities.

The deferred tax assets or liabilities are measured using the tax rates that are currently expected to apply when the temporary differences reverse, based on tax rates that have been enacted or substantively enacted by the reporting date. Deferred tax assets are recognised for the unused tax loss and interest carryforwards only to the extent that it is probable that future taxable profit will be available. Deferred tax assets and deferred tax liabilities are offset where a legally enforceable right to set off current tax assets against current tax liabilities exists and the deferred tax assets and deferred tax liabilities relate to income taxes levied by the same taxation authority.

Composition of taxes

	2021 €m	2020 €m
Current income tax expense/(-income)	**443.6**	**414.5**
for the current year	425.5	425.5
for previous years	18.1	– 11.0
Deferred income tax expense/(-income)	**– 0.1**	**– 11.9**
due to temporary differences	– 3.4	– 25.2
due to tax loss and interest carryforwards	6.3	0.3
due to changes in tax legislation and/or tax rates	– 1.0	0
for previous years	– 2.0	13.0
Total income tax expense	**443.5**	**402.6**
Other taxes	**0.9**	**0.5**
Total taxes	**444.4**	**403.1**

Allocation of income tax expense to Germany and foreign jurisdictions

	2021 €m	2020 €m
Current income tax expense/(-income)	**443.6**	**414.5**
Germany	313.4	310.4
Foreign jurisdictions	130.2	104.1
Deferred income tax expense/(-income)	**– 0.1**	**– 11.9**
Germany	– 3.7	– 9.9
Foreign jurisdictions	3.6	– 2.0
Total	**443.5**	**402.6**

Tax rates of 27.4 to 31.9 per cent (2020: 27.4 to 31.9 per cent) were used in the reporting period to calculate income taxes for the German Group companies. These reflect trade income tax at rates of 11.6 to 16.1 per cent (2020: 11.6 to 16.1 per cent), corporation tax of 15 per cent (2020: 15 per cent) and the 5.5 per cent solidarity surcharge (2020: 5.5 per cent) on corporation tax.

A tax rate of 24.9 per cent (2020: 24.9 per cent) was used for the Group companies in Luxembourg. This includes trade tax at a rate of 6.7 per cent (2020: 6.7 per cent) and corporation tax at 18.2 per cent (2020: 18.2 per cent).

Tax rates of 10.0 to 34.6 per cent (2020: 10.0 to 34.6 per cent) were applied to the Group companies in the remaining countries; see Note 34.

Current income tax expense was reduced by €1.2 million in the reporting year by the utilisation of previously unrecognised tax loss carryforwards (2020: €0.3 million). There was no deferred tax income from previously unrecognised tax losses (2020: €2.4 million). As in the previous year, there were no effects resulting from changes of the impairment of deductible temporary differences.

The following table shows the carrying amounts of deferred tax assets and liabilities as at the reporting date by line item or loss carryforwards:

Composition of deferred taxes

	Deferred tax assets		Deferred tax liabilities	
	31.12.2021 €m	31.12.2020 €m	31.12.2021 €m	31.12.2020 €m
Intangible assets	**74.5**	**86.0**	**– 449.8**	**– 254.1**
Internally developed software	17.2	30.0	– 38.7	– 32.5
Other	57.3	56.0	– 411.1	– 221.6
Financial assets	1.5	1.7	– 31.0	– 13.8
Other assets	34.4	7.4	– 19.7	– 16.3
Provisions for pensions and other employee benefits	81.7	88.1	– 25.6	– 17.7
Other provisions	19.1	18.1	– 2.4	– 0.1
Liabilities	83.1	40.8	– 22.5	– 10.7
Tax loss and interest carryforwards	58.0	15.6	0	0
Deferred taxes (before netting)	**352.3**	**257.7**	**– 551.0**	**– 312.7**
thereof recognised in profit and loss	300.9	190.4	– 525.1	– 303.4
thereof recognised in other comprehensive income[1)]	51.4	67.3	– 25.9	– 9.3
Deferred taxes set off	– 212.5	– 96.0	212.5	96.0
Total	**139.8**	**161.7**	**– 338.5**	**– 216.7**

1) See Note 15 for further information on deferred taxes recognised in other comprehensive income.

Short-term elements of deferred taxes are recognised in non-current assets and liabilities in the consolidated balance sheet, in line with IAS 1 “Presentation of Financial Statements”.

At the end of the reporting period, accumulated unused tax losses for which no deferred tax assets were recognised amounted to €55.5 million (2020: €27.2 million). These unused tax losses are attributable to domestic losses totalling €14.4 million and to foreign tax losses totalling €41.1 million (2020: Germany nil, foreign tax losses €27.2 million).

Tax losses can be carried forward indefinitely in Germany as well as in the United Kingdom under consideration of the minimum taxation rules. In the United States, losses may be carried forward for a maximum period of 20 years, provided they were incurred before 1 January 2018. In accordance with the latest tax reform in the US, adopted at the end of December 2017, losses incurred after 31 December 2017 may be carried forward indefinitely, taking into account newly introduced minimum taxation rules. In all other countries, losses can be carried forward indefinitely.

There were no unrecognised deferred tax liabilities on future dividends of subsidiaries and associates or on gains from the disposal of subsidiaries and associates in the reporting period (2020: none).

Reconciliation from expected to reported income tax expense

	2021 €m	2020 €m
Earnings before tax (EBT)	1,709.3	1,528.2
Expected income tax expense	444.4	397.3
Effects of different tax rates	– 12.8	– 15.2
Effects of non-deductible expenses	14.0	15.5
Effects of tax-exempt income	– 3.4	– 1.3
Tax effects from loss carryforwards	0.3	0.9
Effects from changes in tax rates	– 1.0	0
Effects from intra-group restructuring	0	1.5
Other	– 14.1	2.0
Income tax expense arising from current year	**427.4**	**400.7**
Income taxes for previous years	16.1	1.9
Income tax expense	**443.5**	**402.6**

To determine the expected income tax expense, earnings before tax have been multiplied by the composite tax rate of 26 per cent assumed for 2021 (2020: 26 per cent).

As at 31 December 2021, the reported income tax rate was 25.9 per cent (2020: 26.3 per cent).

Notes on the consolidated statement of financial position

10. Intangible assets

Recognition and measurement

Capitalised development costs are amortised from the date of first use of the software using the straight-line method over the asset's expected useful life. The useful life of internally developed software is generally assumed to be seven years; a useful life of ten years is used as the basis in the case of newly developed systems.

Purchased software is generally amortised based on the projected useful life. The amortisation period for intangible assets with finite useful lives is reviewed at a minimum at the end of each financial year. If the expected useful life of an asset differs from previous estimates, the amortisation period is adjusted accordingly.

The other intangible assets were largely acquired within the context of business combinations and refer to exchange licences, trade names and customer relationships. The acquisition costs correspond to the fair values as at the acquisition date. Depending on the relevant acquisition transaction, the expected useful life is 5 to 20 years for trade names with finite useful lives, 4 to 24 years for participant and customer relationships and 2 to 20 years for other intangible assets.

Exchange licences as well as certain trade names have no finite useful lives and, in addition, there is an intention to maintain the exchange licences as part of the general business strategy. Therefore, an indefinite useful life is assumed.

Intangible assets are derecognised on disposal or when no further economic benefits are expected to flow from them.

Impairment tests

At each reporting date, the Group assesses whether there are any indications that an intangible asset may be impaired. If this is the case, the carrying amount is compared with the recoverable amount (the higher of the value in use and fair value less costs of disposal) to determine the amount of any potential impairment.

Value in use is estimated on the basis of the discounted estimated future cash flows from continuing use of the asset and from its ultimate disposal, before taxes. For this purpose, discount rates are estimated based on the prevailing pre-tax weighted average cost of capital. If no recoverable amount can be determined for an asset, the recoverable amount of the cash-generating unit (CGU) to which the asset can be allocated is determined.

Irrespective of any indications of impairment, intangible assets with indefinite useful lives and intangible assets not yet available for use must be tested for impairment at least once a year. Impairment tests are carried out on 1 October every financial year. If the estimated recoverable amount of the asset or CGU is lower than the respective carrying amount, an impairment loss is recognised and the net carrying amount of the asset or CGU, respectively, is reduced to its estimated recoverable amount.

At the acquisition date, goodwill is allocated to the CGUs or groups of CGUs, that is/are expected to create synergies from the relevant acquisition. If changes arise in the structure of CGUs, for example through a new segmentation, goodwill is allocated taking into account the relative fair values of the newly defined CGUs. Irrespective of any indications of impairment, these items must be tested for impairment at least annually at the lowest level of impairment at which Deutsche Börse Group monitors the respective goodwill. An impairment loss is recognised if the carrying amount of the CGUs or groups of CGUs, to which goodwill is allocated, including the carrying amount of that goodwill, is higher than the recoverable amount of this group of assets. The impairment loss is first allocated to the goodwill, then to the other assets in proportion to their carrying amounts.

The recoverable amount of the (groups of) CGUs was determined based on the fair value less costs to sell. The value in use was only determined if the fair value less costs to sell did not exceed the carrying amount. Given that no active market was available for the (groups of) CGUs, the determination of fair values less costs to sell was based on the discounted cash flow method (level 3 input factors). The detailed planning period usually covers a respective time period of five years; for (groups of) CGUs, which have been allocated an asset with an indefinite useful life, such time period ends in perpetuity. Individual costs of capital are determined for each (group of) CGU(s), for the purpose of discounting projected cash flows. These capital costs are based on data incorporating beta factors, borrowing costs, as well as the capital structure of the respective peer group. Pricing, trading volumes, assets under custody, market share assumptions or general business development assumptions are based on past experience or market research. Other key assumptions are mainly based on external factors and generally correspond to internal management planning. Significant macroeconomic indicators include, for instance, equity index levels, volatility of equity indices, as well as interest rates, exchange rates, GDP growth, unemployment levels and government debt. When calculating value in use, the projections are adjusted for the effects of future restructurings and performance investments, if appropriate.

At each reporting date, the Group assesses whether there are any indications that an impairment recognised for non-current assets in previous years (except goodwill) no longer applies. If this is the case, the carrying amount of the asset is increased and the difference is recognised in profit or loss. The maximum amount of this reversal is limited to the carrying amount that would have resulted if no impairment loss had been recognised in previous periods. Deutsche Börse Group does not reverse any goodwill impairments.

Intangible assets

	Purchased software €m	Internally developed software €m	Goodwill €m	Payments on account and construction in progress €m	Other intangible assets €m	Total €m
Historical cost as at 1 Jan 2020	**296.8**	**1,147.2**	**3,470.5**	**102.4**	**1,199.8**	**6,216.7**
Acquisitions from business combinations	15.8	0	550.2	0	271.2	837.2
Adjustment of previous year Goodwill	0	0	4.3	0	0	4.3
Additions	13.9	54.8	0	64.8	0.8	134.3
Disposals	– 3.3	– 0.1	0	– 0.2	0	– 3.6
Reclassifications	1.1	23.1	0	– 23.8	– 0.1	0.3
Exchange rate differences	– 8.6	– 1.9	– 67.4	– 1.4	– 19.4	– 98.7
Historical cost as at 31 Dec 2020	**315.7**	**1,223.1**	**3,957.7**	**141.8**	**1,452.3**	**7,090.6**
Acquisitions through business combinations	79.5	0	1,456.2	2.4	652.7	2,190.8
Adjustment of previous year Goodwill	0	0	– 1.2	0	0	– 1.2
Additions	14.5	76.8	0	76.4	0.9	168.6
Disposals	0	0	0	0	0	0
Reclassifications	2.3	98.5	0	– 100.8	0	0
Reclassifications into assets held for sale	– 7.6	– 10.4	0	– 4.1	0	– 22.1
Exchange rate differences	12.0	4.0	183.3	– 0.1	78.8	278.0
Historical cost as at 31 Dec 2021	**416.4**	**1,392.0**	**5,596.0**	**115.6**	**2,184.7**	**9,704.7**
Amortisation and impairment losses as at 1 Jan 2020	**170.9**	**868.6**	**0**	**9.9**	**158.9**	**1,208.3**
Amortisation	30.5	86.3	0	0	38.5	155.3
Impairment losses	0	2.6	0	5.6	0	8.2
Disposals	– 2.2	0	0	0	0	– 2.2
Reclassifications	0	0	0	0	0	0
Exchange rate differences	– 1.2	– 0.5	0	0	– 0.5	– 2.2
Amortisation and impairment losses as at 31 Dec 2020	**198.0**	**957.0**	**0**	**15.5**	**196.9**	**1,367.4**
Amortisation	37.6	57.8	0	0	71.0	166.4
Impairment losses	0	11.8	0	0	0	11.8
Reclassifications into assets held for sale	– 7.3	– 3.5	0	– 0.1	0	– 10.9
Reclassifications	1.1	– 1.1	0	0	0	0
Exchange rate differences	2.1	1.7	0	0.1	3.2	7.1
Amortisation and impairment losses as at 31 Dec 2021	**231.5**	**1,023.7**	**0**	**15.5**	**271.1**	**1,541.8**
Carrying amount as at 31 Dec 2020	117.7	266.1	3,957.7	126.3	1,255.4	5,723.2
Carrying amount as at 31 Dec 2021	**184.9**	**368.3**	**5,596.0**	**100.1**	**1,913.6**	**8,162.9**

Material intangible assets with finite useful lives

	Carrying amount as of		Remaining amortisation period as at	
	31 Dec 2021 €m	31 Dec 2020 €m	31 Dec 2021 years	31 Dec 2020 years
Customer Relationship ISS Data & Research	435.7	n/a	21.2	n/a
Customer Relationship Clearstream Funds Centre	235.8	237.1	18.8	19.8
Customer Relationship 360T	169.6	179.7	16.8	17.8

Software, payments on account and software in development

Research costs are recognised as expenses in the period in which they are incurred. Development costs for internally developed intangible assets are only capitalised when the definition and recognition criteria for intangible assets according to IAS 38 are met and development costs can be separated from research costs.

Development costs that have to be capitalised include direct labour costs, costs of purchased services and workplace costs, including proportionate overheads that can be directly attributed to the preparation of the respective asset for use, such as costs for the infrastructure of software development. Development costs that do not meet the requirements for capitalisation are recognised through profit or loss. Interest expense that cannot be allocated directly to one of the development projects is recognised through profit or loss in the reporting period.

Total development costs in the reporting year 2021 came to €202.8 million (2020: €158.2 million), of which €128.7 million were capitalised (2020: €104.0 million).

Impairment testing in 2021 revealed an impairment loss of €11.8 million (2020: €8.2 million), which is shown in the line item "Depreciation, amortisation and impairment losses" and relates to the following assets:

- An impairment loss of €8.0 million (recoverable amount: negative) in the fourth quarter of 2021 concerned settlement, custody and asset servicing services for the Investor CSD product in the Clearstream segment. The asset was intended for use by a particular customer. Finally, the customer decided not to use the product. Promotional activities towards other potential customers did not result in successful marketing.

- Another impairment loss of €3.9 million (recoverable amount: negative) in the fourth quarter of 2021 relates to the OTC currency clearing system in the Eurex segment. The combination of internal and external operating costs and limited market interest led to the decision to cease providing OTC currency clearing services.

Goodwill and other intangible assets from business combinations

Changes in goodwill classified by (groups of) CGUs

	Eurex €m	EEX €m	360T €m	Xetra €m	Clear-stream €m	IFS €m	Qontigo €m	ISS €m	Total €m
Balance as at 1 Jan 2020	**1,293.6**	**119.5**	**245.2**	**6.7**	**969.0**	**66.3**	**608.6**	**0**	**3,308.9**
Reallocation due to change in reporting structure	17.0	0	0	2.5	142.1	0	0	0	**161.6**
Acquisitions through business combinations	64.1	1.2	0	0	0	484.9	0	0	**550.2**
Adjustment of previous year Goodwill	0	0	0	0	0	0	4.3	0	**4.3**
Exchange rate differences	– 2.3	– 4.9	– 5.0	– 0.1	0	– 1.5	– 53.6	0	**– 67.4**
Balance as at 31 Dec 2020	**1,372.4**	**115.8**	**240.2**	**9.1**	**1,111.1**	**549.7**	**559.3**	**0**	**3,957.6**
Acquisitions through business combinations	0	0	0	52.1	13.7	10.7	78.8	1,300.9	**1,456.2**
Adjustment of previous year Goodwill	0	0	0	0	0	– 1.2	0	0	**– 1.2**
Exchange rate differences	6.2	4.4	4.4	0.7	1.1	25.5	53.1	88.0	**183.4**
Balance as at 31 Dec 2021	**1,378.6**	**120.2**	**244.6**	**61.9**	**1,125.9**	**584.7**	**691.2**	**1,388.9**	**5,596.0**

Changes in other intangible assets by category

	Exchange licences €m	Trade names €m	Member and customer relationships €m	Miscellaneous intangible assets €m	Total €m
Balance as at 1 Jan 2020	**24.5**	**524.7**	**486.8**	**4.9**	**1,040.9**
Acquisitions through business combinations	0	0	270.3	0.9	271.2
Additions	0	0	0.3	0.5	0.8
Amortisation	0	– 0.4	– 36.5	– 1.6	– 38.5
Exchange rate differences	– 2.1	– 6.2	– 10.5	– 0.1	– 19.0
Reclassifications	0	0	0	0	0
Balance as at 31 Dec 2020	**22.4**	**518.1**	**710.4**	**4.6**	**1,255.4**
Acquisitions through business combinations	0	117.2	535.1	0.4	652.7
Additions	0	0	0	0.9	0.9
Amortisation	0	– 1.2	– 67.9	– 2.0	– 71.1
Exchange rate differences	1.8	14.3	59.5	0.1	75.7
Balance as at 31 Dec 2021	**24.2**	**648.4**	**1,237.1**	**4.0**	**1,913.6**

Key assumptions used for impairment tests in 2021

(Group of) CGUs	Allocated book value €m	Risk-free interest rate %	Market risk premium %	Discount rate %	Long-term growth rate %	CAGR[1] Net revenue %	CAGR[1] Operating costs %
Goodwill							
Eurex	1,379.9	0.1	7.8	6.5	1.5	4.9	4.3
ISS	1,240.9	2.0	6.0	8.0	2.5	8.2	6.3
Clearstream	1,125.7	0.1	7.8	6.7	1.0	3.3	2.2
Qontigo	675.7	0.1	7.8	7.4	1.5	7.1	5.6
IFS	557.8	0.1	7.8	6.6	1.5	9.9	7.5
360T	243.3	0.1	7.8	7.0	1.5	6.5	4.1
EEX	118.8	0.1	7.8	6.6	1.5	6.9	2.5
Xetra	11.2	0.1	7.8	6.8	1.0	– 0.4	3.9
Trade names and exchange licences							
STOXX	420.0	0.1	7.8	7.4	1.5	5.8	6.8
ISS Core	96.7	2.0	6.0	8.0	2.5	8.2	6.3
Axioma	62.1	2.0	6.0	7.7	2.0	9.6	4.6
Nodal	27.7	2.0	6.0	7.0	1.5	4.6	3.1
360T Core	19.9	0.1	7.8	7.0	1.5	7.0	4.8
EEX Core	13.7	0.1	7.8	6.6	1.5	6.7	4.4
360TGTX	1.7	1.5	6.0	6.9	1.5	2.7	1.8

1) CAGR = compound annual growth rate.

Key assumptions used for impairment tests in 2020

	Allocated book value €m	Risk-free interest rate %	Market risk premium %	Discount rate %	Long-term growth rate %	CAGR[1] Net revenue %	CAGR[1] Operating costs %
Goodwill							
Eurex	1,310.0	– 0.2	7.8	6.2	1.5	3.9	1.4
Clearstream	1,111.1	– 0.2	7.8	7.6	1.0	2.7	1.9
Qontigo	585.5	– 0.2	7.8	7.5	1.5	12.6	6.9
IFS	551.8	– 0.2	7.8	7.5	1.5	10.4	2.8
360T	242.7	– 0.2	7.8	7.7	2.0	9.7	5.0
EEX	118.2	– 0.2	7.8	7.1	1.5	6.9	2.1
Xetra	9.1	– 0.2	7.8	7.5	1.0	5.6	8.4
Trade names and exchange licences							
STOXX	420.0	– 0.3	7.8	7.4	1.5	7.9	5.9
Axioma	58.7	1.4	6.3	7.8	2.5	15.8	4.7
Nodal	26.1	1.4	6.3	7.6	1.5	23.8	6.8
360T Core	19.9	– 0.3	7.8	7.7	2.0	8.7	7.1
EEX Core	13.5	– 0.3	7.8	7.0	1.5	6.0	4.3
360TGTX	1.6	0.9	6.3	7.7	2.0	17.8	11.0

1) CAGR = compound annual growth rate

Even in case of a reasonably possible change of one of the parameters, under the condition that all the other parameters remain constant, none of the above-mentioned CGUs or groups of CGUs with the exception of ISS CGU, would be impaired. At the ISS CGU, the recoverable amount exceeds the carrying amount in the annual impairment test by €136.4 million. A reduction in the annual growth rate of the net revenue by 8.7 per cent or rather an increase in operating costs by 9.1 per cent or a reduction in the growth rate in perpetuity by 0.6 percent or rather an increase in capital costs by 0.4 per cent would result in the recoverable amount being equal to the carrying amount.

11. Property, plant and equipment

Measurement of purchased property, plant and equipment

Depreciable items of property, plant and equipment are carried at cost less cumulative depreciation. The straight-line depreciation method is used. The carrying amount is immediately written down to its recoverable amount if the carrying amount is higher than its recoverable amount. Costs of an item of property, plant and equipment comprise all costs directly attributable to the production process, as well as an appropriate proportion of production overheads. No borrowing costs were recognised in the reporting period or in the previous year as they could not be directly allocated to any particular development project. If it is probable that the future economic benefits associated with an item of property, plant and equipment will flow to the Group and the cost of the asset in question can be reliably determined, costs subsequent to acquisition is added to the carrying amount of the asset as incurred. The carrying amounts of any parts of an asset that have been replaced are derecognised. Repair and maintenance costs are expensed as incurred.

Useful life of property, plant and equipment

	Depreciation period
IT hardware	3 to 5 years
Operating and office equipment	5 to 19 years
Leasehold improvements	Based on lease term

Measurement of right-of-use assets

We lease a large number of different assets. These mainly include buildings and cars. Right-of-use assets are measured at cost. Any accumulated depreciation and impairment amounts are deducted from the cost of right-of-use assets as part of subsequent measurement. This does not apply to short-term leases with a term of not more than twelve months and leases for low-value assets. Expenses in the reporting year resulting from the above-mentioned short-term and low-value assets are reported in other operating expenses.

Useful life of property, plant and equipment

	Depreciation period
Right-of-use - land and buildings	Based on lease term
Right-of-use - IT hardware, operating and office equipment as well as carpool	Based on lease term

As a lessor in the case of an operating lease, we present the leased asset as an item of property, plant and equipment and measures the asset at amortised cost. The lease instalments received during the period are shown under other operating income.

Property, plant and equipment (incl. Right-of-use assets)

	Land and buildings (right-of-use)	Fixtures and fittings	IT hardware, operating and office equipment as well as carpool			Advance payments made and construction in progress	Total
			Right-of-use	Purch-ased	Total		
	€m	€m	€m	€m	€m	€m	€m
Historical costs as at 1 Jan 2020	**389.1**	**77.5**	**9.8**	**303.2**	**313.0**	**15.8**	**795.4**
Acquisitions through business combinations	3.1	0	0	0.3	0.3	0.5	3.9
Additions	70.3	13.1	3.0	43.4	46.4	4.7	134.5
Disposals	– 0.7	– 3.1	0	– 6.3	– 6.3	– 0.9	– 11.0
Reclassifications	0	9.7	0	3.1	3.1	– 13.1	– 0.3
Exchange rate differences	– 2.3	– 0.6	– 0.2	– 0.5	– 0.7	0	– 3.6
Historical costs as at 31 Dec 2020	**459.5**	**96.6**	**12.6**	**343.2**	**355.8**	**7.0**	**918.9**
Acquisitions through business combinations	85.1	6.0	1.4	4.2	5.6	0.4	97.1
Additions	42.6	7.2	3.5	25.6	29.1	5.0	83.9
Disposals	– 2.8	– 0.5	– 0.2	– 2.8	– 3.0	– 0.4	– 6.7
Reclassifications	0	2.0	0	1.3	1.3	– 3.3	0
Reclassifications into assets held for sale	– 0.1	0	– 0.1	0	– 0.1	0	– 0.2
Exchange rate differences	3.8	1.0	0.3	1.1	1.4	– 0.2	6.0
Historical costs as at 31 Dec 2021	**588.1**	**112.3**	**17.5**	**372.6**	**390.1**	**8.5**	**1,099.0**
							0
Depreciation and impairment losses as at 1 Jan 2020	**42.6**	**37.7**	**2.8**	**214.3**	**217.1**	**0**	**297.4**
Amortisation	48.5	9.2	4.2	39.0	43.2	0	100.9
Disposals	– 0.4	– 2.5	0	– 5.8	– 5.8	0	– 8.7
Exchange rate differences	– 0.4	– 0.3	– 0.1	– 0.3	– 0.4	0	– 1.1
Depreciation and impairment losses as at 31 Dec 2020	**90.3**	**44.1**	**6.9**	**247.2**	**254.1**	**0**	**388.5**
Amortisation	59.2	10.5	4.9	42.2	47.1	0	116.9
Disposals	– 0.3	0	– 0.1	– 2.2	– 2.3	0	– 2.6
Reclassifications into assets held for sale	0.1	0	0	0	0	0	0.1
Exchange rate differences	0.8	0.7	0	1.0	1.0	0	2.6
Depreciation and impairment losses as at 31 Dec 2021	**150.1**	**55.3**	**11.7**	**288.2**	**299.9**	**0**	**505.3**
							0
Carrying amount as at 31 Dec 2020	**369.2**	**52.5**	**5.7**	**96.0**	**101.7**	**7.0**	**530.4**
Carrying amount as at 31 Dec 2021	**438.0**	**57.0**	**5.8**	**84.4**	**90.1**	**8.5**	**593.7**

The average remaining term of leases is 13.8 years.

The remaining term of the material sub-lease is one year; it is then renewed automatically for an indefinite period. Both parties can terminate the lease at the end of the remaining term by giving notice of six months.

For details regarding the corresponding lease liabilities, please see Note 12.

12. Financial instruments

Financial assets

Additions and disposals
Financial assets are recognised when the Group or one of its companies becomes party to a financial instrument. Regular way purchases and sales of financial assets are generally recognised and derecognised at the trade date. Purchases and sales of debt instruments classified as “at amortised cost” and of equities eligible for clearing via the central counterparties (CCPs) of Deutsche Börse Group are recognised and derecognised at the settlement date. Financial assets are derecognised when the contractual rights to the cash flows expire or when the company transfers these rights in a transaction that transfers substantially all risks and rewards of ownership of the financial assets.

Clearstream Banking S.A. acts as a principal in securities borrowing and lending transactions in the context of the ASLplus securities lending system and is an intermediate between lender and borrower without becoming a contracting party from an economic perspective. Consequently, these transactions are not recognised in the consolidated balance sheet.

First-time measurement and classification
Financial assets are first recognised at fair value. For financial assets not at fair value through profit or loss the recognised amount also includes transaction costs that can be allocated directly to the acquisition of this asset. Transaction costs of financial assets at fair value through profit or loss are expensed as incurred.

Financial assets are classified at the acquisition date, from which subsequent measurement is derived. We assign financial assets to the following measurement categories:

- At fair value (either at “fair value through other comprehensive income” (FVOCI) or “fair value through profit or loss” (FVPL))
- At amortised cost (aAC)

Debt instruments are allocated on the basis of the business model for managing the financial assets and the contractual cash flow characteristics. Debt instruments are only reclassified if the business model for managing them is changed. We do not make use of the option to designate debt instruments at fair value through profit or loss upon initial recognition (fair value option).

The classification of investments in equity instruments not held for trading depends on whether the option of designating the corresponding financial assets as at fair value through other comprehensive income (FVOCI option) is used on initial recognition. Each individual equity instrument can be allocated separately and may not be changed in subsequent periods.

Subsequent measurement of debt instruments
We allocate each debt instrument to one of the following categories:

- **Amortised cost (aAC):** Assets allocated to the "hold" business model and whose cash flows consist of solely payments of principal and interest are measured at amortised cost. Interest income from these financial assets is measured using the effective interest method. Gains and losses from derecognition, impairment and exchange rate movements are recognised through profit or loss. Measurement effects are shown in banking business or non-banking business depending on how the financial assets are allocated. For financial assets from banking business all measurement effects are shown in the treasury result of banking and similar business. Interest income from the non-banking business is shown in the financial result. All other effects of non-banking business are presented in net income from financial investments. All effects relating to the measurement of trade receivables are shown in other operating income and expenses.
- **Fair value through other comprehensive income (FVOCI):** Investments in debt instruments allocated to the "hold and sell" business model and whose cash flows consist solely of payments of principal and interest are measured as at fair value through other comprehensive income. Impairments on these debt instruments are recognised as net income from financial investments through profit or loss. On disposal of these debt instruments all the balances in the revaluation surplus are reclassified to net income from financial investments through profit or loss. Interest income from fixed income debt securities in this category are shown in the financial result.
- **Fair value through profit or loss (FVPL):** Financial assets that do not meet the criteria for measurement at amortised cost or at FVOCI are measured at FVPL and their measurement effects are shown in net income from financial investments. Distributions from fund interests are also shown in net income from financial investments. Interest income from fixed income bonds in this category are shown in the financial result.

Subsequent measurement of equity instruments
Equity instruments are always subsequently measured at fair value. In the reporting year 2021, we are reporting three strategic investments for the first time under other financial assets at fair value through profit or loss. For all other equity instruments, we have exercised the irrevocable FVOCI option as of the reporting date, with the result that the gains and losses are recognised in other comprehensive income. When the item is derecognised the gains and losses are not recycled through profit or loss, but reclassified to retained earnings. Dividends from these financial assets are shown in Result from financial investments.

Impairment
As a rule, any impairment for expected credit losses for debt instruments reported at amortised cost and at fair value through other comprehensive income is determined using the three-stage impairment model in IFRS 9. The losses represent a forward-looking measurement of future losses that are generally subject to estimates.

Stage 1: The impairment upon initial recognition is measured on the basis of the expected losses in the event of default within the next twelvemonths after the reporting date.
Stage 2: If a financial asset's credit risk has increased significantly, the expected credit loss is determined over the entire term. A significant increase in credit risk is determined individually using internal ratings and is assumed if there is a downgrade of three notches within the internal rating system.
Stage 3: Credit-impaired financial assets are allocated to Stage 3 and the impairment is based on the full lifetime expected credit losses. This is the case if there are observable data of significant financial difficulties and there is a high risk of default, even if the definition of a default has not yet been met.

If the credit risk for debt instruments at amortised cost and at fair value through profit or loss is low in absolute terms as at the reporting date, they remain in Stage 1 even if the default risk has increased.

We have the following two triggers to identify a default event and which cause a transfer to stage 3 of the model:

Legal default event: a contractual partner of the Group is unable to fulfil its contractual obligations due to its insolvency.
Contractual default event: a contractual partner of the Group is unable or unwilling to fulfil its contractual obligations in a timely manner. The non-fulfilment of the contractual obligation could result in a financial loss for us.

We measure the expected credit losses for trade receivables using a simplified approach, which requires lifetime expected losses to be recognised from initial recognition of a receivable. Due to the high recovery rate for trade receivables with a due date of less than 360 days, a default is assumed for amounts which are overdue for more than 360 days.

Financial Liabilities

Additions and disposals

Financial liabilities are recognised when a Group company becomes a party to the instrument. Purchases and sales of equities via the central counterparty Eurex Clearing AG are recognised at the settlement date analogous to financial assets. Financial liabilities are derecognised when the contractual obligation has been extinguished because it has been discharged or cancelled or has expired.

Financial liabilities measured at amortised cost

Financial liabilities not held for trading are accounted for at amortised cost. The borrowing costs associated with the placement of financial liabilities are included in the carrying amount and accounted for using the effective interest method if they are directly attributable. Discounts are amortised over the term of the liabilities using the effective interest method. Liabilities to non-controlling shareholders for the acquisition of non-controlling shares settled in cash or another financial asset are recognised at the present value of the future purchase price. The effect of the present value of accrued interest on the financial obligation and all measurement changes in the obligation is subsequently measured through profit or loss. The equity interest attributable to a non-controlling shareholder underlying the transaction is accounted for as if it had already been acquired at the time of the transaction.

Financial liabilities measured at fair value through profit or loss

Contingent purchase payments recognised by the purchaser of a business combination in accordance with IFRS 3 are not measured at amortised cost. The resulting financial liabilities are recognised at fair value. With a contingent purchase price component the purchaser is obliged to transfer additional assets or shares to the seller if certain conditions are met. Subsequent measurement is at fair value through profit or loss.

We do not make use of the option to designate financial liabilities at fair value through profit or loss upon initial recognition (fair value option).

Our exposure to various risks associated with the financial instruments is discussed in Note 24. The maximum exposure to credit risk at the end of the reporting period is the carrying amount of each class of financial assets mentioned above.

Presentation and netting of financial assets and liabilities

Financial assets and liabilities in the statement of financial position are divided into non-current and current. They are presented as non-current if the remaining term is more than twelve months as at the reporting date. They are presented as current assets if the remaining term is less than twelve months.

Financial assets and liabilities are offset and only the net amount is presented in the consolidated balance sheet when a Group company currently has a legally enforceable right to set off the recognised amounts and intends either to settle on a net basis or to realise the asset and settle the liability simultaneously.

Derivative financial instruments and hedge accounting

The derivative financial instruments we use include interest rate swaps, foreign exchange swaps, foreign exchange forwards and foreign exchange options.

Derivatives are initially recognised at fair value on the date a derivative contract is taken out. The Group applies the provisions of IFRS 9 to account for hedges that meet the criteria for hedge accounting. When a hedging transaction takes place the economic relationship between the hedging instrument and the hedged item is documented in accordance with the requirements of IFRS 9.

All other derivative transactions are mainly used to hedge foreign currency risks in economic hedging relationships and are classified as “held for trading” for accounting purposes and are remeasured at the end of each reporting period at fair value through profit or loss. Gains and losses from the subsequent measurement are either recognised in the result of treasury activities in banking business and similar business or in net income from financial investments.

Cash flow hedges that qualify for hedge accounting

In 2021 we used cash flow hedge accounting to hedge the foreign exchange risk on highly likely transactions as well as translation effects of intercompany monetary items. We also used cash flow hedge accounting to hedge the interest rate risk of a highly probable securities issue by means of interest rate swaps.

The effectiveness of the hedging relationship is assessed at the beginning and over the entire duration of the hedging relationship to ensure that there is an economic relationship between the hedging instrument and the hedged item. This entails establishing hedging transactions in which all the relevant contractual parameters of the hedging instrument exactly match those of the hedged item. Ineffectiveness may arise in the hedging of planned transactions if the timing of the planned transaction changes compared with the original estimate. Ineffectiveness due to changes in our default risk or the default risk of the counterparty to the hedging transaction is deemed to be negligible. Effectiveness is measured regularly as at the reporting dates. The Group uses the hypothetical derivative method for this purpose.

The effective portion of changes in the fair value of derivatives designated as cash flow hedges is shown in the reserve for cash flow hedges as part of other comprehensive income; it is limited to the cumulative absolute change in the hedged fair value of the hedged since the hedging transaction. Gains or losses on the ineffective portion are recognised directly through profit or loss, either in the treasury result of banking and similar business or in net income from financial investments. If forward contracts are used to hedge planned transactions we designate the entire change in the fair value of the forward, including the forward component, as a hedging instrument. In this case, the gains or losses from the effective portion of the change in fair value for the entire future transaction are recognised in the reserve for cash flow hedges as a component of equity. If the Group uses futures to hedge existing receivables and liabilities, only the spot component of the future is designated. Gains or losses from the effective portion of the change in the spot component of the future are shown in the reserve for cash flow hedges.

Changes in the forward component of the hedging instrument that relates to the hedged item are considered to be hedging costs and shown separately in the reserve for hedging costs in other comprehensive income. The fair value of the forward component not included in the hedging relationship at the time it is designated is written off pro rata temporis over the period of the hedging relationship. The amount written down is recycled from the reserve for hedging costs to profit or loss.

Cumulative amounts in the reserve for cash flow hedges are reclassified according to the following methodology:

- If the cash flow hedges serve to hedge a planned transaction, the amount from the hedging instrument that has accumulated in other comprehensive income up to the acquisition date is derecognised from the reserve and treated as part of the acquisition costs.
- For cash flow hedges of existing receivables and liabilities, the amount that has accumulated in the reserve for cash flow hedges is reclassified to profit or loss in the periods in which there are changes in the hedged future cash flows recognised through profit or loss.
- If this amount is a loss, however, and the assumption is that all or part of this loss cannot be recouped in future periods, then this amount is recognised immediately through profit or loss.

When a hedging instrument expires or is sold or terminated, or when a hedge no longer meets the criteria for hedge accounting, hedge accounting is discontinued. The hedging relationship continues, however, if it was originally designated as a rolling hedge. If the expected transaction is deemed to be highly probable, new hedging instruments are arranged to replace those that have expired. When the forecast transaction is no longer expected to occur, the cumulative gain or loss and deferred costs of hedging that were reported in equity are immediately reclassified to profit or loss.

Financial assets measured at fair value through other comprehensive income

This item comprises strategic investments which we have irrevocably elected to recognise at fair value through other comprehensive income in this category at initial recognition. Fixed-income bonds allocated to the “Hold and sell” business model are also presented at fair value through other comprehensive income.

Composition of financial assets measured at fair value through other comprehensive income

	2021 €m	2020 €m
Strategic investments	224.3	107.0
Listed debt instruments	4.3	4.9
Total	**228.6**	**111.9**

We do not pledge any of these financial assets as collateral. Debt securities amounting to €0.5 million expired in 2021 (2020: €0.5 million). Debt securities amounting to €1.5 million were classified as current as at 31 December 2021 (2020: €0.5 million); total impairments came to less than €0.1 million (2020: less than €0.1 million). Additions to this item came partly from follow-on investments of €64.7 million and also from the reclassification of two strategic investments of €7.0 million, which were previously accounted for using the equity method.

Amounts recognised in profit or loss and other comprehensive income

	2021 €m	2020 €m
Gains/(losses) recognised in other comprehensive income		
Strategic investments	49.7	25.5
Debt instruments	0.1[1]	0.3
Total	**49.8**	**25.8**
Gains/(losses) recognised in profit or loss		
Dividends related to investments derecognised during the period	0	0.3
Total	**0**	**0.3**

1) Of which €<0.1 million (2020: €0.1 million) are attributable to non-controlling interests.

The sale of a strategic investment resulted in a disposal of financial assets for €8.8 million (2020: €12.5 million) and a resulting effect of €–4,9 million (2020: €0.1 million) recognised directly in equity and transferred to the retained earnings. The sale of the strategic investment was due to its acquisition by another company outside the Group.

Furthermore, there was a significant positive valuation effect of €39.0 million resulting from a strategic investment.

Financial assets and liabilities measured at amortised cost

Composition of financial assets at amortised cost

	31 Dec 2021			31 Dec 2020		
	Non-current €m	Current €m	Total €m	Non-current €m	Current €m	Total €m
Trade receivables	**0**	**969.4**	**969.4**	**0**	**616.6**	**616.6**
of which expected losses	0	– 8.8	– 8.8	0	– 9.2	– 9.2
Other financial assets measured at amortised costs	**1,634.7**	**15,799.6**	**17,434.3**	**997.5**	**16,225.1**	**17,222.5**
Fixed income securities	1,528.8	396.1	1,924.9	992.1	206.0	1,198.1
Reverse repo transactions	0	4,274.3	4,274.3	0	6,176.7	6,176.7
Balances on nostro accounts	0	1,905.4	1,905.4	0	2,252.4	2,252.4
Money market lendings	0	7,440.3	7,440.3	0	6,440.0	6,440.0
Customer overdrafts from settlement business	0	531.6	531.6	0	267.7	267.7
Receivables from CCP balances	0	1,189.3	1,189.3	0	675.6	675.6
Margin calls	0	6.7	6.7	0	156.6	156.6
Other	105.9	55.9	161.8	5.4	50.0	55.4
of which expected losses	– 0.4	0	– 0.4	– 0.3	0	– 0.3
Restricted bank balances	**0**	**78,542.0**	**78,542.0**	**0**	**38,420.1**	**38,420.1**
Cash and other bank balances	**0**	**1,029.6**	**1,029.6**	**0**	**1,467.3**	**1,467.3**
Total	**1,634.7**	**96,340.6**	**97,975.3**	**997.5**	**56,729.1**	**57,726.6**

Debt securities amounting to €218.9 million expired in 2021 (2020: €609.6 million).

Amounts reported separately under liabilities as cash deposits by market participants are restricted. Such amounts are mainly invested via bilateral or triparty reverse repurchase agreements and in the form of overnight deposits at central banks and banks and shown as restricted bank balances. Government and government-guaranteed bonds with an external credit rating of at least AA– are accepted as collateral for the reverse repurchase agreements.

Composition of financial liabilities at amortised cost

	31 Dec 2021			31 Dec 2020		
	Non-current €m	Current €m	Total €m	Non-current €m	Current €m	Total €m
Trade payables	**0**	**704.4**	**704.4**	**0**	**388.6**	**388.6**
Other liabilities at amortised costs	**3,539.9**	**15,914.3**	**19,454.2**	**3,474.4**	**14,630.0**	**18,104.4**
Bonds issued	3,037.3	599.4	3,636.7	2,637.1	0	2,637.1
Deposits from securities settlement business	0	12,177.2	12,177.2	0	12,191.6	12,191.6
Money market borrowings	0	574.4	574.4	0	1,176.2	1,176.2
Purchase price liabilities from business combinations	0	0	0	479.5	0	479.5
Commercial Papers issued	0	1,551.8	1,551.8	0	546.4	546.4
Liabilities from CCP balances	0	733.1	733.1	0	565.3	565.3
Leasing liabilities	423.1	63.6	486.7	357.8	51.1	408.9
Bank overdrafts	0	74.5	74.5	0	27.8	27.8
Other	79.5	140.3	219.8	0	71.7	71.7
Cash deposits from market participants	**0**	**78,292.5**	**78,292.5**	**0**	**38,188.8**	**38,188.8**
Total	**3,539.9**	**94,911.2**	**98,451.1**	**3,474.4**	**53,207.4**	**56,681.8**

Deutsche Börse AG issued senior hybrid bonds with a nominal volume of €1,000.0 million in the financial year to refinance an acquisition. The issue was divided into two tranches, with maturities of five and ten years. The five-year bond pays interest of 0.00 per cent and the ten-year bond pays interest of 0.125 per cent.

The financial liabilities recognised on the balance sheet were not secured by liens or similar rights as at 31 December 2021 or as at 31 December 2020.

Cash deposits by market participants

Composition of cash deposits by market participants

	31 Dec 2021 €m	31 Dec 2020 €m
Liabilities from margin payments		
to Eurex Clearing AG by clearing members	34,444.5	31,750.3
to European Commodity Clearing AG by clearing members	42,567.5	5,964.8
to Nodal Clear, LLC by clearing members	1,280.1	473.3
to European Energy Exchange AG by clearing members	0.4	0.4
Total	**78,292.5**	**38,188.8**

Financial assets and liabilities measured at fair value through profit or loss

Financial instruments of the central counterparties

Eurex Clearing AG, European Commodity Clearing AG and Nodal Clear, LLC all act as central counterparties:

- Eurex Clearing AG guarantees the settlement of all transactions involving futures and options on Eurex Germany. It also guarantees the settlement of all transactions for Eurex Repo (repo trading platform), certain exchange transactions in equities on Frankfurter Wertpapierbörse (FWB, the Frankfurt Stock Exchange). Eurex Clearing AG also guarantees the settlement of off-order-book trades entered for clearing in the trading systems of the Eurex exchanges as well as Eurex Repo. In addition, Eurex Clearing AG clears over-the-counter (OTC) interest rate derivatives and securities lending transactions, where these meet the specified novation criteria.
- European Commodity Clearing AG guarantees the settlement of spot and derivatives transactions at the trading venues of EEX group and the connected partner exchanges.
- Nodal Clear, LLC, as part of the Nodal Exchange Group, is a Derivatives Clearing Organisation (DCO) registered in the United States and is the central counterparty for all transactions executed on Nodal Exchange.

The transactions of the clearing houses are only executed between the respective clearing house and a clearing member. Purchases and sales of equities and bonds via the Eurex Clearing AG central counterparty are recognised and simultaneously derecognised at the settlement date. For products that are marked-to-market (futures, options on futures, as well as OTC interest-rate derivatives), the clearing houses recognise gains and losses on open positions of clearing members on each exchange day. By means of the variation margin, profits and losses on open positions resulting from market price fluctuations are settled on a daily basis. The difference between this and other margin types is that the variation margin does not comprise collateral, but is a daily offsetting of profits and losses in cash. Therefore, futures and OTC interest rate derivatives are not reported in the consolidated balance sheet. “Traditional” options, for which the buyer must pay the option premium in full upon purchase, are carried in the consolidated balance sheet at fair value. Receivables and liabilities from repo transactions and from cash-collateralised securities lending transactions are classified as held for trading and carried at fair value.

The fair values recognised in the consolidated balance sheet are based on daily settlement prices. These are calculated and published by the clearing houses in accordance with the rules set out in the contract specifications.

Composition of financial instruments held by central counterparties

	31 Dec 2021 €m	31 Dec 2020 €m
Repo transactions	82,264.9	58,020.6
Options	30,373.2	29,587.4[1]
Others	0	5.0
Total	**112,638.1**	**87,613.0[1]**
thereof non-current	9,442.4	6,908.5[1]
thereof current	103,195.7	80,704.5[1]

1) Due to a correction of the previous year's figures, non-current assets decreased by €26,2 million and current assets by €63,6 million.

Receivables and liabilities that may be offset against a clearing member are reported on a net basis. Financial liabilities of €128,0 million (31 December 2020: €95.0 million) and financial assets of €200.0 million (31.December 2020: €0.0 million) were eliminated because of intra-Group GC Pooling transactions.

Other financial assets and liabilities at FVPL

Other financial assets and liabilities measured at fair value through profit or loss

	Carrying amount 31 Dec 2021			Carrying amount 31 Dec 2020		
	Non-current €m	Current €m	Total €m	Non-current €m	Current €m	Total €m
Derivatives	**10.1**	**102.0**	**112.2**	**0.2**	**8.1**	**8.3**
Forward exchange transactions designated as cash flow hedges	0	0.2	0.2	0.2	0	0.2
Interest rate swaps designated as cash flow hedges	0	11.6	11.6	0	0	0
Foreign currency derivatives not designated as hedges	0	90.2	90.2	0	8.1	8.1
Call options not designated in hedging relationships	10.1	0	10.1	0	0	0
Other financial assets	**146.0**	**14.0**	**160.0**	**42.2**	**7.6**	**49.8**
Strategic investments	**74.6**	**0**	**74.6**	**0**	**0.0**	**0.0**
Fund units and debt securities	71.4	0	71.4	42.2	0	42.2
Contingent consideration	0	14.0	14.0	0	7.6	7.6
Total assets	**156.2**	**116.0**	**272.2**	**42.4**	**15.8**	**58.2**
Derivatives	**6.9**	**4.2**	**11.1**	**1.5**	**172.6**	**174.1**
Forward exchange transactions designated as cash flow hedges	6.9	2.1	9.0	**1.5**	**39.9**	**41.4**
Foreign currency derivatives not designated as hedges	0	2.1	2.1	0	132.7	132.7
Other financial liabilities	**1.5**	**0.6**	**2.1**	**0**	**1.5**	**1.5**
Contingent consideration	1.5	0.6	2.1	0	1.5	1.5
Total liabilities	**8.4**	**4.7**	**13.1**	**1.5**	**174.1**	**175.6**

As at 31 December 2021 there were foreign currency derivatives not designated in hedges with a term of less than eight months with a nominal amount of €3,419.2 million (31 December 2020: €2,524.2 million with a term of less than seven months). Thereof €2,359.1 million (31 December 2020: €510.3 million) is attributable to derivatives with a positive fair value and thereof €1,060.1 million (31 December 2020: €2,013.9 million) is attributable to derivatives with a negative fair value. These foreign currency derivatives were entered into mainly in order to convert USD amounts received into euros for liquidity management purposes on the one hand and as an alternative to unsecured deposits and loans on the other hand with the aim of hedging the unsecured counterparty risk as well as liquidity risk in daily liquidity management.

Amounts recognised in profit or loss

	2021 €m	2020 €m
Net gain/(loss) from derivatives not designated as hedges	15.6	38.6
Net gain/(loss) from cash flow hedges	– 1.4	– 0.2
Net gain/(loss) from other financial assets measured at fair value through profit or loss	59.1	9.4
Distributions from fund units	0.3	0.8
Net gain/(loss) from other financial liabilities measured at fair value through profit or loss	1.4	1.8
Total	**75.0**	**50.4**

Cash flow hedges that qualify for hedge accounting

We enter into cash flow hedges in various currencies to hedge existing or future transactions. The hedged items included in hedge accounting are, on the one hand, intercompany loans in USD and CHF and, on the other hand, a highly probable planned business acquisition in AUD. In addition, a highly probable planned refinancing of a bond maturing in 2022 was designated in a cash flow hedge to hedge the interest rate risk.

The effects of interest rate and foreign currency hedging instruments on the net assets, financial position and results of operations are as follows:

Changes in value of the hedged items in cash flow hedges

	2021 €m	2020 €m
Hedging foreign currency risks		
Intra-group monetary foreign currency items	9.9	0.9
Planned acquisitions	– 0.2	39.9
Hedging interest rate risks		
Planned refinancings	– 11.7	0

Forward exchange contracts and foreign exchange swaps were concluded in USD, CHF and AUD and are denominated in the same currency as the intercompany foreign currency transactions and the highly probable future transactions. Therefore, the hedge ratio is 1:1. The foreign currency hedges in USD will mature in 2024. The other foreign currency hedges and the interest rate hedges expire in 2022.

Hedging transactions in cash flow hedges

	2021	2020
Currency risk		
Foreign exchange swaps and forward exchange contracts		
CHF		
Nominal amount in CHFm	56.3	436.3
Carrying amount in €m	– 2.3	1.3
Hedge rate for hedging instruments	1.08	1.08
USD		
Nominal amount in USDm	340.8	1,421.8
Carrying amount in €m	– 7.4	39.9
Weighted average hedge rate for hedging instruments	1.16	1.20
AUD		
Nominal amount in AUDm	16.0	0
Carrying amount in €m	0.2	0
Hedge rate for hedging instruments	1.56	0
Interest rate risk		
Interest rate swaps		
Nominal amount €m	600.0	0
Carrying amount €m	11.6	0
Weighted average hedge rate for hedging instruments	0.14	0

The revaluation surplus for cash shown in other comprehensive income relates to the following hedging instruments:

Cash flow hedge reserve

	Cost of hedging reserve €m	Reserve for cash flow hedges forward exchange transactions €m	Reserve for cash flow hedges foreign currency swaps €m	Reserve for cash flow hedges interest rate swaps €m	Total €m
Balance as at 1 Jan 2020	**0**	**0**	**0.2**	**0**	**0.2**
Change in fair value of hedging instruments recognised in OCI	0	– 41.3	0	0	– 41.3
Hedging costs deferred and recognised in OCI	– 0.3	0	0	0	– 0.3
Reclassification to profit or loss	0.2	1.3	0	0	1.5
Settlement	0	0	– 0.2	0	– 0.2
Balance as at 31 Dec 2020	**– 0.1**	**– 39.9**	**0**	**0**	**– 40.1**
Change in fair value of hedging instruments recognised in OCI	0	– 8.1	0.3	11.6	**3.8**
Hedging costs deferred and recognised in OCI	– 0.4	0	0	0	**– 0.4**
Reclassification to profit or loss	1.2	8.3	– 0.3	0	**9.2**
Settlement	0.2	39.9	0	0	**40.1**
Balance as at 31 Dec 2021	**0.9**	**0.2**	**0**	**11.6**	**12.6**

The separate amount in the cost of hedging reserve comprises the forward component of forward contracts. The separated costs relate to over-time hedged items in the form of existing purchase price obligations from company acquisitions.

Fair value hierarchy

The financial assets measured at fair value includes financial assets and liabilities at the following three hierarchy levels:

- **Level 1:** Financial instruments with a quoted price for identical assets and liabilities in an active market.
- **Level 2:** Financial instruments with no quoted prices for identical instruments on an active market and whose fair value is determined using valuation methods based on observable market parameters.
- **Level 3:** Financial instruments where the fair value is determined using one or more unobservable significant inputs. This does not apply to listed equity instruments

There were no transfers between levels for recurring fair value measurements during the year under review.

Fair value hierarchy

	Fair value as at 31 Dec 2021	thereof attributable to:		
		Level 1	Level 2	Level 3
	€m	€m	€m	€m
ASSETS				
Financial assets measured at fair value through other comprehensive income (FVOCI)				
Strategic investments	224.3	0	0	224.3
Debt instruments	4.3	4.3	0	0
Total	**228.6**	**4.3**	**0**	**224.3**
Financial assets measured at fair value through profit or loss (FVPL)				
Non-current financial instruments held by central counterparties	9,442.4	0	9,442.4	0
Other non-current financial assets	156.2	17.0	0	139.2
Current financial instruments held by central counterparties	103,195.7	0	103,195.7	0
Other current financial assets	116.0	0	102.0	14.0
Total	**112,910.3**	**17.0**	**112,740.2**	**153.2**
Total assets	**113,138.9**	**21.3**	**112,740.2**	**377.4**
LIABILITIES				
Financial liabilities measured at fair value through profit or loss (FVPL)				
Non-current financial instruments held by central counterparties	9,442.4	0	9,442.4	0
Other non-current financial liabilities	8.4	0	6.9	1.5
Current financial instruments held by central counterparties	103,267.7	0	103,267.7	0
Other current financial liabilities at FVPL	4.7	0	4.2	0.6
Total liabilities	**112,723.3**	**0**	**112,721.2**	**2.1**

Fair value hierarchy previous year

	Fair value as at 31 Dec 2020	thereof attributable to:		
		Level 1	Level 2	Level 3
	€m	€m	€m	€m
ASSETS				
Financial assets measured at fair value through other comprehensive income (FVOCI)				
Strategic investments	107.0	0	0	107.0
Debt instruments	4.9	4.9	0	0
Total	**111.9**	**4.9**	**0**	**107.0**
Financial assets measured at fair value through profit or loss (FVPL)				
Non-current financial instruments held by central counterparties	6,908.5[1]	0	6,908.5[1]	0
Other non-current financial assets	42.4	15.8	0.2	26.4
Current financial instruments held by central counterparties	80,704.5[1]	0	80,704.5[1]	0
Other current financial assets	15.7	0	8.1	7.6
Total	**87,671.1[1]**	**15.8**	**87,621.4[1]**	**34.0**
Total assets	**87,783.0[1]**	**20.7**	**87,621.4[1]**	**141.0**
LIABILITIES				
Financial liabilities measured at fair value through profit or loss (FVPL)				
Non-current financial instruments held by central counterparties	6,908.5[1]	0	6,908.5[1]	0
Other non-current financial liabilities	1.5	0	1.5	0
Current financial instruments held by central counterparties	80,609.5[1]	0	80,609.5[1]	0
Other current financial liabilities	174.1	0	172.6	1.5
Total liabilities	**87,693.6[1]**	**0**	**87,692.1[1]**	**1.5**

1) Due to a correction of the previous year's figures non-current financial assets held by central counterparties decreased by €26.2 million and current financial assets held by central counterparties by €63.6 million. The current and non-current liabilities oft the central counterparties decreased correspondingly.

The other non-current and current assets and liabilities included in the Level 2 hierarchy include foreign currency forwards. The basis for measuring the market value of the foreign currency forwards is the forward rate at the reporting date for the remaining term. They are based on observable market prices. The basis for measuring the market value of financial instruments held by central counterparties are market transactions for identical or similar assets on non-active markets and option pricing models based on observable prices.

The following table shows the valuation techniques including the significant unobservable inputs used to determine the fair value of financial instruments (FVPL) in Level 3.

Measurement methods and inputs for the fair value hierarchy Level 3

Financial instrument	Measurement Method	Material unobservable inputs	Connection between material unobservable inputs and fair value measurement
Derivates	Internal Black-Scholes option pricing model	Value of equity Volatility	The estimated fair value would go up (down), if: - the expected value of the equity were higher (lower) - the volatility were higher (lower)
Strategic investments	Adjusted prices for assets on inactive markets	Measurement by means of price adjustments for assets on inactive markets A descriptive sensitivity analysis is not used here for this reason.	n/a
Interests in institutional investment funds	Net asset value	These investments include private equity funds and alternative investments held by Deutsche Börse Group They are valued by the fund manager based on net asset value. Net asset value is determined using non-public information from the respective private equity managers. Deutsche Börse Group only has limited insight into the specific inputs used by the fund managers; a descriptive sensitivity analysis is therefore not used here.	n/a
Contingent purchase price components	Discounted-cash flow-model	Value of equity	The estimated fair value would go up (down), if: - the expected value of the equity were higher (lower)

The table below shows the reconciliation of the opening balance to the closing balance for Level 3 fair values.

Changes in Level 3 financial instruments

	Assets		Liabilities	Total
	Strategic investments €m	Financial assets measured at fair value through profit or loss €m	Financial liabilities measured at fair value through profit or loss €m	€m
Balance as at 1 Jan 2020	**53.8**	**17.5**	**– 87.9**	**– 16.7**
Additions	25.0	14.5	– 3.3	36.2
Disposals	0	– 0.9	0	– 0.9
Reclassifications	5.2	– 6.7	87.8	86.3
Realised capital gains/(losses) recognised in profit or loss	0	0	2.2	2.2
Other operating income	0	0	2.2	2.2
Unrealised capital gains/(losses) recognised in profit or loss	0	9.6	– 0.3	9.3
Other operating income	0	7.6	– 0.3	7.3
Other operating expenses	0	– 0.3	0	– 0.3
Result from financial investments	0	2.3	0	2.3
Changes recognised in the revaluation surplus	26.6	0	0	26.6
Unrealised gains/(losses) from currency translation recognised in equity	– 3.6	0	0	– 3.6
Balance as at 31 Dec 2020	**107.0**	**34.0**	**– 1.5**	**139.4**
Acquisitions from business combinations	0	0.8	0	0.8
Additions	73.0	40.4	– 1.9	111.5
Disposals	– 9.1	– 12.8	0	– 21.9
Reclassifications	37.0	0	0	37.0
Unrealised capital gains/(losses) recognised in profit or loss	34.1	16.1	1.5	51.7
Other operating income	0	6.4	1.5	7.8
Result from financial investments	34.1	9.8	0	43.8
Changes recognised in the revaluation surplus	44.9	0	0	44.9
Unrealised gains/(losses) from currency translation recognised in equity	7.1	0	0	7.1
Gains/(losses) recognised in equity	4.9	0	0	4.9
Balance as at 31 Dec 2021	**298.9**	**78.6**	**– 1.9**	**375.4**

The unobservable inputs can generally consist of a range of values that are considered probable. The sensitivity analysis determines the fair values of the financial instruments using input factors that lie at the lower or upper limit of the possible range. The fair values of the financial instruments in Level 3 would change as follows using these inputs:

Sensitivity analysis of the financial assets and financial liabilities allocated to Level 3 depending on unobservable input parameters.

	Change input paramter[1]	Fair value change Increase €m	 Decrease €m
Financial assets			
Derivatives	Expected value of equity (10% change)	5.5	– 3.8
	Volatility (10% change)	3.0	– 2.7
Financial liabilities			
Contingent consideration	Value of equity (10% change)	7.6	– 15.3

1) A possible change in one of the significant unobservable input factors with the other input factors remaining unchanged would have the effects shown in the table above.

The fair values of the other financial assets and liabilities not measured at fair value were determined as follows:

The financial assets measured at amortised cost held by Deutsche Börse Group include debt instruments with a fair value of €1,914.7 million (31 December 2020: €1,205.0 million). The fair value of the debt instruments was determined by reference to published price quotations in an active market. The securities were allocated to Level 1.

The bonds issued by Deutsche Börse Group have a fair value of €3,722.9 million (31 December 2020: €2,784.0 million) and are disclosed under liabilities measured at amortised cost. The fair value of such instruments is based on the debt instruments' quoted prices. Due to insufficient market liquidity, the debt securities were allocated to Level 2.

The financial instrument's carrying amount represents a reasonable approximation of fair value for all other positions.

Offsetting financial instruments

Gross presentation of offset financial instruments held by central counterparties

	Gross amount of financial instruments		Gross amount of offset financial instruments		Net amount of financial instruments	
	31 Dec 2021 €m	31 Dec 2020 €m	31 Dec 2021 €m	31 Dec 2020 €m	31 Dec 2021 €m	31 Dec 2020 €m
Financial assets from repo transactions	126,856.4	81,173.2	– 44,591.5	– 23,152.6	82,264.9	58,020.6
Financial liabilities from repo transactions	– 126,928.4	– 81,078.2	44,591.5	23,152.6	– 82,336.9	– 57,925.6
Financial assets from options	108,810.4	78,015.0[1]	– 78,437.2	– 48,427.6	30,373.2	29,587.4[1]
Financial liabilities from options	– 108,810.4	– 78,015.0[1]	78,437.2	48,427.6	– 30,373.2	– 29,587.4[1]

1) Due to a correction of the previous year's figures, the gross amounts and thus also the net amounts of financial assets from options decreased by € 89.7 million. The financial liabilities from options decreased correspondingly.

Cash or securities held as collateral by central counterparties

As the clearing houses of the Deutsche Börse Group guarantee the settlement of all traded contracts, they have established multi-level collateral systems. The central pillar of the collateral systems is the determination of the overall risk per clearing member (margin) to be covered by cash or securities collateral. Losses calculated on the basis of current prices and potential future price risks are covered up to the date of the next collateral payment.

In addition to these daily collateral payments, each clearing member must make contributions to the respective default fund (for further details, see section risk management in the combined management report). Cash collateral is reported in the consolidated balance sheet under “cash deposits by market participants” and the corresponding amounts under “restricted bank balances”.

Securities collateral is generally not derecognised by the clearing member providing the collateral, as the opportunities and risks associated with the securities are not transferred to the secure party. Recognition at the secure party is only permissible if the clearing member providing the transfer is in default according to the underlying contract.

The aggregate margin calls based on the executed transactions and default fund requirements after haircuts was €109,657.0 million as at the reporting date (2020: €62,467.3 million). Collateral totalling €126,842.0 million (2020: €79,747.6 million) was actually deposited.

Composition of collateral held by central counterparties

	31 Dec 2021 €m	31 Dec 2020 €m
Cash collateral (cash deposits)[1, 3]	78,250.7	38,193.0
Securities and book-entry securities collateral[2, 3]	48,591.2	41,554.6
Total	**126,842.0**	**79,747.6**

1) The amount includes the clearing fund totalling €5,943.5 million (2019: € 4,600.8 million).
2) The amount includes the clearing fund totalling €2,995.7 million (2019: € 2,294.1 million).
3) The collateral value is determined on the basis of the fair value less a haircut

13. Contract balances

The Group has recognised the following other contract assets and liabilities:

Contract balances

	31 Dec 2021 €m	31 Dec 2020 €m
Contract costs		
Non-current contract costs	2.9	0
Current contract costs	1.2	0
Total	**4.1**	**0**
Contract liabilities		
Long-term contract liabilities	15.1	13.8
Short-term contract liabilities	136.3	30.5
Total	**151.4**	**44.3**

Contract costs are “incremental costs of obtaining a contract” within the meaning of IFRS 15 and include sales commissions. The Group only recognises the costs of obtaining a contract as an asset for multi-year contracts. The recognised costs are amortised in line with revenue recognition. Total amortisation came to €1.6 million in 2021 (2020: €0 million) and is shown in the consolidated income statement under depreciation, amortisation and impairment losses. Other contract assets are presented in the consolidated statement of financial position in “Other non-current assets” and “Other current assets”.

Contract liabilities are generally advance payments by customers for performance obligations that have not yet been satisfied in full. The increase in contract liabilities mainly results from changes in the basis of consolidation amounting to €117.3 million. The €34.4 million included in contract liabilities as at 31 December 2020 (2020: €30.0 million) was recognised as revenue in 2021. Contract liabilities are presented in the consolidated statement of financial position in “Other non-current liabilities” and “Other current liabilities”.

The total transaction price allocated to performance obligations that have not been satisfied in full as at 31 December 2021 for multi-year contracts that are not invoiced on a variable basis as performance obligations are satisfied is €148.3 million. We anticipate that €75.5 million of the transaction price will be recognised as revenue in the next reporting period. The remaining €72.7 million will be recognised in subsequent financial years.

14. Other current assets

Composition of other current assets

	31 Dec 2021 €m	31 Dec 2020 €m
Other receivables from CCP transactions (commodities)	2,477.0	414.3
Prepaid expenses	93.0	67.6
Tax receivables (excluding income taxes)	47.8	28.9
Interest receivables on taxes	15.3	26.6
Crypto assets	6.3	0
Miscellaneous	36.2	10.7
Total	**2,675.6**	**548.1**

The increase in other current assets results almost exclusively from the increase in other receivables from the CCP business in connection with physical commodity deliveries not yet settled on the spot markets, which were subject to high volatility at year-end 2021. Other current liabilities also increased correspondingly, see Note 20. These receivables do not belong to the financial assets, as the claims do not include receipts of cash or cash equivalents but claims on physical deliveries of commodities.

15. Equity

Changes in equity are presented in the consolidated statement of changes in equity. As at 31 December 2021 the number of no-par value registered shares of Deutsche Börse AG in issue was 190,000,000 (31 December 2020: 190,000,000).

Subject to the agreement of the Supervisory Board, the Executive Board is authorised to increase the subscribed share capital by the following amounts:

Composition of authorised share capital

	Number shares	Date of authori-sation by the shareholders	Expiry date	Existing shareholders' pre-emptive rights may be disapplied for fractioning and/or may be disapplied if the share issue is:
Authorised share capital I[1]	19,000,000	19 May 2021	18 May 2026	n/a
Authorised share capital II[1]	19,000,000	19 May 2020	18 May 2025	▪ for cash at an issue price not significantly lower than the stock exchange price, up to a maximum amount of 10 per cent of the nominal capital. ▪ against non-cash contributions for the purpose of acquiring companies, parts of companies, interests in companies or other assets.
Authorised share capital III[1]	19,000,000	19 May 2020	18 May 2024	n/a
Authorised share capital IV[2]	6,000,000	17 May 2017	16 May 2022	n/a

1) Shares may only be issued, excluding shareholders' pre-emptive subscription rights, provided that the aggregate amount of new shares issued excluding shareholders' pre-emptive rights during the term of the authorisation (including under other authorisations) does not exceed 20 per cent of the issued share capital.
2) Shares may only be issued, excluding shareholders' pre-emptive subscription rights, provided that the aggregate amount of new shares issued excluding shareholders' pre-emptive rights during the term of the authorisation (including under other authorisations) does not exceed 10 per cent of the issued share capital.

Contingent capital

By resolution of the Annual General Meeting of 8 May 2019, the Executive Board is authorised, subject to the consent of the Supervisory Board, to issue in the period until 7 May 2024 on one or several occasions convertible bonds and/or warrant-linked bonds or a combination of such instruments with a total principal amount of up to €5,000,000,000 with or without a limited term and to grant holders or creditors of such bonds conversion or option rights, respectively, to acquire new no-par value registered shares in Deutsche Börse AG representing a notional interest in the share capital of up to €17,800,000 as stipulated in the terms and conditions of convertible bonds or the terms and conditions of the warrants attaching to the warrant-linked bonds.

The Executive Board is authorised, subject to the consent of the Supervisory Board, to exclude the subscription rights of the shareholders in relation to bonds with conversion or option rights to acquire shares in Deutsche Börse AG in the following cases: (i) to avoid fractional amounts, (ii) when the issue price of a bond is not materially below the theoretical fair value determined in accordance with recognised financial techniques and the total number of shares attributable to these bonds does not exceed 10 per cent of the share capital, (iii) to grant the holders of conversion or option rights to shares of Deutsche Börse AG subscription rights to offset any dilutive effects to the same extent as they would be entitled to receive after exercising these rights.

The bonds may also be issued by companies based in Germany or abroad that are affiliated with Deutsche Börse AG within the meaning of sections 15 ff. Aktiengesetz (AktG, German Stock Corporation Act). Accordingly, the share capital was contingently increased by up to €17,800,000 (contingent capital 2019). To date, the authorisation to issue convertible bonds and/or bonds with warrants has not been exercised.

There were no further subscription rights to shares as at 31 December 2021 or 31 December 2020.

Revaluation surplus

Revaluation surplus

	Share-based payments €m	Equity investments measured at FVOCI €m	Cash flow hedges €m	Defined benefit obligations €m	Other €m	Total[1] €m
Balance as at 1 Jan 2020 (gross)	**0**	**6.1**	**0.2**	**– 219.2**	**– 1.2**	**– 214.1**
Changes from defined benefit obligations	0	0	0	– 25.2	– 0.4	– 25.6
Fair value measurement	0	25.7	– 40.3	0	0	– 14.6
Balance as at 31 Dec 2020 (gross)	**0**	**31.8**	**– 40.1**	**– 244.4**	**– 1.6**	**– 254.3**
Changes from defined benefit obligations	0	0	0	60.8	0.1	60.9
Changes from share-based payments	1.3	0	0	0	0	1.3
Fair value measurement	0	52.2	52.7	0	0	104.9
Balance as at 31 Dec 2021 (gross)	**1.3**	**84.0**	**12.6**	**– 183.6**	**– 1.5**	**– 87.2**
Deferred taxes						
Balance as at 1 Jan 2020	**0**	**– 1.8**	**– 0.1**	**59.9**	**0.3**	**58.3**
Additions	0	0	0.2	6.9	0.1	7.2
Reversals	0	– 7.5	0	0	0	– 7.5
Balance as at 31 Dec 2020	**0**	**– 9.3**	**0.1**	**66.8**	**0.4**	**58.0**
Reversals	0	– 13.0	– 3.5	– 16.0	0	– 32.5
Balance as at 31 Dec 2021	**0**	**– 22.3**	**– 3.4**	**50.8**	**0.4**	**25.5**
Balance as at 1 Jan 2020 (net)	**0**	**4.3**	**0.1**	**– 159.3**	**– 0.9**	**– 155.8**
Balance as at 31 Dec 2020 (net)	**0**	**22.5**	**– 40.0**	**– 177.6**	**– 1.2**	**– 196.3**
Balance as at 31 Dec 2021 (net)	**1.3**	**61.7**	**9.2**	**– 132.8**	**– 1.1**	**– 61.7**

1) The position recognition of hidden reserves from fair value measurement, which was included in the previous year, was retroactively allocated to the retained earnings.

Retained earnings

The “retained earnings” item includes exchange rate differences amounting to €133.9 million (2020: €–98.3 million).

16. Shareholders' equity and appropriation of net profit of Deutsche Börse AG

The annual financial statements of the parent company Deutsche Börse AG, prepared as at 31 December 2021 in accordance with the provisions of Handelsgesetzbuch (HGB, the German Commercial Code), report net profit for the period of €943.3 million) (2020: €1,161.9 million) and equity of €3,919.9 million (2020: €3,511.8 million). In 2021, Deutsche Börse AG distributed €550.6 million (€3.00 per share) from distributable profit for the previous year.

Proposal on the appropriation of the unappropriated surplus

	31 Dec 2021 €m
Net profit for the period	943.3
Appropriation to other retained earnings in the annual financial statements	– 323.3
Unappropriated surplus	**620.0**
Proposal by the Executive Board:	
Distribution of a regular dividend to the shareholders of €3.20 per share for 183,618,782 no-par value shares carrying dividend rights	587.6
Appropriation to retained earnings	32.4

No-par value shares carrying dividend rights

	31 Dec 2021 Number	31 Dec 2020 Number
Number of shares issued as at 31 December	190,000,000	190,000,000
Number of treasury shares as at the reporting date	– 6,381,218	– 6,478,743
Number of shares outstanding as at 31 December	**183,618,782**	**183,521,257**

The proposal on the appropriation of distributable profit reflects treasury shares held directly or indirectly by the company that do not carry dividend rights under section 71b Aktiengesetz (AktG, the German Stock Corporation Act). The number of shares carrying dividend rights can change until the Annual General Meeting through the repurchase or sale of further treasury shares. In this case, with a dividend of €3.20 per eligible share, an amended resolution for the appropriation of distributable profit will be proposed to the Annual General Meeting.

17. Provisions for pensions and other employee benefits

Defined benefit pension plans

Provisions for pensions and similar obligations are measured using the projected unit credit method on the basis of actuarial reports. Calculating the present value requires certain actuarial assumptions (e.g. discount rate, staff turnover rate, salary and pension trends) to be made. The current service cost and the net interest expense or income for the subsequent period are calculated on the basis of these assumptions.

The fair value of the plan assets is deducted from the present value of the pension obligations, if necessary taking into account the regulations on the upper limit of the value of plan assets in excess of the obligation (so-called asset ceiling), so that the net pension obligation or the asset value from the defined benefit plans results.

Net interest expense for the financial year is calculated by applying the discount rate determined at the beginning of the financial year to the net defined benefit liability determined as at that date.

The relevant discount rate is determined by reference to the return on long-term corporate bonds with a rating of at least AA (Moody's Investors Service, S&P Global Ratings, Fitch Ratings and DBRS) on the basis of the information provided by Bloomberg and a maturity that corresponds approximately to the maturity of the pension obligations. Moreover, the bonds must be denominated in the same currency as the underlying pension obligation. Measurement of the pension obligations in euros is based on a discount rate which is determined according to the adjusted "GlobalRate:Link" methodology from the advisory company Willis Towers Watson, updated in line with the current market trend.

The actuarial gains or losses and the difference between the expected and the actual return or loss on plan assets are recognised in other comprehensive income in the revaluation surplus. They result from changes in expectations with regard to life expectancy, pension trends, salary trends and the discount rate.

Other long-term benefits for employees and members of executive boards (e.g. total disability pension, transitional payments) are also measured using the projected unit credit method. Actuarial gains and losses and past service cost are recognised immediately and in full through profit or loss.

The defined benefit obligations of the companies of Deutsche Börse Group relate primarily to final salary arrangements and pension plans based on capital components, which guarantee employees a choice of either lifelong pensions or capital payments on the basis of the final salary paid. Deutsche Börse Group uses external trust solutions to cover some of its pension obligations.

Net liability of defined benefit obligations

	Germany €m	Luxembourg €m	Other €m	Total 31 Dec 2021 €m	Total 31 Dec 2020 €m
Present value of defined benefit obligations that are at least partially funded	513.8	83.9	65.4	663.1	666.7
Fair value of plan assets	– 414.1	– 63.8	– 55.2	– 533.1	– 464.4
Funded status	**99.7**	**20.1**	**10.2**	**130.0**	**202.3**
Present value of unfunded obligations	4.8	0.6	0.1	5.5	5.5
Net liability of defined benefit obligations	**104.5**	**20.7**	**10.3**	**135.5**	**207.8**
Amount recognised in the balance sheet	**104.5**	**20.7**	**10.3**	**135.5**	**207.8**

The defined benefit plans comprise a total of 4,156 beneficiaries (2020: 2,882). The present value of defined benefit obligations can be allocated to the beneficiaries as follows:

Allocation of the present value of the defined benefit obligation to the beneficiaries

	Germany €m	Luxembourg €m	Other €m	Total 31 Dec 2021 €m	Total 31 Dec 2020 €m
Eligible current employees	216.1	74.9	62.1	353.1	347.0
Former employees with vested entitlements	184.5	9.1	0	193.6	206.8
Pensioners or surviving dependants	118.4	0.6	2.9	121.9	118.4
Total	**519.0**	**84.6**	**65.0**	**668.6**	**672.2**

Essentially, the retirement benefits encompass the following retirement benefit plans:

Executive boards of Group companies (Germany and Luxembourg)
Individual commitment plans exist for executive board members of certain Group companies; they are based on the plan for executives described in the second paragraph below, i.e. in each calendar year the company provides an annual contribution to a capital component calculated in accordance with actuarial principles. The benefit assets equal the total of the acquired capital components of the individual years and are converted into a lifelong pension once the benefits fall due. In addition, retirement benefit agreements are in place with members of the executive boards of Group companies, under which they are entitled to pension benefits upon reaching the age of 63 and following reappointment. When the term of office began, the replacement rate was 30 per cent of individual pensionable income. It rose by 5 percentage points with each reappointment, up to a maximum of 50 per cent of pensionable income.

Germany
There is an employee-funded deferred compensation plan for employees of certain Deutsche Börse Group companies in Germany who joined prior to 1 January 2019. Under this plan, it is possible to convert portions of future remuneration entitlements into benefit assets of equal value which bear interest of 6 per cent p.a. The benefits consist of a capital payment made in equal annual instalments over a period of three years upon the reaching the age of 65 or at an earlier date due to disability or death.

In the period from 1 January 2004 to 30 June 2006, executives in Germany were offered the opportunity to participate in the following pension system based on capital components: the benefit is based on annual income received, composed of fixed annual salary and the variable remuneration. Every year, participating Group companies provide for an amount that corresponds to a certain percentage of the pensionable income. The participating companies provide an amount corresponding to a specific percentage of this eligible income every year. This amount is multiplied by a capitalisation factor depending on age, resulting in the annual capital component. The benefit assets equal the total of the acquired capital components of the individual years and are converted into a lifelong pension once the benefits fall due. This benefit plan was closed to new staff on 30 June 2006; the executives who were employed in the above period can continue to earn capital components.

As part of adjustments to the remuneration systems to bring them into line with supervisory requirements contracts were adjusted for some executives. For executives affected, whose contracts allowed for the inclusion of only the income received and the variable remuneration above the upper limit of the contribution assessment as pensionable income, the pensionable income was determined on the basis of income received from the year 2016. This is adjusted annually to account for the increase of the cost of living according to the consumer price index for Germany as issued by the Federal Statistical Office. For executives affected, whose capital components were calculated on the basis of income received, without observing the upper limit of the contribution assessment, an amount has been determined that will be reviewed annually and adjusted if necessary, by the Supervisory Board, taking any changes in circumstances in terms of income and purchasing power into account.

Luxembourg

The defined benefit pension plan in favour of Luxembourg employees is funded by means of cash contributions to an “association d'épargne pension” (ASSEP) organised in accordance with Luxembourg law. The benefits consist of a one-off capital payment, which is generally paid upon reaching the age of 65. Employees receive an annual account statement showing their current balance. The pension plan does not pay any benefits in the event of death or disability. Contributions to the ASSEP are funded in full by the participating companies. The contributions are determined annually on the basis of actuarial opinions in accordance with Luxembourg law.

Changes in net defined benefit obligations

	Present value of obligations		Fair value of plan assets		Total	
	2021 €m	2020 €m	2021 €m	2020 €m	2021 €m	2020 €m
Balance as at 1 Jan	**672.2**	**621.6**	**– 464.4**	**– 428.2**	**207.8**	**157.2**
Current service cost	27.9	26.2	0	0	27.9	26.2
Interest expense/(income)	4.7	6.0	– 3.3	– 4.1	1.4	1.9
Past service cost	0	0.3	0	0	0	0.3
	32.6	**32.5**	**– 3.3**	**– 4.1**	**29.3**	**28.4**
Remeasurements						
Return on plan assets, excluding amounts already recognised in interest income	0	0	– 20.2	6.0	– 20.2	6.0
Adjustments to demographic assumptions	– 2.3	0	0	0	– 2.3	0
Adjustments to financial assumptions	– 38.0	25.1	0	0	– 38.0	25.1
Experience adjustments	– 0.9	– 5.8	0	0	– 0.9	– 5.8
	– 41.2	**19.3**	**– 20.2**	**6.0**	**– 61.4**	**25.3**
Effect of exchange rate differences	2.7	0.1	– 1.6	0	1.1	0.1
Contributions:						
Employers	0	0	– 42.9	– 43.6	– 42.9	– 43.6
Plan participants	1.4	0.9	– 1.4	– 0.9	0.0	0
Benefit payments	– 8.7	– 13.5	8.7	13.5	0.0	0
Withdrawal from plan assets	0	0	0	0	0	0
Settlements	0	0	0	0	0	0
Tax and administration costs	– 0.7	– 0.8	1.3	1.4	0.6	0.6
Reclassification to "Held for Sale"	– 0.6	0	0.3	0	– 0.3	0
Changes in the basis of consolidation	11.0	12.1	– 9.8	– 8.5	1.2	3.6
Balance as at 31 Dec	**668.6**	**672.2**	**– 533.1**	**– 464.4**	**135.5**	**207.8**

In the 2021 financial year, employees converted a total of €5.0 million (2020: €4.8 million) of their variable remuneration into deferred compensation benefits.

Assumptions

Provisions for pension plans and other employee benefits are measured annually at the reporting date using actuarial techniques. The assumptions for determining the actuarial obligations for the pension plans differ according to the individual conditions in the countries concerned and are shown in the following table:

Actuarial assumptions

	31 Dec 2021		31 Dec 2020	
	Germany %	Luxembourg %	Germany %	Luxembourg %
Discount rate	1.10	1.10	0.70	0.70
Salary growth	3.00	3.30	3.00	3.30
Pension growth	2.00	n/a	1.90	n/a
Staff turnover rate[1]	2.00	2.00	2.00	2.00

1) Up to the age of 50, afterwards 0 per cent

In Germany, the "2018 G" mortality tables (generation tables) developed by Prof Klaus Heubeck are used. For Luxembourg, generation tables of "Institut national de la statistique et des études économiques du Grand-Duché de Luxembourg" are used.

Sensitivity analysis

The sensitivity analysis presented in the following considers the change in one assumption of the main plans in Germany and Luxembourg at a time, leaving the other assumptions unchanged from the original calculation, i.e. possible correlation effects between the individual assumptions are not taken into account.

Sensitivity of defined benefit obligation

	Change in actuarial assumption	Effect on defined benefit obligation			
		2021		2020	
		Defined benefit obligation €m	Change %	Defined benefit obligation €m	Change %
Present value of the obligation		**603.1**	–	**630.6**	–
Discount rate	Increase by 1.0 percentage point	519.2	–13.9	537.8	–14.7
	Reduction by 1.0 percentage point	707.9	17.4	746.9	18.4
Salary growth	Increase by 0.5 percentage points	613.5	1.7	642.1	1.8
	Reduction by 0.5 percentage points	593.4	–1.6	619.3	–1.8
Pension growth	Increase by 0.5 percentage points	615.3	2.0	643.8	2.1
	Reduction by 0.5 percentage points	591.4	–1.9	617.2	–2.1
Life expectancy	Increase by one year	621.0	3.0	650.1	3.1
	Reduction by one year	584.6	–3.1	609.9	–3.3

Composition of plan assets

Germany

In Germany, plan assets are held by a trustee in safekeeping for individual companies of the Group and for the beneficiaries. At the company's instruction, the trustee uses the funds transferred to acquire securities, without any consulting by the trustee. The contributions are invested in accordance with an investment policy, which may be amended by the companies represented in the investment committee. The trustee may refuse to carry out instructions if they are in conflict with the fund's allocation rules or the payment provisions. In accordance with the investment policy, a value preservation mechanism is applied; investments can be made in different asset classes.

Luxembourg

In Luxembourg, the Board of Directors of the Clearstream Pension Fund is responsible for determining the investment strategy, with the aim of maximising returns in relation to a benchmark. This benchmark is 75 per cent derived from the return on five-year German federal government bonds and 25 per cent from the return on the EURO STOXX 50 Index. According to the investment policy, the fund may only invest in fixed-income and variable-rate securities, as well as listed investment fund units; it may hold cash, including in the form of money market funds.

Composition of plan assets

	31 Dec 2021		31 Dec 2020	
	€m	%	€m	%
Bonds	**402.9**	**75.6**	**349.9**	**75.3**
Government bonds	241.2		211.5	
Multilateral development banks	144.4		0	
Corporate bonds	17.3		138.4	
Derivatives	**2.8**	**0.5**	**3.0**	**0.6**
Stock index futures	3.0		2.9	
Interest rate futures	–0.2		0.1	
Investment funds	**31.2**	**5.9**	**28.1**	**6.1**
Total listed	**436.9**	**82.0**	**381.0**	**82.0**
Qualifying insurance policies	42.8	8.0	31.8	6.8
Cash	53.3	10.0	51.6	11.1
Total not listed	**96.2**	**18.0**	**83.4**	**18.0**
Total plan assets	**533.1**	**100.0**	**464.4**	**100.0**

As at 31 December 2021 the plan assets did not include any financial instruments of the Group (2020: zero). Neither did they include any properties or other assets used by companies in Deutsche Börse Group.

Risks

In addition to the general actuarial risks, the risks associated with the defined benefit obligations relate especially to financial risks in connection with the plan assets, including in particular counterparty credit and market risks.

Market risk

The return on plan assets is assumed to be the discount rate determined on the basis of corporate bonds with an AA rating. If the actual rate of return on plan assets is lower than the discount rate used, the net defined benefit liability increases accordingly. If volatility is low, the actual return is further expected to exceed the return on corporate bonds with a good rating in the medium to long term. The level of the net liability is influenced by the discount rates in particular, whereby the current low interest rates contribute to a relatively high net liability. We consider the share price risk resulting from derivative positions in equity index futures in the plan assets to be appropriate. The company bases its assessment on the expectation that the overall volume of payments from the pension plans will be manageable in the next few years, that the total amount of the obligations will also be manageable and that it will be able to meet these payments in full from operating cash flows. Any amendments to the investment policy take into account the duration of the pension obligation as well as the expected payments over a period of ten years.

Inflation risk

Possible inflation risks that could lead to an increase in defined benefit obligations exist because some pension plans are final salary plans or the annual capital components are directly related to salaries, i.e. a significant increase in salaries would lead to an increase in the benefit obligation from these plans. In Germany, however, there are no contractual arrangements with regard to inflation risk for these pension plans. An interest rate of 6 per cent p.a. has been agreed for the employee-financed deferred compensation plan; the plan does not include any arrangements for inflation, so that it has to be assumed that there will be little incentive for employees to contribute to the deferred compensation plan in times of rising inflation. In Luxembourg, salaries are adjusted for the effects of inflation on the basis of a consumer price index no more than once a year; this adjustment leads to a corresponding increase in the benefit obligation from the pension plan. Since the obligation will be met in the form of a capital payment, there will be no inflation-linked effects once the beneficiary reaches retirement age.

Duration and expected maturities of the pension obligations

The weighted duration of the pension obligations as at 31 December 2021 is 15.6 years (2020: 16.6 years).

Expected maturities of undiscounted pension payments

	Expected pension payments[1]	
	31 Dec 2021 €m	31 Dec 2020 €m
Less than 1 year	16.7	15.7
Between 1 and 2 years	13.5	15.6
Between 2 and 5 years	57.0	50.1
More than 5 years up to 10 years	161.6	144.6
Total	**248.8**	**226.0**

1) The expected payments in Swiss francs were translated into euros at the relevant closing rate on 31 December.

The expected costs of defined benefit plans (excluding service cost for deferred compensation) amount to approximately €15.2 million plus €1.5 million for the net interest expense.

Defined contribution pension plans and multi-employer plans

Defined contribution plans

There are defined contribution plans as part of the occupational pension system using pension funds and similar pension institutions. In addition, contributions are paid to the statutory pension insurance scheme. The level of contributions is normally determined in relation to income. As a rule, no provisions are recognised for defined contribution plans. The contributions paid are reported as pension expenses in the year of payment. There are defined contribution pension plans for employees in several countries. In addition, the employer pays contributions to employees' private pension funds.

During the reporting period, the costs associated with defined contribution plans amounted to €43.5 million (2020: €37.0 million).

Multi-employer plans

Amongst other financial institutions, several Deutsche Börse Group companies are member institutions of BVV Versicherungsverein des Bankgewerbes a.G., a pension insurance provider with registered office in Berlin. Employees and employers make regular contributions, which are used to provide guaranteed pension plans and a potential surplus. The contributions to be made are derived from contribution rates applied to active employees' monthly gross salaries, taking into account specific financial thresholds. Member institutions have a subsidiary liability for the fulfilment of BVV's agreed pension benefits. However, we consider the risk that this liability will be invoked as remote. Given that BVV membership is governed by several Works Council Agreements, membership termination is subject to certain conditions. The notice period is specified in the BVV constitution. The subsidiary liability for the reached entitlement of each employee remains with the employer after the membership termination. Deutsche Börse Group considers BVV pension obligations as multi-employer defined benefit pension plans. However, we currently lack information regarding the allocation of BVV assets to individual member institutions and the respective beneficiaries. Moreover, we do not know Deutsche Börse Group's actual share in BVV's total obligations. This plan is therefore shown in the Group's financial reporting as a defined contribution plan. On the basis of current information published by BVV there is no shortfall that could affect the future contributions payable by the Group. Deutsche Börse group is not liable for other BVV members' obligations.

EPEX Netherlands B.V. participates in the ABP pension fund within the EEX subgroup. Participation is mandatory for all employees. Employer contributions are calculated by ABP and adjusted, if necessary. Since the allocation of assets to member institutions and beneficiaries is not possible, this pension plan can also be presented only as a defined contribution plan.

During the reporting period, the costs associated with designated multi-employer plans, amounted to €10.3 million (2020: €10.0 million). In 2022 we expect to make contributions to multi-employer plans amounting to around €10.2 million.

Other long-term employee benefits

Other long-term employee benefits

	31 Dec 2021 €m	31 Dec 2020 €m
Pensions obligations (IHK)	7.7	8.5
Jubilee	6.0	6.2
Total	**13.7**	**14.6**

The obligation arising from partial retirement agreements is reported under other current assets, as the allocated plan assets exceed the corresponding liability.

18. Share-based payment

Deutsche Börse Group operates the Group Share Plan (GSP), the Stock Bonus Plan (SBP), the Co-Performance Investment Plan (CPIP), the Performance Share Plan (PSP) and the Management Incentive Programme (MIP) as well as the Long-term Sustainable Instrument (LSI) and the Restricted Stock Units (RSU), which provide share-based payment components for employees, senior executives and executive board members.

Stock Bonus Plan (SBP)

The SBP is open to senior executives of Deutsche Börse AG and its participating subsidiaries. It grants a long-term remuneration component in the form of so-called SBP shares. These are generally accounted for as share-based payments for which Deutsche Börse AG has a choice of settlement in cash or equity instruments for certain tranches. Tranches due in previous years were each settled in cash. In the reporting period, the company established an additional tranche of the SBP for senior executives who are not risk takers. In order to participate in the SBP, a beneficiary must have earned a bonus. The awards are settled in cash and the SBP shares are measured as cash-settled share-based payment transactions. The cost of the options is estimated using an option pricing model (fair value measurement) and recognised in staff costs in the consolidated income statement.

The number of stock options is determined by the amount of the individual and performance-based SBP bonus for the financial year, divided by the average share price (Xetra closing price) of Deutsche Börse AG's shares in the fourth quarter of the financial year in question. Neither the converted SBP bonus nor the stock options are paid at the time the bonus is determined. Rather, the entitlement is generally received three years after the grant date (the "waiting period"). Within this period, beneficiaries cannot assert shareholder rights (in particular, the rights to receive dividends and attend the Annual General Meeting). Once they have met the condition of service, the beneficiaries' claims resulting from the SBP are calculated on the first trading day following the last day of the waiting period. The current market price at that date (closing auction price of Deutsche Börse shares in electronic trading on the Frankfurt Stock Exchange) is multiplied by the number of stock options. Stock options are settled in cash.

Evaluation of the SBP

To determine the fair value of the stock options the intrinsic value of the additional pro rata stock options is calculated, which also includes an expectation about future dividend payments.

Valuation of SBP shares

Tranche	Balance at 31 Dec 2021 Number	Deutsche Börse AG share price at 31 Dec 2021 €	Intrinsic value/ option at 31 Dec 2021 €	Fair value/ option at 31 Dec 2021 €	Settlement obligation €m	Current provision at 31 Dec 2021 €m	Non-current provision at 31 Dec 2021 €m
2017	45	147.10	136.00	136.00	0.0	0.0	0.0
2018	10,596	147.10	147.10	138.45	1.5	1.5	0.0
2019	6,409	147.10	147.10	101.71	0.7	0.0	0.7
2020	7,739	147.10	147.10	66.39	0.5	0.0	0.5
2021	9,768	147.10	147.10	32.48	0.3	0.0	0.3
Total	**34,557**				**3.0**	**1.5**	**1.5**

Average price of the exercised and forfeited share options

Tranche	Average price of the exercised share options €	Average price of the forfeited share options €
2017	135.97	130.51
2018	138.55	104.78
2019	140.38	74.02
2020	142.26	50.56

The stock options from the 2017 SBP tranche were exercised in the reporting period following the expiration of the waiting period. Shares of the SBP tranches 2018, 2019 and 2020 were paid to former employees as part of severance payments in the year under review.

The carrying amount of the provision for the SBP results from the measurement of the number of SBP stock options at the fair value of the closing auction price of Deutsche Börse shares in electronic trading at the Frankfurt Stock Exchange at the reporting date and its proportionate recognition over the waiting period.

Provisions for the SBP amounting to €3.0 million were recognised at the reporting date of 31 December 2021 (31 December 2020: €3.4 million). The total expense for SBP stock options in the reporting period amounted to €1.3 million (2020: €1.5 million).

Change in number of SBP shares allocated

	Balance at 31 Dec 2020	Disposals tranche 2017	Disposals tranche 2018	Disposals tranche 2019	Disposals tranche 2020	Additions tranche 2021	Fully settled cash options	Options forfeited	Balance at 31 Dec 2021
To other senior executives	38,225	303	278	107	– 171	9,768	– 12,539	– 1,414	34,557
Total	**38,225**	**303**	**278**	**107**	**– 171**	**9,768**	**– 12,539**	**– 1,414**	**34,557**

Long-term Sustainable Instrument (LSI) and Restricted Stock Units (RSU)

In 2014, Deutsche Börse Group introduced the Long-Term Sustainable Instrument (LSI) plan in order to provide share-based remuneration in line with regulatory requirements. This programme was extended in 2016 with the Restricted Stock Units (RSU) plan. The following disclosures relate to both plans.

Long-term Sustainable Instrument (LSI)
The LSI remuneration model requires at least half of a part of the variable remuneration to be settled in cash and half in phantom shares of Deutsche Börse AG (LSI shares). All tranches will be settled in cash. A portion of the variable remuneration is paid in the subsequent year and another portion over a further period of three or four years. Moreover, a portion of the variable remuneration shall be converted into RSU, subject to a three-year retention period after grant and a one-year waiting period (RSU shares). Deutsche Börse Group thus measures the LSI shares as cash-settled share-based payment transactions. The options are measured using an option pricing model (fair value measurement). Any right to payment of a stock bonus only vests after the expiration of the one-year service period on which the plan is based, taking certain waiting periods into account.

The number of LSI and RSU shares for the 2016 to 2020 tranches is calculated by dividing the proportionate LSI or RSU bonus, respectively, for the year in question by the average closing price of Deutsche Börse AG shares in the last month of a financial year. The number of LSI and RSU shares for the 2021 tranche is based on the closing auction price of Deutsche Börse shares as at the disbursement date of the cash component of the 2021 tranche in 2022 or on the closing price as at the following trading day on the Frankfurt Stock Exchange. This results in individual LSI tranches for the LSI bonus, which have maturities of between one and five years. The RSU bonus is used as a basis for another four-year tranche. Payment of each tranche is made after a waiting period of one year. Neither remuneration system stipulates any condition of service. Following the expiry of the waiting period, both the LSI and the RSU shares of the 2016 to 2020 tranches are measured on the basis of the average closing price of Deutsche Börse AG shares in the last month preceding the end of the waiting period. The LSI and RSU shares of the 2021 tranche are measured at the closing auction price as at the first trading day in February of the year in which the holding period ends. In the reporting year, LSI shares of the tranches 2015 to 2019 were paid out with a relevant payout share price of € 138.22 for shares of tranches 2015 to 2017. For shares of tranches 2018 and 2019 the relevant payout share price was € 136.90. The difference in payout share prices is caused by the nature of the specific terms and conditions for the respective tranches.

Restricted Stock Units (RSU)

Like the LSI plan, the RSU plan applies to risk takers within Deutsche Börse Group. RSU shares are settled in cash; Deutsche Börse Group thus measures the RSU shares as cash-settled share-based payment transactions. The options are measured using an option pricing model (fair value measurement). Any right to payment of a stock bonus only vests after the expiration of the one-year service period on which the plan is based, taking a three-year retention period and a one-year waiting period into account. In the reporting year, RSU shares of tranche 2016 were paid out with a relevant payout share price of € 138.22.

Evaluation of the LSI and the RSU

To determine the fair value of the subscription rights the intrinsic value of the additional pro rata subscription rights is calculated, which also includes an expectation about future dividend payments.

Valuation of LSI and RSU shares

Tranche	Balance as at 31 Dec 2021 Number	Deutsche Börse AG share price as at 31 Dec 2021 €	Intrinsic value/ option as at 31 Dec 2021 €	Fair value/ option as at 31 Dec 2021 €	Settlement obligation €m	Current provision as at 31 Dec 2021 €m	Non-current provision as at 31 Dec 2021 €m
2016	1,748	147.10	147.10	147.10	0.2	0.2	0.0
2017	42,764	147.10	147.10	147.10	6.3	6.3	0.0
2018	51,178	147.10	147.10	138.03-147.10	7.3	0.8	6.5
2019	40,408	147.10	147.10	128.88-147.10	5.7	0.6	5.1
2020	41,963	147.10	147.10	126.10-147.10	5.9	1.6	4.3
2021	48,024	147.10	147.10	134.98-144.09	6.8	0.0	6.8
Total	**226,085**				**32.2**	**9.5**	**22.7**

Provisions amounting to €32.2 million were recognised as at 31 December 2021 (31 December 2020: €33.3 million). The total expense for LSI/RSU stock options in the reporting period amounted to €9.5 million (31 December 2020: €5.9 million).

Change in number of LSI and RSU shares allocated

	Balance at 31 Dec 2020	Additions/ (disposals) Tranche 2016	Additions/ (disposals) Tranche 2017	Additions/ (disposals) Tranche 2018	Additions/ (disposals) Tranche 2019	Additions/ (disposals) Tranche 2020	Additions/ (disposals) Tranche 2021	Fully settled cash options	Balance at 31 Dec 2021
To other senior executives	247,236	1,149	– 1,287	395	4,881	1,064	48,024	– 75,377	226,085
Total	**247,236**	**1,149**	**– 1,287**	**395**	**4,881**	**1,064**	**48,024**	**– 75,377**	**226,085**

Co-Performance Investment Plan (CPIP) and Performance Share Plan (PSP)

Performance Share Plan (PSP)
The PSP was launched in the financial year 2016 for members of the Executive Board of Deutsche Börse AG as well as selected senior executives and employees of Deutsche Börse AG and of participating subsidiaries. The number of phantom PSP shares to be allocated is calculated based on the number of shares granted and the increase of net profit for the period attributable to Deutsche Börse AG shareholders, as well as on the relative performance of the total shareholder return (TSR) on Deutsche Börse AG's shares compared with the total shareholder return of the STOXX Europe 600 Financials Index constituents. The shares are subject to a performance period of five years. The subsequent payment of the stock bonus will be settled in cash.

The 100 per cent stock bonus target was calculated in euros for each Executive Board member. The 100 per cent stock bonus target for selected executives and employees of Deutsche Börse AG and participating subsidiaries is defined by the responsible decision-making bodies. Based on the PSP 100 per cent stock bonus target, the corresponding number of phantom shares for each beneficiary was calculated by dividing the stock bonus target by the average share price (Xetra closing price) of Deutsche Börse AG's shares in the last calendar month preceding the performance period. Any right to payment of a PSP stock bonus vested only at the end of a five-year performance period.

The final number of performance shares was calculated by multiplying the original number of Performance Shares with the level of overall target achievement. The PSP level of overall target achievement was based on two performance factors during the performance period: firstly, on the relative performance of the total shareholder return (TSR) on Deutsche Börse AG's shares compared with the total shareholder return of the STOXX Europe 600 Financials Index as the peer group; and secondly, on the increase of Deutsche Börse AG's net profit for the period attributable to shareholders of the parent company. The two performance factors contribute 50 per cent each to calculate overall target achievement. For the 2021 tranche the overall target achievement depends on the performance against three different metrics over the performance period. The total shareholder return (TSR) for the Deutsche Börse AG share compared with the total shareholder return for the STOXX Europe 600 Financials Index accounts for 50 per cent. The annual growth rate for adjusted earnings per share over the performance period accounts for a further 25 per cent. The remaining 25 per cent are calculated by reference to performance against four equally weighted ESG targets.

The payout amount is calculated by multiplying the final number of performance shares with the average share price of Deutsche Börse AG's shares (Xetra closing price) in the last calendar month preceding the performance period, plus the total of dividend payments made during the performance period based on the final number of performance shares. In the reporting year, PSP shares of tranche 2016 were paid out with a relevant payout share price of €150.87. Until the 2020 tranche, servicing and treatment will be in accordance with the cash settlement rules. Settlement is in cash and with the exception of the 2021 tranche the transaction is measured and recognised as cash-settled share-based remuneration. Because of its specific contractual conditions the 2021 tranche is treated as a settlement with equity instruments.

Co-Performance Investment Plan (CPIP)

In the financial year 2015, a new remuneration programme (Co-Performance Investment Plan, CPIP) was introduced, and the former CEO of Deutsche Börse AG, Carsten Kengeter, was offered a one-time participation. The appropriate number of phantom shares was calculated based on the number of shares granted and the increase of Deutsche Börse AG's net profit for the period attributable to shareholders of Deutsche Börse AG, as well as on the relative performance of the total shareholder return (TSR) on Deutsche Börse AG's shares compared with the total shareholder return of the STOXX Europe 600 Financials Index entities. The performance period for the measurement of the performance criteria commenced on 1 January 2015 and ends on 31 December 2019. The shares are subject to a performance period of five years and a waiting period until 31 December 2019. The payment of the stock bonus was settled in cash and paid in full as at 31 March 2021.

Evaluation of the CPIP and the PSP

To determine the fair value of the subscription rights, the intrinsic value of the additional pro rata subscription rights is calculated, which also includes an expectation about future dividend payments.

Valuation parameters for CPIP and PSP shares

		Tranche 2021	Tranche 2020	Tranche 2019	Tranche 2018	Tranche 2017	Tranche 2016
Term to		31 Dec 2025	31 Dec 2024	31 Dec 2023	31 Dec 2022	31 Dec 2021	31 Dec 2020
Relative total shareholder return	%	100.0	0.0	75.0	235.0	235.0	250.0
Net profit for the period attributable to Deutsche Börse AG shareholders	%	n/a	119.59	120.80	144.13	139.72 - 149.97	171.86 - 182.10
Growth rate Earnings per Share	%	150.00	n/a	n/a	n/a	n/a	n/a
ESG-Target Achievement	%	175.00	n/a	n/a	n/a	n/a	n/a

Valuation of CPIP and PSP shares

Tranche	Balance as at 31 Dec 2021 Number	Deutsche Börse AG share price as at 31 Dec 2021 €	Intrinsic value/ option as at 31 Dec 2021 €	Fair value/ option as at 31 Dec 2021 €	Settlement obligation €m	Current provision as at 31 Dec 2021 €m	Non-current provision as at 31 Dec 2021 €m
2016	9,965	147.10	138.22	152.18	1.5	1.5	0.0
2017	132,150	147.10	141.35	154.75	20.4	20.4	0.0
2018	132,606	147.10	147.10	126.76	18.8	0.0	18.8
2019	53,342	147.10	147.10	93.57	5.7	0.0	5.7
2020	22,820	147.10	147.10	61.27	1.6	0.0	1.6
2021[1]	49,458	147.10	147.10	27.41	1.4	0	0
Total	**400,341**				**49.4**	**21.9**	**26.1**

1) Due to the treatment of the 2021 tranche as equity-settled, no provisions are recognized for this tranche. The above figures also include the shares of the members of the Board of Management

Provisions for the CPIP and the PSP amounting to €48.0 million were recognised at the reporting date 31 December 2021 (31 December 2020: €68.8 million). Of these provisions, €14.8 million were attributable to members of the Executive Board (2020: €8.5 million). The total expense for CPIP and PSP stock options in the reporting period was €6.0 million (2020: €8.5 million). Of that amount, an expense of €3.5 million was attributable to members of the Executive Board (2020: €6.0 million).

Change in number of CPIP and PSP shares allocated

	Balance at 31 Dec 2020	Additions/ (disposals) Tranche 2015	Additions/ (disposals) Tranche 2016	Additions/ (disposals) Tranche 2017	Additions/ (disposals) Tranche 2018	Additions/ (disposals) Tranche 2019	Additions/ (disposals) Tranche 2020	Additions/ (disposals) Tranche 2021	Balance at 31 Dec 2021
To the Executive Board[1]	496,043	– 87,574	– 87,744	– 3,025	– 3,574	– 20,117	– 24,016	38,116	308,109
To other senior executives	144,977	–	– 44,018	– 2,876	– 3,112	– 6,833	– 7,248	11,342	92,232
Total	**641,020**	**– 87,574**	**– 131,762**	**– 5,901**	**– 6,686**	**– 26,950**	**– 31,264**	**49,458**	**400,341**

1) Active and former Executive Board members.

Granting of PSP-Tranche 2021 for Board Members

At the beginning of the fiscal year 2021 PSP-tranche 2021 was granted. The relevant grant share price for tranche 2021 shares was at €138.22. The performance period ends on 31 December 2025. The individual investment target amounts, grant share price, number of initially granted virtual shares as well as the fair value at reporting date can be summarised for the respective board members as follows:

Granted PSP-Tranche 2021 for Board Members

Board member	Investment Target €	Grant Share Price €	Granted Number of Performance Shares Number	Fair value/ option as at 31 Dec 2021 €
Dr. Theodor Weimer	1,300,000	138.22	9,406	338,376
Dr. Christoph Böhm	560,000	138.22	4,052	145,794
Dr. Thomas Book	516,666	138.22	3,738	134,501
Heike Eckert	516,666	138.22	3,738	134,501
Dr. Stephan Leithner	560,000	138.22	4,052	145,794
Gregor Pottmeyer	560,000	138.22	4,052	145,794
Total	**4,013,332**			**1,044,760**

Group Share Plan (GSP)

Employees of Deutsche Börse Group who are not members of the Executive Board or senior executives have the opportunity to acquire shares of Deutsche Börse AG at a discount under the Group Share Plan (GSP). Under the GSP tranche for the year 2021, the participating employees could subscribe for up to 50 shares of the Company at a discount of 40 per cent and another 50 shares at a discount of 10 per cent. The acquired shares are subject to a lock-up period of two years.

The expense of this discount is recognised in the income statement at the grant date. In the reporting period, an expense totalling €4.8 million (2020: €4.8 million) was recognised in staff expense for the GSP.

Other share based payment programmes in the light of acquisitions

Axioma Management Incentive Programme (MIP)

The MIP was set up for the senior management of the Qontigo Group (index and analytics business of Group Deutsche Börse) as part of the acquisition. It grants a non-current remuneration component in the form of virtual shares of the Qontigo Group. These are generally accounted for as share based payments. The amounts payable to the beneficiaries are intended to reflect the economic development of the Qontigo Group. The MIP contains a time-based and a performance-based component. The vesting period is three years with the possibility of an early execution and started with the implementation of the transaction. Due to a potential payout with cash by Group Deutsche Börse, the MIP is accounted for under the principles of a cash-settlement.

Valuation
The value of the virtual shares is determined using a Monte Carlo simulation on the respective balance sheet date, which appropriately reflects the contract-specific conditions. The underlying simulations depend on the underlying from which the payment is linked to the beneficiaries of the MIP. The enterprise value of the Qontigo Group serves as the underlying. On the basis of the simulations carried out, a discounted average payment of the contractually agreed payment flows to the respective participants is calculated. The main valuation parameters include the enterprise value and the expected volatility of the Qontigo Group as well as the expected term and the contract-specific payment profile. A pro rata addition of expenses over the vesting period is conducted in accordance with the criteria for a non-forfeiture of the programme.

ISS Employee Share Programme (MBP)

An employee share programme was set up for the senior management of ISS in the course of the acquisition. It enables management to purchase shares in the parent of ISS, Inc. (ISS HoldCo, Inc.). Deutsche Börse Group has the right to buy back the shares after not less than three years at their fair value. According to an IFRIC interpretation from 2005, this programme is treated like an award of stock options. Since Deutsche Börse Group has a unilateral right to settle the transaction with treasury shares in Deutsche Börse AG, the programme is treated according to the rules for equity settlement.

Valuation
The value of the programme was calculated using the Black-Scholes model and contract-specific inputs at the time the transaction was completed. The main valuation parameters were the enterprise value of ISS, its expected volatility, the contractually agreed interest rate on the loan and the expected time until maturity. Since the programme does not have a vesting period, the total value was recognised as expense at the transaction date.

ISS Employee Incentive Programme (MAP)

An employee incentive programme was set up for selected managers at ISS, which has not yet been fully awarded as at the reporting date. It grants a long-term remuneration component in the form of virtual shares in ISS. The programme is accounted for as share-based payments. The amounts awarded to the beneficiaries are intended to reflect the economic development of ISS. The MAP contains a time-based and a performance-based component. The vesting period is three years, and under certain circumstances can be exercised early. Since Deutsche Börse Group has a unilateral right to settle the transaction with treasury shares in Deutsche Börse AG, the programme is treated according to the rules for equity settlement.

Valuation
The value of the virtual shares is calculated at the date of each allocation to the beneficiaries, using a Black-Scholes model with contract-specific inputs. The main valuation parameters include the enterprise value and the expected volatility of ISS, as well as the expected term and the contract-specific payment profile. In line with the vesting criteria, the value of the award is recognised as an expense over the vesting period.

19. Changes in other provisions

Other provisions

Provisions are recognised if the Group has a present obligation from an event in the past, it is probable that there will be an outflow of resources embodying economic benefits to settle the obligation and the amount of this obligation can be estimated reliably. The amount of the provision corresponds to the best estimate of the expenditure required to settle the obligation at the reporting date. The provision is to be reversed if it is no longer probable that settling the obligation will entail the outflow of resources embodying economic benefits.

A provision is only recognised for restructuring when a detailed, formal restructuring plan has been adopted and those concerned have been given the reasonable impression that the restructuring measures will be implemented. This can be by starting to implement the plan or by announcing its key elements to those concerned. The restructuring provisions and the provisions for contractually agreed early retirement benefits and severance payments are recognised in other provisions.

Changes in other provisions (part 1)

	Bonuses €m	Share-based payments €m	Interest on taxes €m	Restructuring and efficiency measures €m
Balance as at 1 Jan 2021	**122.8**	**112.6**	**92.1**	**79.5**
Changes in the basis of consolidation	3.7	0	0	0
Reclassification	– 4.8	– 0.3	0	– 0.2
Utilisation	– 88.8	– 27.3	– 2.3	– 28.0
Reversal	– 11.0	– 19.5	– 24.1	– 2.6
Additions	129.1	19.6	11.2	7.7
Currency translation	3.1	0.22	0	0.1
Interest	0	0	0	– 0.2
Balance as at 31 Dec 2021	**154.1**	**85.4**	**76.9**	**56.2**

Changes in other provisions (part 2)

	Other tax provisions €m	Anticipated Losses €m	Other personnel provision €m	Miscellaneous €m
Balance as at 1 Jan 2021	**38.9**	**7.9**	**4.5**	**23.4**
Changes in the basis of consolidation	0.0	0	0.3	1.8
Reclassification	0	0	0	– 1.1
Utilisation	– 3.1	– 0.1	– 4.0	– 9.8
Reversal	– 0.5	– 0.2	– 0.3	– 2.8
Additions	9.3	7.5	4.6	12.9
Currency translation	0.0	0.2	0.2	0.2
Interest	0.0	0	0.0	0
Balance as at 31 Dec 2021	**44.6**	**15.4**	**5.2**	**24.7**

The other non-current and current provisions amount to a total of €462.5 million (31 December 2020: €481.7 million). The non-current provisions of €127.2 million (31 December 2020: €168.0 million) largely have a remaining term of one to five years. Furthermore current provisions exist for €335.3 million (31 December 2020: €313.7 million).

Provisions for restructuring and efficiency measures include provisions for contractually agreed early retirement benefits and severance payments as well as expenses directly related to restructuring measures.

For details of share-based payments, see Note 18.

20. Other current liabilities

Composition of other current liabilities

	31 Dec 2021 €m	31 Dec 2020 €m
Other Liabilities from CCP positions (Commodities)	2,527.6	415.1
Contract liabilities	136.3	30.5
Tax liabilities (excluding income tax)	41.9	42.8
Vacation entitlements, flextime and overtime credits	30.6	29.9
Social security liabilities	13.8	9.1
Liabilities to employees	11.4	6.7
Liabilities to supervisory bodies	3.3	3.0
Miscellaneous	23.7	7.6
Total	**2,788.6**	**544,7**

The increase in other current liabilities results almost exclusively from the increase in liabilities from CCP business. These liabilities are not part of the financial liabilities because the obligation does not consist in payment of cash but in physical delivery of commodities.

Other disclosures

21. Notes on the consolidated cash flow statement

Composition of other non-cash income

	2021 €m	2020 €m
Subsequent measurement of non-derivative financial instruments	– 156.4	39.5
Reversal of discount and transaction costs from long-term financing	0.5	8.9
Equity method measurement	– 18.1	– 17.2
Impairment of financial instruments	– 0.4	2.1
Subsequent measurement of derivatives	19.4	101.5
Contract assets and liabilities	– 3.9	2.6
Gains on the disposal of subsidiaries and equity investments	– 10.5	0
Miscellaneous	5.8	6.3
Total	**– 163.6**	**143.6**

Reconciliation to cash and cash equivalents

Cash and cash equivalents comprise cash and bank balances – to the extent that these do not result from reinvesting current liabilities from cash deposits by market participants – as well as receivables and liabilities from banking business with an original maturity of three months or less.

Reconciliation to cash and cash equivalents

	31 Dec 2021 €m	31 Dec 2020 €m
Restricted bank balances	78,542.0	38,420.1
Other cash and bank balances	1,029.6	1,467.3
Net position of financial instruments held by central counterparties	– 72.0	95.0
Current financial instruments measured at amortised cost	15,799.7	16,225.1
less financial instruments with an original maturity exceeding 3 months	– 2,019.0	– 1,919.7
Current financial liabilities measured at amortised cost	– 15,914.3	– 14,630.0
less financial instruments with an original maturity exceeding 3 months	2,966.5	1,037.7
Current liabilities from cash deposits by market participants	– 78,292.5	– 38,188.8
Cash and cash equivalents	**2,040.0**	**2,506.7**

Changes in liabilities arising from financing activities

	Bonds issued €m	Leasing liabilities €m	Commercial paper €m
Balance as at 1 Jan 2020	**2,286.2**	**380.1**	**0**
Lease payments (IFRS 16)	0	– 47.4	0
Acquisition from business combinations	0	2.9	0
Additions	948.2	73.3	0
Disposals	0	– 0.7	0
Repayments	– 602.9	0	0
Other and exchange rate differences	5.5	0.7	0
Balance as at 31 Dec 2020	**2,637.0**	**408.7**	**0**
Lease payments (IFRS 16)	0	– 62.8	0
Acquisition from business combinations	0	87.1	0
Additions	999.1	46.1	2,701.0
Disposals	0	– 4.7	0
Repayments	0	0	– 1,900.0
Other and exchange rate differences	0	12.1	0
Balance as at 31 Dec 2021	**3,636.1**	**486.7**	**801.0**

22. Earnings per share

Under IAS 33, earnings per share are calculated by dividing the net profit for the period attributable to Deutsche Börse AG shareholders (net income) by the weighted average number of shares outstanding.

In order to determine diluted earnings per share, potentially dilutive ordinary shares that may be acquired under the share-based payment programmes are added to the average number of shares.

In order to determine diluted earnings per share, all subscription rights, for which a cash settlement has not been determined are assumed to be settled with equity instruments – regardless of actual accounting in accordance with IFRS 2.

All tranches of the Long-term Sustainability Instrument (LSI) for which a choice between settlement in cash or equity instruments exists were settled in the previous year. All current and future tranches may only be settled in cash. There are therefore no potentially dilutive ordinary shares from the Long-term Sustainability Instrument.

As part of the acquisition of Institutional Shareholder Services Inc. there are ongoing option rights valid until 25 February 2024, which did have a small dilutive effect during the reporting year up to the reporting date.

Calculation of earnings per share (basic and diluted)

	2021	2020
Number of shares outstanding at beginning of period	183,521,257	183,429,035
Number of shares outstanding at end of period	183,618,782	183,521,257
Weighted average number of shares outstanding	183,546,106	183,452,436
Number of potentially dilutive ordinary shares	368,326	0
Weighted average number of shares used to compute diluted earnings per share	183,914,432	183,452,436
Net profit for the period attributable to Deutsche Börse AG shareholders (€m)	1,209.7	1,079.9
Earnings per share (basic) (€)	6.59	5.89
Earnings per share (diluted) (€)	6.58	5.89

23. Segment reporting

Deutsche Börse Group divides its business into eight segments: This structure serves as a basis for the Group's internal management and financial reporting. Detailed information about the segment structure, which is part of these consolidated financial statements, can be found under the heading Business operations and Group structure in section Deutsche Börse: Fundamental information about the Group in the combined management report. Due to the acquisition of Institutional Shareholder Services (ISS), we adapted the segment reporting in the first quarter 2021 and added Institutional Shareholder Services as a segment, please see Note 3.

Segment reporting (part 1)

	Eurex (financial derivatives)		EEX (commodities)		360T (foreign exchange)	
	2021	2020	2021	2020	2021	2020
Net revenue (€m)	995.8	1,110.3	341.5	302.2	107.8	101.5
Operating costs (€m)	– 387.7	– 373.1	– 178.7	– 174.3	– 53.7	– 53.9
Result from financial investments	16.1	1.6	– 0.3	– 0.9	0	0
thereof result of the equity method measurement of associates	– 0.8	– 1.0	– 0.3	– 0.9	0	0
EBITDA (€m)	624.2	738.8	162.5	127.0	54.1	47.6
EBITDA margin (%)	63	67	48	42	50	47
Depreciation, amortisation and impairment losses (€m)	– 44.1	– 55.3	– 33.1	– 35.6	– 21.5	– 20.4
EBIT (€m)	580.1	683.5	129.4	91.4	32.6	27.2
Capital expenditure[1] (€m)	48.3	46.1	22.8	21.4	7.6	8.6
Employees (as at 31 December)	1,746	1,661	1,009	934	274	272

1) Excluding investments from business combinations.

Segment reporting (part 2)

	Xetra (cash equities)		Clearstream (post-trading)		IFS (investment fund services)	
	2021	2020	2021	2020	2021	2020
Net revenue (€m)	364.0	391.7	835.4	827.2	382.4	232.8
Operating costs (€m)	– 150.6	– 158.8	– 376.3	– 367.3	– 125.9	– 117.5
Result from financial investments	29.4	25.8	0.5	– 1.9	– 0.6	– 0.1
thereof result of the equity method measurement of associates	29.2	25.4	0.4	– 1.7	– 0.5	– 0.1
EBITDA (€m)	242.8	258.7	459.6	458.0	255.9	115.2
EBITDA margin (%)	67	66	55	55	67	49
Depreciation, amortisation and impairment losses (€m)	– 15.3	– 23.7	– 69.7	– 72.5	– 36.9	– 28.5
EBIT (€m)	227.5	235.0	389.9	385.5	219.0	86.7
Capital expenditure[1] (€m)	13.5	15.3	72.8	68.4	16.4	27.5
Employees (as at 31 December)	774	739	2,159	2,136	886	911

Segment reporting (part 3)

	Qontigo (index and analytics business)		ISS (Institutional Shareholder Services)		Group	
	2021	2020	2021	2020	2021	2020
Net revenue (€m)	258.7	248.1	223.9	n/a	3,509.5	3,213.8
Operating costs (€m)	– 123.3	– 123.8	– 155.4	n/a	– 1,551.6	– 1,368.7
Result from financial investments	45.2	– 0.2	– 5.1	n/a	85.2	24.3
thereof result of the equity method measurement of associates	10.5	– 0.2	0	n/a	38.6	21.5
EBITDA (€m)	180.6	124.1	63.4	n/a	2,043.1	1,869.4
EBITDA margin (%)	70	50	28	n/a	58	58
Depreciation, amortisation and impairment losses (€m)	– 28.5	– 28.3	– 44.6	n/a	– 293.7	– 264.3
EBIT (€m)	152.1	95.8	18.8	n/a	1,749.4	1,605.1
Capital expenditure[1] (€m)	7.7	8.1	17.3	n/a	206.4	195.4
Employees (as at 31 December)	611	585	2,741	n/a	10,200	7,238

1) Excluding investments from business combinations.

The net revenue includes revenue generated through external parties as well as through intercompany transactions. The impact of intercompany revenue is eliminated on Group level as such internally generated revenue of one segment has an adverse effect on revenue by the same amount on the corresponding partner segment. For an overview of intercompany revenue see Note 4. Services between segments are offset on the basis of measured amounts or fixed prices.

Our business model – and that of all our segments – is focused on an internationally operating participant base and pricing does not differ depending on the customer's location. From a price, margin and risk perspective, this means it does not matter whether sales revenue is generated from German or international participants.

The risks and returns from the activities of the subsidiaries operating within the economic environment of the European Monetary Union (EMU) do not differ significantly from each other on the basis of the factors to be considered in identifying information on geographical regions under IFRS 8. We have therefore identified the following segments: Euro area, other Europe, America and Asia-Pacific.

Sales revenue is allocated to the individual regions according to the customer's domicile, while investments and non-current assets are allocated according to the company's domicile and employees according to their location.

As described above, the analysis of sales is based on the direct customer's billing address. This means, for example, that sales to an American investor trading a product with an Asian underlying via a European clearing member are classified as European sales.

Information on geographical regions

	Sales revenue[1]		Investments[2]		Non-financial non-current assets[3, 4]		Number of employees	
	2021 €m	2020 €m	2021 €m	2020 €m	2021 €m	2020 €m	2021	2020
European Union	2,358.5	2,047.8	177.7	172.8	4,199.1	4,008.7	5,464	5,042
Other Europe	1,201.0	1,063.2	4.2	15.4	1,339.4	1,241.0	1,792	1,449
America	472.1	289.1	24.3	6.5	3,279.2	1,061.6	1,209	435
Asia-Pacific	254.3	183.9	0.2	0.7	27.7	31.7	1,734	312
Total of all regions	**4,285.9**	**3,584.0**	**206.4**	**195.4**	**8,845.4**	**6,343.0**	**10,200**	**7,238**
Consolidation of internal net revenue	– 67.1	– 64.7	0	0	0	0	0	0
Group	**4,218.8**	**3,519.3**	**206.4**	**195.4**	**8,845.4**	**6,343.0**	**10,200**	**7,238**

1) Including countries in which more than 10 per cent of sales revenue was generated: UK (2021: €807.1 million, 2020: €732.1 million) and Germany (2021: €1,014.7 million,2020: €910.9 million).
2) Excluding goodwill and right-of-use assets from leasing.
3) Including countries in which more than 10 per cent of assets are held: Germany (2021: €3,859.2 million, 2020: €3,648.1 million), Switzerland (2021: €1,307.0 million, 2020: €1,210.1 million) and United States (2021: €3,279.2 million, 2020: €1,061.6 million).
4) These include intangible assets, property, plant and equipment as well as investments in associates and joint ventures.

24. Financial risk management

Detailed qualitative disclosures on financial instruments in accordance with IFRS 7.33 that are part of these consolidated financial statements, such as the nature and extent of risk arising from financial instruments and risk management objectives, strategies and procedures, are included under the caption Risk management approach and risk controlling in the combined management report in the section risk management.

Financial risks mainly arise in the form of credit risks and to a lesser extent in the form of market price risks. They are quantified using the economic capital concept. Detailed information, which is part of these consolidated financial statements, can be found under the caption financial risks in the combined management report in section risk management. Required economic capital is assessed on a 99.9 per cent confidence level for a one-year holding period. It is compared with the Group's liable equity capital adjusted for intangible assets so as to test the Group's ability to absorb extreme and unexpected losses. Required economic capital (REC) for financial risk is calculated at the end of each month and amounted to €664.0 million as at 31 December 2021, whereby €488.0 million stems from credit risk and €176.0 million stems from market risk.

We evaluate our risk position continuously. In the view of the Executive Board, no threat to the continued existence of the Group can be identified at this time.

Credit risk

Credit risk of financial instruments (part 1)

	Segment	Carrying amounts – maximum risk exposure: Amount at 31 Dec 2021 €m	Carrying amounts – maximum risk exposure: Amount at 31 Dec 2020 €m	Collateral: Amount at 31 Dec 2021 €m	Collateral: Amount at 31 Dec 2020 €m
Collateralised cash investments					
Reverse repo transactions	Eurex (financial derivatives)[1]	820.9	574.9	828.9	580.5
	Clearstream (post-trading)	4,274.3	6,176.7	4,360.6	6,346.0
		5,095.2	**6,751.6**	**5,189.5**	**6,926.5**
Uncollateralised cash investments					
Money market lendings – central banks	Eurex (financial derivatives)	33,709.3	31,711.6	0	0
	Clearstream (post-trading)	7,350.7	6,291.8	0	0
Money market lendings – other counterparties	Eurex (financial derivatives)	298.5	187.5	0	0
	Clearstream (post-trading)	89.6	148.3	0	0
Balances on nostro accounts and other bank deposits	Clearstream (post-trading)	1,905.4	2,252.4	0	0
	EEX (commodities)	43,888.7	3,809.7	0	0
	Group	854.1	3,603.7	0	0
Securities	Clearstream (post-trading)	1,910.2	1,186.3	0	0
	Eurex (financial derivatives)	10.1	7.0	0	0
	Group	14.0[2]	14.9[2]	0	0
Fund assets	Group	66.7[3]	37.1[3]	0	0
		90,097.3	**49,250.3**	**0**	**0**
Loans for settling securities transactions					
Technical overdraft facilities	Clearstream (post-trading)	531.6	267.7	n/a[4]	n/a[4]
Automated Securities Fails Financing[5]	Clearstream (GSF)	885.7[6]	427.3[6]	1,122.3	560.6
		1,417.3	**695.0[7]**	**1,122.3**	**560.6[7]**
Total		**96,609.8**	**56,696.9[7]**	**6,311.8**	**7,487.1[7]**

Credit risk of financial instruments (part 2)

	Segment	Carrying amounts – maximum risk exposure Amount at 31 Dec 2021 €m	Amount at 31 Dec 2020 €m	Collateral Amount at 31 Dec 2021 €m	Amount at 31 Dec 2020 €m
Balance brought forward		96,609.8	56,696.9[7]	6,311.8	7,487.1[7)]
Other financial instruments					
Other loans	Group	100.5	0.3	100.5	0
Other assets	Group	13.3	15.3	0	0
Trade receivables	Group	978.2	625.8	0	0
Other receivables	Clearstream (post-trading)	17.3	147.2	0	0
	Eurex (financial derivatives)	1,217.0	697.0	0	0
	Group	9.8	27.8	0	0
Other financial assets at fair value	Group	14.0	7.6	0	0
		2,350.1	**1,521.0**	**100.5**	**0**
Financial instruments held by central counterparties		**109,657.0[8]**	**62,467.3[8]**	**126,842.0[9]**	**79,747.6[9]**
Derivatives		**112.1**	**8.4**	**0**	**0**
Total		**208,729.0**	**120,693.6[7]**	**133,254.3**	**87,234.7[7]**

1) Presented in the items “restricted bank balances” and “other cash and bank balances”.
2) The amount includes collateral totalling €5.0 million (2020: €5.1 million)
3) The amount includes collateral totalling €8.0 million (2020: €8.0 million)
4) The portfolio of deposited collateral is not directly attributed to any utilisation, but is determined by the scope of the entire business relationship and the limits granted.
5) Off-balance-sheet items
6) Meets the IFRS 9 criteria for a financial guarantee contract
7) Prior-year figures adjusted as securities lending transactions from Clearsteam Banking S.A.’s ASLplus programme do not represent a risk position
8) Net value of all margin requirements resulting from executed trades at the reporting date as well as default fund requirements: this figure represents the risk-oriented view of Eurex Clearing AG and European Commodity Clearing AG, while the carrying amount of the “financial instruments held by central counterparties” item in the balance sheet shows the gross amount of the open trades according to IAS 32.
9) Collateral value of cash and securities collateral deposited for margins, covering the net value of all margin and default fund requirements

Cash investments

Clearstream receives cash deposits from its customers in various currencies, whereas Eurex Clearing AG receives cash collateral mainly in EUR and CHF. In line with treasury policy, these entities shall invest such funds, and this is where the credit risk is potentially stemming from.

We mitigate such risks either – to the extent possible – by investing short-term funds on a secured basis, e.g. via reverse repurchase agreements, or by depositing them with central banks.

According to the treasury policy, eligible collateral mainly consists of highly liquid financial instruments with a minimum rating of AA– (S&P Global Ratings/Fitch) or Aa3 (Moody’s) issued or guaranteed by governments or supranational institutions.

Unsecured cash investments are permitted only with counterparties with impeccable credit ratings within the framework of defined counterparty credit limits. In this context, impeccable creditworthiness means an internal rating of at least “D”, which corresponds to an external rating from Fitch of at least “BBB”. Counterparty credit risk is monitored on the basis of an internal rating system.

The fair value of securities received under reverse repurchase agreements was €5,189.5 million (2020: €6,926.0 million). Clearstream Banking S.A. and Eurex Clearing AG are entitled to pledge the eligible securities received to their central banks in order to make use of the central banks’ monetary policy instruments.

As at 31 December 2021, Clearstream Banking S.A. had pledged securities with a value of €229.0 million (2020: €168.20 million) to central banks as collateral for credit lines received from the central banks. As in the previous year, these all come from the Clearstream investment portfolio.

Eurex Clearing AG had pledged no securities to central banks as at 31 December 2021, the same as the previous year.

Loans for settling securities transactions
Clearstream grants customers intraday technical overdraft facilities to maximise settlement efficiency. These settlement facilities are subject to internal credit review procedures. They are revocable at the discretion of the Clearstream subgroup and are in general fully secured. As at 31 December 2021 they came to €110.2 billion (2020: €106.2 billion). Of the total, €5.9 billion (2020: €5.5 billion) are unsecured and only relate to credit lines granted to selected central banks and multilateral development banks in accordance with the CSDR exception defined in Article 23 of the Delegated Regulation (EU) 2017/390 based on the creditworthiness of the borrowers and zero risk weight applied by the Regulation (EU) No 575/2013 (CRR). Actual outstandings at the end of each business day generally represent a small fraction of the facilities and amounted to €531.6 million as at 31 December 2021 (2020: €267.7 million); see Note 12.

Clearstream also guarantees the undue residual risk resulting from the Automated Securities Fails Financing (ASL) programme it offers to its customers, where Clearstream Banking S.A. acts as an intermediary between borrower and lender. Such risks are secured. As at 31 December 2021 the outstanding loans under this programme amounted to €885.8 million (2020: €427.3 million). Collateral received by Clearstream Banking S.A. in connection with these loans amounted to €1,122.3 million (2020: €560.6 million).

In 2020 and 2021, no losses from credit transactions occurred in relation to any of the transaction types described.

Financial instruments of the central counterparties
To safeguard the Group’s central counterparties against the risk of default by a clearing member, the clearing conditions require the clearing members to deposit margins in the form of cash or securities on a daily basis or an intraday basis in the amount stipulated by the respective clearing house. Additional security mechanisms of the Group’s central counterparties are described in detail in the section risk management.

Trade receivables
Trading, settlement and custody fees are generally collected without delay by direct debit. Fees for other services, such as the provision of data and information, are settled mainly by transfer. Trade receivables are analysed using an expected credit loss model based on the simplified approach as outlined in IFRS 9. To measure the expected credit loss, trade receivables and contract assets have been grouped based on the days past due. The trade receivables share the main risk characteristics. The expected loss amount has been determined by applying the lifetime expected loss approach. The expected loss rates are based on the payment profiles over a period of five years and the loss profile experienced over that period. As at 31 December 2021 there were no contract assets (2020: nil).

Loss allowances for trade receivables as at 31 December 2021

	Not more than 30 days past due €m	Not more than 60 days past due €m	Not more than 90 days past due €m	Not more than 120 days past due €m	Not more than 360 days past due €m	More than 360 days past due €m	Insol-vent €m	Total €m
Expected loss rate	0.0%	0.0%	0.5%	0.9%	5.4%	89.4%	100%	
Trade receivables	38.9	7.8	9.3	2.7	13.0	6.4	1.9	80.0
Loss allowance	0.0	0.0	0.0	0.0	0.7	6.1	1.9	8.8

Loss allowances for trade receivables as at 31 December 2020

	Not more than 30 days past due €m	Not more than 60 days past due €m	Not more than 90 days past due €m	Not more than 120 days past due €m	Not more than 360 days past due €m	More than 360 days past due €m	Insolvent €m	Total €m
Expected loss rate	0.0%	0.0%	0.1%	1.3%	5.4%	81.9%	100%	
Trade receivables	33.0	13.3	5.9	3.2	15.0	7.9	1.8	80.1
Loss allowance	0.0	0.0	0.0	0.1	0.8	6.5	1.8	9.2

Trade receivables are written off when there is no reasonable expectation of recovery. The following criteria are used for the assessment of derecognition:

- Insolvency proceedings are not started for want of assets.
- Insolvency proceedings have not resulted in any payment for a period of three years and there is no indication that any amount will be received going forward.
- Enforcement activities are not pursued by Deutsche Börse Group due to cost-benefit analysis or Deutsche Börse Group has tried unsuccessfully to collect the receivable for a period of three years.

In the reporting year, as in the previous year there were no significant write-offs due to customer defaults. Moreover, no significant payments were received for receivables which had previously been written off (2020: nil).

Debt securities

All debt securities measured at amortised cost are considered to have low default risk and the loss allowance recognised during the period was therefore limited to twelve months' expected losses. The Group considers listed bonds to have a low credit risk if they have an investment grade credit rating from an external rating agency. All debt securities measured at fair value through OCI are assigned to Level 1 on recognition and are reviewed regularly for changes in credit risk on the basis of their rating. The expected loss for listed debt securities is determined using the default rates provided by a rating agency.

Development of the loss allowance

Development of the loss allowance

	Debt securities Stage 1 €m	Trade receivables Stage 1/2 €m	Trade receivables Stage 3 €m	Total €m
Closing loss allowance as at 1 January 2020	**0**	**1.1**	**6.0**	**7.1**
Increase from business combinations	0	0.1	1.0	**1.1**
Increase in the allowance recognised in profit or loss during the period	0.3	0.3	2.1	**2.7**
Decrease in the allowance recognised in profit or loss during the period	0	–0.6	–0.8	**– 1.4**
Closing loss allowance as at 31 December 2020	**0.3**	**0.9**	**8.3**	**9.5**
Increase from business combinations	0	0	0	0
Increase in the allowance recognised in profit or loss during the period	0.2	0.2	0.8	1.2
Decrease in the allowance recognised in profit or loss during the period	– 0.1	– 0.3	– 1.2	– 1.6
Closing loss allowance as at 31 December 2021	**0.4**	**0.8**	**8.0**	**9.2**

Credit risk concentrations

Our business model and the resulting business relationships mean that, as a rule, credit risk is concentrated on the financial services sector. Potential concentrations of credit risk are limited by application of counterparty, group and country credit limits. Collateral and currency concentrations are also monitored.

Management of credit risk concentration, including collateral concentration, and so-called large exposures, is conducted in compliance with applicable regulatory requirements such as those arising from, among others, articles 387–410 of Regulation (EU) 575/2013 (Capital Requirements Regulation, CRR), article 47 paragraph 8 of Regulation (EU) 648/2012 (European Market Infrastructure Regulation, EMIR) and respectively applicable national requirements (see also section regulatory capital requirements and regulatory capital ratios in the section risk management for a description of the regulatory capital requirements). Requirements of concentration risks arising from Regulation (EU) 909/2014 (Central Securities Depository Regulation, CSDR) have been implemented as part of Deutsche Börse Group's affiliated CSD authorisation under article 16 CSDR.

The required economic capital (based on the so-called "Value at Risk" (VaR) with a confidence level of 99.90 per cent) for credit risk is calculated monthly for each day and amounted to €488.0 million as at 31 December 2021 (2020: €657.0 million, based on VaR with a confidence level of 99.98 per cent).

We also apply additional methods in order to detect credit concentration risks. It analyses the impact of a default by its two largest counterparties with unsecured exposures and stressed recovery parameters. In addition, analyses are carried out for the Group's top 5 and top 10 counterparties, based on the risk-weighted exposures of the individual counterparties. All the concentration metrics have dedicated early warning thresholds and limits and are part of the quarterly risk reporting to the Executive Board. As in the previous year, no material adverse credit concentrations were detected in 2021.

Market risk

Market risk arises from changes in interest rates, foreign-exchange rates and other market prices. Deutsche Börse Group is generally only affected to a limited extent by market risk. For market price risks, the required economic capital (based on the so-called "Value at Risk" (VaR) with a confidence level of 99.90 per cent) is determined on a monthly basis. As at 31 December 2021 the economic capital for market price risks was €176.0 million (2019: €107.0 million, based on VaR with a confidence level of 99.98 per cent).

Impairment losses of €0.2 million (2020: nil) were recognised in profit or loss in the financial year 2021 for strategic investments not included in VaR for market price risks.

Interest rate risk
Changes in market interest rates may affect Deutsche Börse Group's net profit for the period attributable to Deutsche Börse AG shareholders. This risk arises whenever interest terms of financial assets and liabilities are different.

Interest rate sensitive assets include the Group's money market and investment portfolios, while interest rate sensitive liabilities mainly consist of short-term debt instruments. Interest rate risk from long-term liabilities of Deutsche Börse AG is mitigated through issuance of fixed-coupon bonds.

In order to finance the acquisition of a majority stake in Institutional Shareholder Services, Deutsche Börse AG issued debt securities with a nominal volume of €1,000 million. For further details of the outstanding bonds issued by Deutsche Börse Group, see section "Net assets" section in the combined management report.

Cash received as deposits from market participants is invested mainly via short-term reverse repos and in the form of overnight deposits at central banks, limiting the risk of a negative impact due to a changed interest rate environment. Negative interest rates resulting from reinvestments of these cash deposits are passed on to the respective Clearstream (post-trading) customers after applying an additional margin. For Eurex Clearing AG, interest rates on cash collateral are in principle calculated based on a predefined market benchmark rate per currency after deducting an additional spread per currency. In exceptional cases such as market disruption, Eurex Clearing AG reserves the right to calculate interest rates on cash collateral based on the realised interest rate.

Group entities may furthermore invest their own capital and part of customer cash balances in high-quality liquid bonds. The bond portfolio consists mostly of variable-rate instruments, which leads to a comparably low interest rate risk for the Group.

The risk arising from interest-earning assets and interest-bearing liabilities is monitored on each business day and limited by using a system which includes mismatch limits in combination with interest rate risk limits and stop-loss limits. The interest rate risk limits determine the acceptable maximum loss caused by a hypothetical adverse yield curve shift. The stop-loss limits define the fair value of a portfolio triggering an ad hoc review and risk-reducing actions.

In line with its risk strategy, we may use financial instruments to hedge highly probable interest rate exposures. For this purpose, interest rate swaps, as well as swaptions, might be used. Our Treasury policy requires that the critical terms of swaps and swaptions must align with the hedged items.

In 2021, we entered into forward interest rate swap contracts to hedge the interest rate risk in connection with the highly probable planned refinancing of a bond maturing in 2022. In this way, the cash flow risk arising from potential interest rate changes was hedged. Cash flow hedge accounting was applied for this hedge.

Foreign-exchange rate risk

Measuring and managing foreign-exchange risk is important for reducing our exposure to exchange rate movements. The three main types of foreign-exchange risk that we are exposed to are cash flow-, translation- and transaction-related foreign-exchange risk. Cash flow risk reflects the risk of fluctuations in present value of future operating cash flows from foreign-exchange movements. Translation risk comprises effects from the valuation of our assets and liabilities in foreign currencies. Finally, transaction risk is closely related to cash flow risk; it may arise through changes in the structure of Deutsche Börse Group's asset and liabilities in foreign currencies.

We operate internationally and are, to a limited extent, exposed to foreign-exchange risk, primarily in USD, CHF, GBP and CZK. Exchange rate fluctuations may affect the Group's profit margins and the value of assets and liabilities denominated in a currency that is not the functional currency of the relevant Group entity. Respective currency risks arise mainly from operating income and expenses denominated in a currency other than the functional currency, inter alia from that portion of the Clearstream (post-trading) segment's sales revenue and treasury result from banking business that is directly or indirectly in USD. The Clearstream (post-trading) segment generated 10 per cent of its revenue and treasury result from banking business directly or indirectly in USD (2020: 14 per cent).

Currency mismatches are avoided to the maximum extent possible. All types of foreign-exchange risks are measured on a regular basis and monitored on a Group as well as single entity level. Limits are defined for cash flow and translation risk affecting our profits and losses. Deutsche Börse Group's treasury policy defines risk limits which take into account historic foreign-exchange rate fluctuations. Any exposure exceeding those limits must be hedged. Foreign-exchange exposures below the defined limits may also be hedged. Management of foreign-exchange risks is in principle based on the Group level. Hedging may take place on a single entity level if foreign-exchange risk threatens the viability of the single entity.

To eliminate foreign-exchange risks, we use financial instruments to hedge existing or highly probable forecast transactions. The Group may use foreign-exchange forwards, foreign-exchange options as well as cross-currency swaps to hedge the exposure to foreign-exchange risk. Under the Group's policy, the critical terms of forwards and options must align with the hedged items.

In 2021, Deutsche Börse AG entered into FX derivative contracts to hedge the foreign currency exposure associated to transaction risk. Hereby, the cash flow risk arising from the time gap between signing the contracts and the actual payment out of the transaction was hedged. Cash flow hedge accounting was applied to this hedging. In addition to that, the Group entered into FX derivative contracts to hedge the foreign currency exposure associated with intercompany cash pooling and loans.

For Clearstream, the policy stipulates that intraperiod open net foreign-exchange positions are closed out when they exceed €15.0 million. This policy was complied with as in the previous year; as at 31 December 2021 there were no significant net foreign-exchange positions (2020: nil).

Other market risks

Market risk arises also from investments in bonds, investments in funds, futures within the framework of contractual trust arrangements (CTAs) and from the Clearstream Pension Fund in Luxembourg. For the CTAs, the investment is protected by a pre-defined floor, which reduces the risk of extreme losses for Deutsche Börse Group. In addition, there are equity price risks arising from strategic equity investments.

No sensitivity analyses were performed, as both interest rate and foreign currency risks are fully hedged. As in the previous year, there were no risk concentrations from market prices in the reporting year.

Liquidity risk

For the Group, liquidity risk may arise from potential difficulties in renewing maturing financing, such as commercial paper, issued bonds as well as bilateral and syndicated credit facilities. In addition, financing required for unexpected events may result in a liquidity risk. Most of the Group's cash investments are short-term to ensure that liquidity is available, should such a financing need arise. Eurex Clearing AG and Clearstream may invest stable customer balances for a maximum of one year in secured money market products, or in high-quality securities with a remaining maturity of less than ten years for Clearstream and less than five years for Eurex Clearing, subject to strict monitoring of mismatch and interest rate limits. Term investments can be transacted via reverse repurchase agreements against highly liquid collateral. For refinancing purposes, Eurex Clearing AG and Clearstream Banking S.A. can pledge eligible securities with their respective central banks. Eurex Clearing AG remains almost perfectly matched with respect to the durations of customer cash margins received and respective investments.

The companies of Deutsche Börse Group have the following credit lines at their disposal, which were not utilised as of the balance sheet date.

Contractually agreed credit lines

Company	Purpose of credit line	Currency	Amount at 31 Dec 2021 m	Amount at 31 Dec 2020 m
Deutsche Börse AG	Working capital[1]	€	600.0	600.0
Eurex Clearing AG	Settlement	€	900.0	900.0
	Settlement	Fr.	200.0	200.0
	Settlement[2]	US$	300.0	300.0
Clearstream Banking S.A.	Working capital[1]	€	750.0	750.0
	Settlement[2]	€	3,290.0	1,250.0
	Settlement[2]	US$	3,450.0	3,050.0
	Settlement[2]	£	3,200.0	350.0
Clearstream Banking AG	Settlement	€	200.0	0
European Energy Exchange AG	Working capital	€	22.0	22.0
	Settlement	€	110.0	81.6
	Settlement	£	0	1.0
Axioma Inc.	Working capital	US$	4.9	29.1
Quantitative Brokers LLC	Working capital	US$	3.0	0

1) €400.0 million of Deutsche Börse AG's working capital credit lines is a sub-credit line of Clearstream Banking S.A.'s €750.0 million working capital credit line.
2) Including committed foreign exchange swap lines and committed repo lines.

Clearstream Banking S.A. has a bank guarantee (letter of credit) in favour of Euroclear Bank S.A./N.V. issued by an international consortium to secure daily deliveries of securities between Euroclear Bank S.A./N.V. and Clearstream Banking S.A. This guarantee amounted to US$3.0 billion as at 31 December 2021 (2020: US$3.0 billion). Euroclear Bank S.A./N.V. has also issued a guarantee in favour of Clearstream Banking S.A. amounting to US$3.0 billion (2020: US$3.0 billion).

A commercial paper programme offers Deutsche Börse AG an opportunity for flexible, short-term financing, involving a total facility of €2.5 billion in various currencies. As at 31 December 2021 Deutsche Börse AG had issued commercial paper with a nominal volume of €801.0 million (2020: nil).

Clearstream Banking S.A. also has a commercial paper programme with a programme limit of €1.0 billion, which is used to provide additional short-term liquidity. As at 31 December 2021 it had issued commercial paper with a nominal volume of €750.3 million (2020: €546.4 million).

In 2021, S&P Global Ratings (S&P) confirmed Deutsche Börse AG's AA credit rating with a stable outlook. Deutsche Börse AG's commercial paper programme also had the highest short-term rating of A-1+. The AA rating of Clearstream Banking S.A. was confirmed with a stable outlook by the rating agencies Fitch and S&P Global Ratings (S&P) in 2021. S&P also rated Clearstream Banking AG as AA in November 2021. For further details on the rating of Deutsche Börse Group, see section "Financial position" section in the combined management report.

As in the previous year, there were no concentrations of liquidity risk in the reporting year.

Maturity analysis of financial instruments (1)

31 Dec 2021	Sight	Not more than 3 months	More than 3 months but not more than 1 year	More than 1 year but not more than 5 years	Over 5 years	Reconcili-ation to carrying amount	Carrying amount
	Contractual maturity						
	€m	€m	€m	€m	€m	€m	€m
Non-derivative financial liabilities							
Non-current financial liabilities measured at amortised cost	0	7.4	38.9	1,747.5	1,986.5	– 240.4	3,539.9
thereof lease liabilities	0	0	0	198.1	253.4	– 28.4	423.1
Non-current financial liabilities at fair value through profit or loss	0	0	0	1.5	0	0	1.5
Trade payables	0.1	702.5	1.8	0	0	0	704.4
Current financial liabilities measured at amortised cost	13,605.7	1,627.8	686.9	0	0	– 6.1	15,926.4
thereof lease liabilities	0	16.9	52.1	0	0	– 5.4	63.6
Current financial liabilities at fair value through profit or loss	0	0	0.6	0	0	0	0.6
Cash deposits by market participants	0	77,632.3	660.2	0	0	0	78,292.5
Total	**13,605.8**	**79,970.0**	**1,388.4**	**1,749.0**	**1,986.5**	**– 246.5**	**98,453.2**
Derivatives and financial instruments held by central counterparties							
Financial liabilities and derivatives held by central counterparties	61,366.4	34,231.1	7,670.2	8,465.2	977.2	0	112,710.1
less financial assets and derivatives held by central counterparties	– 61,294.4	– 34,231.1	– 7,670.2	– 8,465.2	– 977.2	0	– 112,638.1
Cash inflow – derivatives and hedges							
Cash flow hedges	0	10.3	11.6	194.0	0		
Fair value hedges	0	0	0	0	0		
Derivatives held for trading	615.1	1,850.5	1,233.1				
Cash outflow – derivatives and hedges							
Cash flow hedges	0	– 10.1	– 54.5	– 207.4	0		
Fair value hedges	0	0	0	0	0		
Derivatives held for trading	– 615.3	– 1,806.4	– 1,204.4		0		
Total	**71.8**	**44.3**	**– 14.2**	**– 13.4**	**0**		

Maturity analysis of financial instruments (2)

31 Dec 2020	Contractual maturity: Sight €m	Not more than 3 months €m	More than 3 months but not more than 1 year €m	More than 1 year but not more than 5 years €m	Over 5 years €m	Reconciliation to carrying amount €m	Carrying amount €m
Non-derivative financial liabilities							
Non-current financial liabilities measured at amortised cost	0	6.8	38.9	2,239.0	1,477.6	– 287.9	3,474.4
thereof lease liabilities	0	0	0	169.7	224.4	– 36.2	357.9
Non-current financial liabilities at fair value through profit or loss	0	0	0	0	0	0	0
Trade payables	0	388.6	0	0	0	0	388.6
Current financial liabilities measured at amortised cost	13,999.7	409.4	219.2	0	0	1.7	14,630.0
thereof lease liabilities	0	12.8	36.4	0	0	1.8	51.0
Current financial liabilities at fair value through profit or loss	0	0	1.5	0	0	0	1.5
Cash deposits by market participants	38,188.8	0	0	0	0	0	38,188.8
Total	**52,188.5**	**804.8**	**259.6**	**2,239.0**	**1,477.6**	**– 286.2**	**56,683.3**
Derivatives and financial instruments held by central counterparties							
Financial liabilities and derivatives held by central counterparties	41,684.5	25,955.1[1]	12,970.0[1]	5,876.9[1]	1,031.6	0	87,518.1[1]
less financial assets and derivatives held by central counterparties	– 41,684.5	– 26,050.1[1]	– 12,970.0[1]	– 5,876.9[1]	– 1,031.6	0	– 87,613.1[1]
Cash inflow – derivatives and hedges							
Cash flow hedges	0	1,156.0	0	403.2	0		
Fair value hedges	0	0	0	0	0		
Derivatives held for trading	0	1,870.6	654.1	0	0		
Cash outflow – derivatives and hedges							
Cash flow hedges	0	– 1,200.5	0	– 405.3	0		
Fair value hedges	0	0	0	0	0		
Derivatives held for trading	0	– 1,968.3	– 687.5	0	0		
Total	**0**	**– 237.2**	**– 33.4**	**– 2.1**	**0**		

1) Due to a correction of the previous year's figures, the financial instruments held by central counterparties decreased by in total €89.7 million.

25. Financial liabilities and other risks

Legal risks

The companies of Deutsche Börse Group are exposed to litigation. Such litigation may result in payments by entities in the Group. If it is more likely than not that an outflow of resources will occur, a provision will be recognised based on an estimate of the most probable amount necessary to settle the obligation if such amount is reasonably estimable. The management of the entity affected must assess whether the possible obligation results from a past event, as well as evaluate the probability of a cash outflow and estimate its amount.

We recognise provisions for possible losses only if there is a present obligation arising from a past event that is likely to result in an outflow of resources and if the Group can reliably estimate the amount of the obligation (see also note 19). Contingent liabilities may result from present obligations and from possible obligations arising from events in the past. In order to identify the litigation for which the possibility of a loss is more than unlikely, as well as how the possible loss is estimated, Deutsche Börse Group considers a large number of factors, including the nature of the claim and the facts on which it is based, the jurisdiction and course of the individual proceedings, the experience of Deutsche Börse Group, prior settlement talks (to the extent that they have already taken place) as well as expert opinions and evaluations of legal advisers. Losses may also arise from legal risks which are not highly probable, so that no provisions have been recognised. If the event is not completely improbable, the legal risks may have to be recognised as contingent liabilities. As neither the timing of these contingent liabilities nor the amount of any payment can be estimated reliably, any quantitative disclosure would not be a useful guide to possible future losses. For this reason, no figure is provided for contingent liabilities.

Detailed information about the legal disputes, which have been classified as contingent liabilities as of 31 December 2021 and for which consequently no provisions have been recognised, is part of these consolidated financial statements and included in the combined management report in the section risk management under the heading legal disputes and business practice.

Tax risks

Due to its business activities in various countries, Deutsche Börse Group is exposed to tax risks. A process has been developed to recognise and evaluate these risks, which are initially recognised based on their probability of occurrence. These risks are then measured on the basis of their expected value. A tax liability is recognised in the event that it is more probable than not that the risks will occur. We continuously review whether the conditions for recognising corresponding tax liabilities are met. These tax risks, that are also part of these consolidated financial statements,
are included under the caption business risks in the combined management report in the section risk management.

26. Corporate governance

On 8 December 2021 the Executive and Supervisory Boards issued the latest version of the declaration of compliance in accordance with section 161 Aktiengesetz (AktG, the German Stock Corporation Act) and made it permanently available to shareholders on the company's website (see also the Corporate governance statement).

27. Related party disclosures

Related parties as defined by IAS 24 are members of the executive bodies of Deutsche Börse AG and their close family members, as well as the companies classified as associates of Deutsche Börse AG, investors and investees and companies that are controlled or significantly influenced by members of the executive bodies.

Business relationships with related parties

The following table shows transactions entered into within the scope of business relationships with non-consolidated companies of Deutsche Börse AG during the 2021 financial year. All transactions took place at standard market terms.

Transactions with related parties

	Amount of the transactions: revenue		Amount of the transactions: expenses		Outstanding balances: receivables		Outstanding balances: liabilities	
	2021 €m	2020 €m	2021 €m	2020 €m	31 Dec 2021 €m	31 Dec 2020 €m	31 Dec 2021 €m	31 Dec 2020 €m
Associates	17.4	18.6	–28.7	–29.4	1.9	1.9	–5.0	–2.2
Total sum of business transactions	**17.4**	**18.6**	**–28.7**	**–29.4**	**1.9**	**1.9**	**–5.0**	**–2.2**

Business relationships with key management personnel
Key management personnel are persons who directly or indirectly have authority and responsibility for planning, directing and controlling the company's activities. The Group only defines the members of the Executive Board and Supervisory Board of Deutsche Börse AG who were active in the reporting period as key management personnel for the purposes of IAS 24. In the reporting year and the previous year, no material transactions took place with key management personnel.

Executive Board

In the reporting year the fixed and variable remuneration of the members of the Executive Board, including non-cash benefits granted in the financial year, amounted to €18.2 million (2020: €19.4 million). During the year under review, expenses of €3.5 million (2020: €6.0 million) were recognised in connection with share-based payments to Executive Board members.

The actuarial present value of the pension obligations to Executive Board members was €17.3 million as at 31 December 2021 (2020: €18.4 million). Expenses of €2.6 million (2020: €3.2 million) were recognised as additions to pension provisions.

Former members of the Executive Board or their surviving dependants

The remuneration paid to former members of the Executive Board or their surviving dependants amounted to €6.5 million in 2021 (2020: €8.3 million). The actuarial present value of the pension obligations was €79.3 million as at 31 December 2021 (2020: €86.0 million).

Termination benefits

There were no changes in the membership of the Executive Board of Deutsche Börse AG in the reporting year 2021, therefore no expenses were incurred in 2021 (2020 €0.7 million).

Supervisory Board

The aggregate remuneration paid to members of the Supervisory Board in the reporting year was €2.6 million (2020: €2.5 million).

In financial year 2021 the employee representatives on Deutsche Börse AG's Supervisory Board received remuneration (excluding Supervisory Board remuneration) amounting to €1.3 million (2020: €0.8 million). The total consists of the fixed and variable salary components for those employee representatives.

28. Employees

Employees

	2021	2020
Average number of employees during the year	9,347	6,996
Employed at the reporting date	10,200	7,238
Employees (average annual FTEs)	8,855	6,528

Of the average number of employees during the year, 29 (2020: 28) were managing directors (not including the Executive Board), 484 (2020: 348) were other senior managers and 8,834 (2020: 6,620) were employees.

Including part-time staff there were 8,855 full-time equivalents (FTE) on average during the year (2020: 6,528). Please also refer to the section "Our employees" in the combined management report.

29. Decision-making bodies

The members of the company's decision-making bodies are listed in the chapters "The Executive Board" and "The Supervisory Board" of this annual report.

30. Events after the end of the reporting period

Deutsche Börse AG has successfully placed a corporate hybrind bond in the amount of €500,0 million on 16 February 2022. The bond has a term of 26.25 years with a first call date after 6 years and a coupon of 2.0 per cent annually until June 2028.

The hybrid bond will be used to refinance last year's M&A activities.

31. Date of approval for publication

Deutsche Börse AG's Executive Board approved the consolidated financial statements for submission to the Supervisory Board on 28 February 2022. The Supervisory Board is responsible for examining the consolidated financial statements and stating whether it endorses them.

32. Disclosures on material non-controlling interests

Material non-controlling interests (1/2)

	European Energy Exchange Group Leipzig, Germany		Qontigo Group Frankfurt/Main, Germany	
	31 Dec 2021	31 Dec 2020	31 Dec 2021	31 Dec 2020
Attributable to non-controlling interests:				
Capital (%)	24.9	24.9	21.7	21.7
Voting rights (%)	37.2	37.2	21.7	21.7
Net profit for the period (in €m)	15.9	10.3	21.0	19.2
Equity (in €m)	150.4	130.7	181.6	161.0
Dividend payments (in €m)	4.0	4.0	16.2	13.3
Assets (in €m)	47,938.8	7,783.6	1,028.4	958.7
Liabilities (in €m)	47,335.0	7,258.7	208.1	216.9
Profit/loss (in €m)	63.9	41.2	96.6	88.5
Other comprehensive income (in €m)	14.7	– 32.7	59.7	– 66.6
Comprehensive income (in €m)	78.6	8.5	156.3	22.0
Cash flows (in €m)	81.9	33.5	– 8.7	7.7

Material non-controlling interests (2/2)

	ISS Group Rockville, USA		Crypto Finance Group Zug, Switzerland	
	31 Dec 2021	31 Dec 2020	31 Dec 2021	31 Dec 2020
Attributable to non-controlling interests:				
Capital (%)	18.8	n/a	33.3	n/a
Voting rights (%)	18.8	n/a	33.3	n/a
Net profit for the period (in €m)	3.1	n/a	0	n/a
Equity (in €m)	345.8	n/a	51.3	n/a
Dividend payments (in €m)	0	n/a	0	n/a
Assets (in €m)	2,435.8	n/a	166.8	n/a
Liabilities (in €m)	596.5	n/a	12.7	n/a
Profit/loss (in €m)	16.5	n/a	0.1	n/a
Other comprehensive income (in €m)	0	n/a	0	n/a
Comprehensive income (in €m)	16.5	n/a	0.1	n/a
Cash flows (in €m)	– 87.4	n/a	42.3	n/a

33. Disclosures on associates

Non-material associates

	31 Dec 2021 €m	31 Dec 2020 €m
Book value of non-material associates	**88.9**[1]	**89.5**
Profit after tax	19.3[1]	18.6
Other income	– 0.1[1]	0
Comprehensive income	**19.3**[1]	**18.6**

1) Disclosures are based on preliminary and unaudited figures which may be adjusted subsequently.

34. List of shareholdings

Deutsche Börse AG's equity interests in subsidiaries, associates and joint ventures as at 31 December 2021 included in the consolidated financial statements are presented in the following tables. There were no joint ventures as of the reporting date.

Consolidated subsidiaries (part 1)

Company	Domicile	Equity interest as at 31 Dec 2021 direct/(indirect) %
Börse Frankfurt Zertifikate AG	Frankfurt/Main, Germany	100.00
Clearstream Fund Centre AG	Zurich, Switzerland	100.00
Clearstream Fund Centre (Hong Kong) Limited	Hong Kong, Hong Kong	(100.00)
Clearstream Holding AG	Frankfurt/Main, Germany	100.00
Clearstream Banking AG	Frankfurt/Main, Germany	(100.00)
Clearstream Banking S.A.	Luxembourg, Luxembourg	(100.00)
Clearstream Australia Limited	Sydney, Australia	(100.00)
Clearstream Australia Nominees Pty Ltd. (dormant)	Sydney, Australia	(100.00)
Clearstream Banking Japan, Ltd.	Tokyo, Japan	(100.00)
Clearstream Fund Centre SA	Luxembourg, Luxembourg	(100.00)
Clearstream London Ltd. (dormant)	London, United Kingdom	(100.00)
REGIS-TR S.A.	Luxembourg, Luxembourg	(50.00)
Clearstream Global Securities Services Limited	Cork, Ireland	(100.00)
Clearstream International S.A.	Luxembourg, Luxembourg	(100.00)
LuxCSD S.A.	Luxembourg, Luxembourg	(100.00)
Clearstream Nominees Limited	London, United Kingdom	(100.00)
Clearstream Operations Prague s.r.o.	Prague, Czech Republic	(100.00)
Clearstream Services S.A.	Luxembourg, Luxembourg	(100.00)
REGIS-TR UK Ltd. (dormant)	London, United Kingdom	(50.00)
Crypto Finance AG	Zug, Switzerland	66.67[1]
Crypto Finance (Brokerage) AG	Zug, Switzerland	(66.67)
Crypto Finance (Infrastructure Services) AG	Zug, Switzerland	(66.67)
Crypto Finance (Asset Management) AG	Zug, Switzerland	(66.67)
DB1 Ventures GmbH	Frankfurt/Main, Germany	100.00
Deutsche Boerse Market Data + Services Singapore Pte. Ltd.	Singapore, Singapore	100.00
Deutsche Boerse Systems Inc.	Chicago, USA	100.00
Centana Growth Partners, LLC	New York, USA	(100.00)
Bryant Sands Partners, LLC	Delaware, USA	(100.00)
Bryant Sands Partners II, LLC	Delaware, USA	(100.00)
Quantitative Brokers LLC	New York, USA	(72.60)
Quantitative Brokers UK Limited	Hounslow, United Kingdom	(72.60)
Quantitative Brokers Australia Pty Ltd	Sydney, Australia	(72.60)
Quantitative Brokers Singapore Pte Ltd.	Singapore, Singapore	(72.60)
Quantitative Brokers Software India Private Limited	Chennai, India	(72.24)
U.S. Exchange, L.L.C. (dormant)	Wilmington, USA	(100.00)
Deutsche Börse Photography Foundation gGmbH	Frankfurt/Main, Germany	100.00
Deutsche Börse Services s.r.o.	Prague, Czech Republic	100.00
Eurex Frankfurt AG	Frankfurt/Main, Germany	100.00
Eurex Clearing AG	Frankfurt/Main, Germany	(100.00)
Eurex Repo GmbH	Frankfurt/Main, Germany	(100.00)
Eurex Securities Transactions Services GmbH	Frankfurt/Main, Germany	(100.00)
Eurex Global Derivatives AG	Zug, Switzerland	100.00
Eurex Services GmbH	Frankfurt/Main, Germany	100.00

Consolidated subsidiaries (part 2)

Company	Domicile	Equity interest as at 31 Dec 2021 direct/(indirect) %
European Energy Exchange AG	Leipzig, Germany	75.05
EEX Asia Pte. Limited	Singapore, Singapore	(75.05)
EEX Australia Pty Ltd	Sydney, Australia	(75.05)
EEX Link GmbH	Leipzig, Germany	(75.05)
European Commodity Clearing AG	Leipzig, Germany	(75.05)
European Commodity Clearing Luxembourg S.à r.l.	Luxembourg, Luxembourg	(75.05)
Grexel Systems oy	Helsinki, Finland	(75.05)
KB Tech Ltd.	Tunbridge Wells, United Kingdom	(75.05)
Nodal Exchange Holdings, LLC	Tysons Corner, USA	(75.05)
Nodal Exchange, LLC	Tysons Corner, USA	(75.05)
Nodal Clear, LLC	Tysons Corner, USA	(75.05)
EEX CEGH Gas Exchange Services GmbH	Vienna, Austria	(38.27)
EPEX SPOT SE	Paris, France	(38.27)
EPEX Netherlands B.V.	Amsterdam, Netherlands	(38.27)
EPEX SPOT Schweiz AG	Bern, Switzerland	(38.27)
Power Exchange Central Europe a.s.	Prague, Czech Republic	(50.03)
ISS HoldCo Inc.	Rockville, USA	81.20
Institutional Shareholder Services Inc.	Rockville, USA	(81.20)
Asset International, Inc.	Rockville, USA	(81.20)
Asset International Financial Information UK Holdings Ltd.	London, United Kingdom	(81.20)
AI Financial Information UK Ltd.	London, United Kingdom	(81.20)
Asset International Australia Pty Ltd.	Melbourne, Australia	(81.20)
Rainmaker Information Pty Limited	Sydney, Australia	(81.20)
Data Management & Integrity Systems Pty Ltd.	Sydney, Australia	(81.20)
Financial Standard Pty Ltd	Sydney, Australia	(81.20)
Asset International Deutschland GmbH	Haar, Germany	(81.20)
FWW Fundservices GmbH	Haar, Germany	(81.20)
FWW Media GmbH	Haar, Germany	(81.20)
Intelligent Financial Systems Limited	London, United Kingdom	(81.20)
Matrix-Data Limited	London, United Kingdom	(81.20)
Discovery Data Holdings Inc.	Eatontown, USA	(81.20)
Discovery Data Inc	Eatontown, USA	(81.20)
Institutional Shareholder Services (Australia) Pty. Ltd.	Sydney, Australia	(81.20)
Institutional Shareholder Services (Hong Kong) Limited	Hong Kong, Hong Kong	(81.20)
Institutional Shareholder Services Canada Inc.	Toronto, Canada	(81.20)
ACRe Data Inc.	Oakville, Canada	(81.20)
Institutional Shareholder Services Europe S.A.	Brussels, Belgium	(81.20)
Institutional Shareholder Services France S.A.S	Paris, France	(81.20)
Institutional Shareholder Services Switzerland AG	Zurich, Switzerland	(81.20)

Consolidated subsidiaries (part 3)

Company	Domicile	Equity interest as at 31 Dec 2021 direct/(indirect) %
Institutional Shareholder Services Germany AG	Munich, Germany	(81.20)
Institutional Shareholder Services India Private Limited	Mumbai, India	(81.20)
Institutional Shareholder Services K.K.	Tokyo, Japan	(81.20)
Institutional Shareholder Services Philippines Inc.	Manila, Philippines	(81.20)
Institutional Shareholder Services (Singapore) Private Limited	Singapore, Singapore	(81.20)
ISS Corporate Solutions, Inc.	Rockville, USA	(81.20)
ISS Europe Limited	London, United Kingdom	(81.20)
ISS-Ethix AB	Stockholm, Sweden	(81.20)
Nordic Investor Services AB	Stockholm, Sweden	(81.20)
Institutional Shareholder Services UK Limited	London, United Kingdom	(81.20)
Securities Class Action Services, LLC	Rockville, USA	(81.20)
Qontigo GmbH	Frankfurt/Main, Germany	78.32
Axioma Inc.	New York, USA	(78.32)
Axioma (CH) GmbH	Geneva, Switzerland	(78.32)
Axioma (HK) Ltd.	Hong Kong, Hong Kong	(78.32)
Axioma (UK) Ltd.	London, United Kingdom	(78.32)
Axioma Argentina S.A.U.	Buenos Aires, Argentina	(78.32)
Axioma Asia Pte Ltd.	Singapore, Singapore	(78.32)
Axioma Deutschland GmbH	Frankfurt/Main, Germany	(78.32)
Axioma Japan G.K.	Tokyo, Japan	(78.32)
Axioma Ltd.	Sydney, Australia	(78.32)
Axioma S.A.S.U.	Paris, France	(78.32)
Qontigo Index GmbH	Frankfurt/Main, Germany	(78.32)
Stoxx Ltd.	Zug, Switzerland	(78.32)
INDEX PROXXY Ltd.	London, United Kingdom	(78.32)
Tradegate Exchange GmbH	Berlin, Germany	63.97[1]
Börse Berlin AG	Berlin, Germany	(63.97)
360 Treasury Systems AG	Frankfurt/Main, Germany	100.00
360 Trading Networks Inc.	New York, USA	(100.00)
360 Trading Networks Limited	Dubai, United Arab Emirates (UAE)	(100.00)
360 Trading Networks Sdn Bhd	Kuala Lumpur, Malaysia	(100.00)
360T Asia Pacific Pte. Ltd.	Singapore, Singapore	(100.00)
360TGTX Inc.	New York, USA	(100.00)
Finbird GmbH	Frankfurt/Main, Germany	(100.00)
ThreeSixty Trading Networks (India) Pte. Ltd.	Mumbai, India	(100.00)

1) Of which 59.98 per cent direct and 3.99 per cent indirect equity interest.

Associates

Company	Domicile	Equity interest as at 31 Dec 2021 direct/(indirect) %
360X AG	Frankfurt/Main, Germany	48.30
BrainTrade Gesellschaft für Börsensysteme mbH	Frankfurt/Main, Germany	(37.72)
China Europe International Exchange AG	Frankfurt/Main, Germany	40.00
Deutsche Börse Commodities GmbH	Frankfurt/Main, Germany	16.20
EMEX East Med. Energy Exchange Ltd.	Giv'atajim, Israel	(30.02)
enermarket GmbH	Frankfurt/Main, Germany	(30.02)
FundsDLT	Luxembourg, Luxembourg	17.91
HQLAx S.à r.l.	Luxembourg, Luxembourg	31.40
Origin Primary Limited	London, United Kingdom	20.00
R5FX Ltd	London, United Kingdom	15.65
SEEPEX a.d.	Belgrade, Serbia	(9.57)
SPARK Commodities Ltd.	Singapore, Singapore	(18.76)
Tradegate AG Wertpapierhandelsbank	Berlin, Germany	19.99
ZDB Cloud Exchange GmbH in Liquidation	Eschborn, Germany	49.90

Frankfurt/Main, 28 February 2022
Deutsche Börse AG

Theodor Weimer
Christoph Böhm
Thomas Book

Heike Eckert
Stephan Leithner
Gregor Pottmeyer

Responsibility statement by the Executive Board

To the best of our knowledge, and in accordance with the applicable reporting principles, the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and profit or loss of the Group, and the combined management report includes a fair review of the development and performance of the business and the position of the Group, together with a description of the principal opportunities and risks associated with the expected development of the Group.

Frankfurt/Main, 2 March 2022
Deutsche Börse AG

Theodor Weimer	Christoph Böhm	Thomas Book
Heike Eckert	Stephan Leithner	Gregor Pottmeyer

Independent Auditors' Report

To Deutsche Börse Aktiengesellschaft, Frankfurt am Main

Report on the Audit of the Consolidated Financial Statements and of the Group Management Report

Audit Opinions

We have audited the consolidated financial statements of Deutsche Börse Aktiengesellschaft, Frankfurt am Main, and its subsidiaries (the Group), which comprise the consolidated statement of financial position as at December 31, 2021, and the consolidated statement of comprehensive income, consolidated statement of profit or loss, consolidated statement of changes in equity, and consolidated statement of cash flows for the financial year from January 1 to December 31, 2021, and notes to the consolidated financial statements, including a summary of significant accounting policies. In addition, we have audited the group management report of Deutsche Börse Aktiengesellschaft, which is combined with the Company's management report, – which comprises the content included to comply with the German legal requirements as well as the non-financial statement pursuant to § [Article] 289b Abs. [paragraph] 1 HGB [Handelsgesetzbuch: German Commercial Code]and § 315b Abs. 1 HGB included in section "About this report" of the group management report – for the financial year from January 1 to December 31, 2021. In accordance with the German legal requirements, we have not audited the content of those parts of the group management report listed in the "Other Information" section of our auditor's report.

In our opinion, on the basis of the knowledge obtained in the audit,

- the accompanying consolidated financial statements comply, in all material respects, with the IFRSs as adopted by the EU, and the additional requirements of German commercial law pursuant to § 315e Abs. 1 HGB and, in compliance with these requirements, give a true and fair view of the assets, liabilities, and financial position of the Group as at December 31, 2021, and of its financial performance for the financial year from January 1 to December 31, 2021, and
- the accompanying group management report as a whole provides an appropriate view of the Group's position. In all material respects, this group management report is consistent with the consolidated financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development. Our audit opinion on the group management report does not cover the content of those parts of the group management report listed in the "Other Information" section of our auditor's report.

Pursuant to § 322 Abs. 3 Satz [sentence] 1 HGB, we declare that our audit has not led to any reservations relating to the legal compliance of the consolidated financial statements and of the group management report.

Basis for the Audit Opinions

We conducted our audit of the consolidated financial statements and of the group management report in accordance with § 317 HGB and the EU Audit Regulation (No. 537/2014, referred to subsequently as "EU Audit Regulation") in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer [Institute of Public Auditors in Germany] (IDW). Our responsibilities under those requirements and principles are further described in the "Auditor's Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report" section of our auditor's report. We are independent of the group entities in accordance with the requirements of European law and German commercial and professional law, and we have fulfilled our other German professional responsibilities in accordance with these requirements. In addition, in accordance with Article 10 (2) point (f) of the EU Audit Regulation, we declare that we have not provided non-audit services prohibited under Article 5 (1) of the EU Audit Regulation. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinions on the consolidated financial statements and on the group management report.

Key Audit Matters in the Audit of the Consolidated Financial Statements

Key audit matters are those matters that, in our professional judgment, were of most significance in our audit of the consolidated financial statements for the financial year from January 1 to December 31, 2021. These matters were addressed in the context of our audit of the consolidated financial statements as a whole, and in forming our audit opinion thereon; we do not provide a separate audit opinion on these matters.

In our view, the matters of most significance in our audit were as follows:

❶ Recoverability of goodwill and other intangible assets

❷ Assessment of certain legal risks

Our presentation of these key audit matters has been structured in each case as follows:

① Matter and issue

② Audit approach and findings

③ Reference to further information

Hereinafter we present the key audit matters:

❶ Recoverability of goodwill and other intangible assets

① In the Company's consolidated financial statements goodwill and other intangible assets amounting in total to EUR 7,509.6 million (97% of total consolidated assets) are reported under the "Intangible assets" balance sheet item. Other intangible assets relate in particular to stock exchange licenses, brand names and customer relationships. Goodwill and other intangible assets are tested for impairment by the Company once a year and/or when there are indications of impairment to determine any need for write-downs. The carrying amount of the relevant cash-generating units (for the test of the goodwill including their carrying amount) is compared with recoverable amount in the context of the impairment test. The recoverable amount is generally calculated on the basis of fair value less costs of disposal. The present value of the future cash flows from the respective cash-generating unit or the groups of cash-generating units normally serves as the basis of valuation. Present values are calculated using discounted cash flow models. For this purpose, the adopted medium-term business plan of the Group forms the starting point which is extrapolated based on assumptions about long-term rates of growth. Expectations relating to future market developments and assumptions about the development of macroeconomic factors fair value also taken into account. The discount rate used is the weighted average cost of capital for the respective cash-generating units. The impairment test determined that no write-downs were necessary.

The outcome of this valuation is dependent to a large extent on the estimates made by the executive directors with respect to the future cash flows from the respective cash-generating units, the discount rate used, the rate of growth and other assumptions, and is therefore subject to considerable uncertainty. Against this background and due to the complex nature of the valuation, this matter was of particular significance in the context of our audit.

2 As part of our audit, we initially assessed the methodology used for the purposes of performing the impairment test. After matching the future cash flows used for the calculation against the adopted medium-term business plan of the Group for the respective groups of cash-generating units, we analyzed in particular the material planning assumptions, compared the plans against analyst expectations and performed plan-actual and plan-plan analyses in order to assess the appropriateness of these plans. In addition, we assessed the appropriate consideration of the costs of Group functions and the appropriateness of the growth assumptions after the forecast period and of the assumed weighted average cost of capital. The Company‘s valuation was additionally verified by comparing the implied multiples with market multiples. In order to reflect the uncertainty inherent in the projections, we evaluated the sensitivity analyses performed by the Company and carried out our own sensitivity analyses for those cash-generating units with low headroom (carrying amount compared with the recoverable amount). Taking into account the information available, we determined that the carrying amounts of the cash-generating units (including the allocated carrying amounts for goodwill) were adequately covered by the discounted future cash flows.

Overall, the valuation methods, parameters and assumptions used by the executive directors are in line with our expectations and are also within the ranges considered by us to be reasonable.

3 The Company‘s disclosures on impairment tests of goodwill and other intangible assets are contained in note 10 “Intangible assets” to the consolidated financial statements.

❷ Assessment of certain legal risks

① Companies of the Deutsche Börse Group are exposed to certain legal risks. These specific legal risks include legal disputes involving Clearstream Banking S.A. in connection with the Iranian Central Bank in which Clearstream Banking S.A. sees itself exposed to surrender and compensation claims from the Iranian Central Bank amounting to USD 4.9 billion (plus interest) and claims from additional group of claimants, an action by the insolvency administrator for the assets of Air Berlin PLC i.I. against Clearstream Banking AG demanding payment of approximately EUR 498 million and an investigation relating to securities transactions by market participants beyond the dividend date (cum/ex transactions). The determination of whether or not a provision should be recognized to cover the risks, and if so, in what amount, is subject to a high degree of uncertainty. Deutsche Börse Group recognizes provisions if a current obligation arises from a past event which is likely to result in an outflow of funds and can be reliably estimated. No provisions are recognized in the consolidated financial statements as at December 31, 2021 for the aforementioned legal risks, as the executive directors do not believe an outflow of funds to be likely. In our view, due to their legal complexity, the aforementioned legal risks are of particular significance to our audit based on the significant uncertainty as to their further development and potential effects on the assets, liabilities, financial position and financial performance.

② As part of our audit, we examined the underlying documents to the above-mentioned legal disputes and proceedings and analyzed the legal assessment of Deutsche Börse Group. With the knowledge that uncertainty results in an increased risk of accounting misstatements and that the executive directors‘ decisions have a direct effect on consolidated net profit, we assessed the executive directors‘ estimates with the assistance of our own specialists. Furthermore, we also held regular meetings with the Company‘s legal department in order to receive updates on current developments and understand the reasons for the corresponding estimates of the outcomes of the proceedings. The development of material legal risks, including executive directors‘ assessments as to their potential outcomes, was provided to us by the legal departments in writing. Furthermore, we obtained external legal confirmations and assessed legal opinions prepared by external attorneys as at the balance sheet date. The executive directors‘ estimates regarding the aforementioned matters and their presentation in the consolidated financial statements are sufficiently substantiated and documented.

③ The Company‘s disclosures relating to material legal risks are contained in note 24 “Financial obligations and other risks” to the consolidated financial statements as well as in the risk report in the Group management report.

Other Information

The executive directors are responsible for the other information. The other information comprises the following non-audited parts of the group management report:

- the statement on corporate governance pursuant to § 289f HGB and § 315d HGB included in the “Corporate governance statement” section of the group management report.
- the information on CO2 emissions classified as unaudited.

The other information comprises further

- the remuneration report pursuant to § 162 AktG [Aktiengesetz: German Stock Corporation Act], for which the supervisory board is also responsible
- all remaining parts of the annual report – excluding cross-references to external information – with the exception of the audited consolidated financial statements, the audited group management report and our auditor's report

Our audit opinions on the consolidated financial statements and on the group management report do not cover the other information, and consequently we do not express an audit opinion or any other form of assurance conclusion thereon.

In connection with our audit, our responsibility is to read the other information mentioned above and, in so doing, to consider whether the other information

- is materially inconsistent with the consolidated financial statements, with the group management report disclosures audited in terms of content or with our knowledge obtained in the audit, or
- otherwise appears to be materially misstated.

Responsibilities of the Executive Directors and the Supervisory Board for the Consolidated Financial Statements and the Group Management Report

The executive directors are responsible for the preparation of the consolidated financial statements that comply, in all material respects, with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to § 315e Abs. 1 HGB and that the consolidated financial statements, in compliance with these requirements, give a true and fair view of the assets, liabilities, financial position, and financial performance of the Group. In addition the executive directors are responsible for such internal control as they have determined necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the consolidated financial statements, the executive directors are responsible for assessing the Group's ability to continue as a going concern. They also have the responsibility for disclosing, as applicable, matters related to going concern. In addition, they are responsible for financial reporting based on the going concern basis of accounting unless there is an intention to liquidate the Group or to cease operations, or there is no realistic alternative but to do so.

Furthermore, the executive directors are responsible for the preparation of the group management report that, as a whole, provides an appropriate view of the Group's position and is, in all material respects, consistent with the consolidated financial statements, complies with German legal requirements, and appropriately presents the opportunities and risks of future development. In addition, the executive directors are responsible for such arrangements and measures (systems) as they have considered necessary to enable the preparation of a group management report that is in accordance with the applicable German legal requirements, and to be able to provide sufficient appropriate evidence for the assertions in the group management report.

The supervisory board is responsible for overseeing the Group's financial reporting process for the preparation of the consolidated financial statements and of the group management report.

Auditor‘s Responsibilities for the Audit of the Consolidated Financial Statements and of the Group Management Report

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and whether the group management report as a whole provides an appropriate view of the Group‘s position and, in all material respects, is consistent with the consolidated financial statements and the knowledge obtained in the audit, complies with the German legal requirements and appropriately presents the opportunities and risks of future development, as well as to issue an auditor‘s report that includes our audit opinions on the consolidated financial statements and on the group management report.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with § 317 HGB and the EU Audit Regulation and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer (IDW) will always detect a material misstatement. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements and this group management report.

We exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements and of the group management report, whether due to fraud or error, design and per-form audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our audit opinions. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal controls.
- Obtain an understanding of internal control relevant to the audit of the consolidated financial statements and of arrangements and measures (systems) relevant to the audit of the group management report in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an audit opinion on the effectiveness of these systems.
- Evaluate the appropriateness of accounting policies used by the executive directors and the reasonableness of estimates made by the executive directors and related disclosures.
- Conclude on the appropriateness of the executive directors‘ use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group’s ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in the auditor‘s report to the related disclosures in the consolidated financial statements and in the group management report or, if such disclosures are inadequate, to modify our respective audit opinions. Our conclusions are based on the audit evidence obtained up to the date of our auditor‘s report. However, future events or conditions may cause the Group to cease to be able to continue as a going concern.

- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements present the underlying transactions and events in a manner that the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and financial performance of the Group in compliance with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to § 315e Abs. 1 HGB.
- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express audit opinions on the consolidated financial statements and on the group management report. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our audit opinions.
- Evaluate the consistency of the group management report with the consolidated financial statements, its conformity with German law, and the view of the Group‘s position it provides.
- Perform audit procedures on the prospective information presented by the executive directors in the group management report. On the basis of sufficient appropriate audit evidence we evaluate, in particular, the significant assumptions used by the executive directors as a basis for the prospective information, and evaluate the proper derivation of the prospective information from these assumptions. We do not express a separate audit opinion on the prospective information and on the assumptions used as a basis. There is a substantial unavoidable risk that future events will differ materially from the prospective information.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

We also provide those charged with governance with a statement that we have complied with the relevant independence requirements, and communicate with them all relationships and other matters that may reasonably be thought to bear on our independence, and where applicable, the related safeguards.

From the matters communicated with those charged with governance, we determine those matters that were of most significance in the audit of the consolidated financial statements of the current period and are therefore the key audit matters. We describe these matters in our auditor‘s report unless law or regulation precludes public disclosure about the matter.

Other Legal and Regulatory Requirements

Report on the Assurance on the Electronic Rendering of the Consolidated Financial Statements and the Group Management Report Prepared for Publication Purposes in Accordance with § 317 Abs. 3a HGB

Assurance Opinion

We have performed assurance work in accordance with § 317 Abs. 3a HGB to obtain reasonable assurance as to whether the rendering of the consolidated financial statements and the group management report (hereinafter the “ESEF documents”) contained in the electronic file “deutschebrseag-2021-12-31-de.zip” and prepared for publication purposes complies in all material respects with the requirements of § 328 Abs. 1 HGB for the electronic reporting format (“ESEF format”). In accordance with German legal requirements, this assurance work extends only to the conversion of the information contained in the consolidated financial statements and the group management report into the ESEF format and therefore relates neither to the information contained within these renderings nor to any other information contained in the electronic file identified above.

In our opinion, the rendering of the consolidated financial statements and the group management report contained in the electronic file identified above and prepared for publication purposes complies in all material respects with the requirements of § 328 Abs. 1 HGB for the electronic reporting format. Beyond this assurance opinion and our audit opinion on the accompanying consolidated financial statements and the accompanying group management report for the financial year from January 1 to December 31, 2021 contained in the “Report on the Audit of the Consolidated Financial Statements and on the Group Management Report” above, we do not express any assurance opinion on the information contained within these renderings or on the other information contained in the electronic file identified above.

Basis for the Assurance Opinion

We conducted our assurance work on the rendering of the consolidated financial statements and the group management report contained in the electronic file identified above in accordance with § 317 Abs. 3a HGB and the IDW Assurance Standard: Assurance Work on the Electronic Rendering, of Financial Statements and Management Reports, Prepared for Publication Purposes in Accordance with § 317 Abs. 3a HGB (IDW AsS 410 (10.2021)) and the International Standard on Assurance Engagements 3000 (Revised). Our responsibility in accordance therewith is further described in the “Group Auditor’s Responsibilities for the Assurance Work on the ESEF Documents” section. Our audit firm applies the IDW Standard on Quality Management 1: Requirements for Quality Management in the Audit Firm (IDW QS 1).

Responsibilities of the Executive Directors and the Supervisory Board for the ESEF Documents

The executive directors of the Company are responsible for the preparation of the ESEF documents including the electronic renderings of the consolidated financial statements and the group management report in accordance with § 328 Abs. 1 Satz 4 Nr. [number] 1 HGB and for the tagging of the consolidated financial statements in accordance with § 328 Abs. 1 Satz 4 Nr. 2 HGB.

In addition, the executive directors of the Company are responsible for such internal control as they have considered necessary to enable the preparation of ESEF documents that are free from material non-compliance with the requirements of § 328 Abs. 1 HGB for the electronic reporting format, whether due to fraud or error.

The supervisory board is responsible for overseeing the process for preparing the ESEF documents as part of the financial reporting process.

Group Auditor’s Responsibilities for the Assurance Work on the ESEF Documents

Our objective is to obtain reasonable assurance about whether the ESEF documents are free from material non-compliance with the requirements of § 328 Abs. 1 HGB, whether due to fraud or error. We exercise professional judgment and maintain professional skepticism throughout the assurance work. We also:

- Identify and assess the risks of material non-compliance with the requirements of § 328 Abs. 1 HGB, whether due to fraud or error, design and perform assurance procedures responsive to those risks, and obtain assurance evidence that is sufficient and appropriate to provide a basis for our assurance opinion.

- Obtain an understanding of internal control relevant to the assurance work on the ESEF documents in order to design assurance procedures that are appropriate in the circumstances, but not for the purpose of expressing an assurance opinion on the effectiveness of these controls.
- Evaluate the technical validity of the ESEF documents, i.e., whether the electronic file containing the ESEF documents meets the requirements of the Delegated Regulation (EU) 2019/815 in the version in force at the date of the consolidated financial statements on the technical specification for this electronic file.
- Evaluate whether the ESEF documents provide an XHTML rendering with content equivalent to the audited consolidated financial statements and to the audited group management report.
- Evaluate whether the tagging of the ESEF documents with Inline XBRL technology (iXBRL) in accordance with the requirements of Articles 4 and 6 of the Delegated Regulation (EU) 2019/815, in the version in force at the date of the consolidated financial statements, enables an appropriate and complete machine-readable XBRL copy of the XHTML rendering.

Further Information pursuant to Article 10 of the EU Audit Regulation

We were elected as group auditor by the annual general meeting on May 19, 2021. We were engaged by the supervisory board on April 8, 2021. We have been the group auditor of the Deutsche Börse Aktiengesellschaft, Frankfurt am Main, without interruption since the financial year 2021.

We declare that the audit opinions expressed in this auditor‘s report are consistent with the additional report to the audit committee pursuant to Article 11 of the EU Audit Regulation (long-form audit report).

Reference to an other matter– use of the Auditor’s Report

Our auditor’s report must always be read together with the audited consolidated financial statements and the audited group management report as well as the assured ESEF documents. The consolidated financial statements and the group management report converted to the ESEF format – including the versions to be published in the Federal Gazette – are merely electronic renderings of the audited consolidated financial statements and the audited group management report and do not take their place. In particular, the “Report on the Assurance on the Electronic Rendering of the Consolidated Financial Statements and the Group Management Report Prepared for Publication Purposes in Accordance with § 317 Abs. 3a HGB” and our assurance opinion contained therein are to be used solely together with the assured ESEF documents made available in electronic form.

German Public Auditor Responsible for the Engagement

The German Public Auditor responsible for the engagement is Dr. Michael Rönnberg.

Frankfurt am Main, March 2, 2022
PricewaterhouseCoopers GmbH
Wirtschaftsprüfungsgesellschaft

sgd. Marc Billeb	sgd. Dr. Michael Rönnberg
Wirtschaftsprüfer	Wirtschaftsprüfer
(German Public Auditor)	(German Public Auditor)