Deutsche Börse Group

Combined management report

as at 31 December 2022

Combined management report

1. What we achieved in 2022

Key performance indicators	Target	Target Achievement 2022
Financial		
Net revenue	10% CAGR 2019–23	14% CAGR 2019–22
	>€4.1 bn[1] in 2022	€4,337.6 m in 2022
EBITDA	10% CAGR 2019–2023	15% CAGR 2019–2022
	>€2.3 bn[2] in 2022	€2,525.6 m in 2022
Cash EPS	10% CAGR 2019–2023	15% CAGR 2019–2022
ESG net revenue growth[3]	>10%	31%
Employees		
Number of employees		11,078
Employee satisfaction	>71.5%	73%
Women in leadership positions[4]	>22%	23%
Customers and markets		
System availability (customer facing IT)	>99.5%	>99.9%
Social environment		
CO_2 emissions per workspace	≤1.51 t CO_2 per workspace	1.01 t CO_2 per workspace
ESG ratings		
MSCI, S&P, Sustainalytics	>90th percentile	98th percentile

1) Originally ~€3.8 billion (guidance raised over the course of the financial year)
2) Originally ~€2.2 billion (guidance raised over the course of the financial year)
3) ESG net revenue according to the internal definition of Deutsche Börse Group – see "Definition of our ESG net revenue"
4) Group-wide target in senior management

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 are subject to PwC's audit.

Integrated reporting on non-financial topics

Since the 2021 reporting year, we have integrated our combined annual report and our combined non-financial statement in one report. 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) on portraying the 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 law (HGB) and German Financial Reporting Standards (DRS). The combined non-financial statement for Deutsche Börse Group and the parent 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 the European 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 (2021) standards. A detailed overview of all GRI indicators (GRI index) is available on our website. Further detailed information that is referenced in this report does not form part of the combined management report itself unless explicitly stated. 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.

The reporting on our key topics follows our value creation process, which is explained in the chapter "Corporate purpose and value creation process". For a schematic representation of the contents in line with the TCFD recommendations we refer to our TCFD index on our website. In the course of our materiality analysis we continuously determine and evaluate the expectations and requirements of relevant internal and external stakeholders. Our last big stakeholder survey took place in 2021. In the year 2022 we surveyed several internal stakeholders in order to validate last year's results. 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 sections 289b–e or 315b–c HGB".

We present the material topics and the related steering parameters in the sections "Corporate purpose and value creation process" and "Our strategy and steering parameters". There are no new material topics compared with the previous year.

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

Required disclosure pursuant to § 289b-e or 315b-c HGB	Reference to chapter in our integrated report
Business Model	3. Deutsche Börse: Fundamental information about the Group 4. Our strategy and steering parameters
Involvement of top management	3. Deutsche Börse: Fundamental information about the Group (+ description in the respective chapters)
Risk	9. Risk management
Annual and consolidated financial statements	For the understanding of the non-financial statement, it is not necessary to refer to individual amounts reported in the consolidated financial statements
Environmental matters	8. Our social environment
Employee matters	6. Our employees
Social matters	8. Our social environment
Respect of human rights	8. Our social environment
Combating corruption and bribery	9. Risk management
Product matters (as additional aspect)	7. 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 11,000 employees from 115 nations working at 55 sites.

As one of the world's largest providers of market infrastructure, we provide our clients with a broad spectrum of products and services along the value chain of financial market transactions: starting with the ESG business, indices and analytics solutions, going on to downstream services for trading, clearing and order settlement, through to custody services for securities and funds, and services for managing liquidity and collateral. We also develop and operate the IT systems that support all these processes. In addition to securities, our platforms are also used to trade derivatives, commodities, foreign exchange and digital assets.

Our business takes place in four segments: Data & Analytics, Trading & Clearing, Fund Services and Securities Services. This structure is used for the internal Group controlling and forms the basis for our financial reporting.

In order to reduce the complexity of our financial reporting and to highlight the Group's growth areas more clearly, we adjusted our segment reporting in line with internal corporate management as of the first quarter of 2022. The previous eight segments were condensed to the four segments mentioned above.

For further details we refer to the segment reporting in the section "Results of operations".

Deutsche Börse Group's full group of consolidated entities is set out in Note 35 to the consolidated financial statements.

A full list of our trademarks is shown on our website.

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 involved directly in decisions of fundamental importance to the Group. Additionally, it approves the annual financial statements as well as 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. The composition of the Supervisory Board is governed by the provisions of the German Co-determination Act (Mitbestimmungsgesetz). 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 2022 financial year, the Executive Board of Deutsche Börse AG comprised six members. The remuneration system and the remuneration paid to individual members are explained in more detail in the "Remuneration report".

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

Leadership structure

Group Executive Board

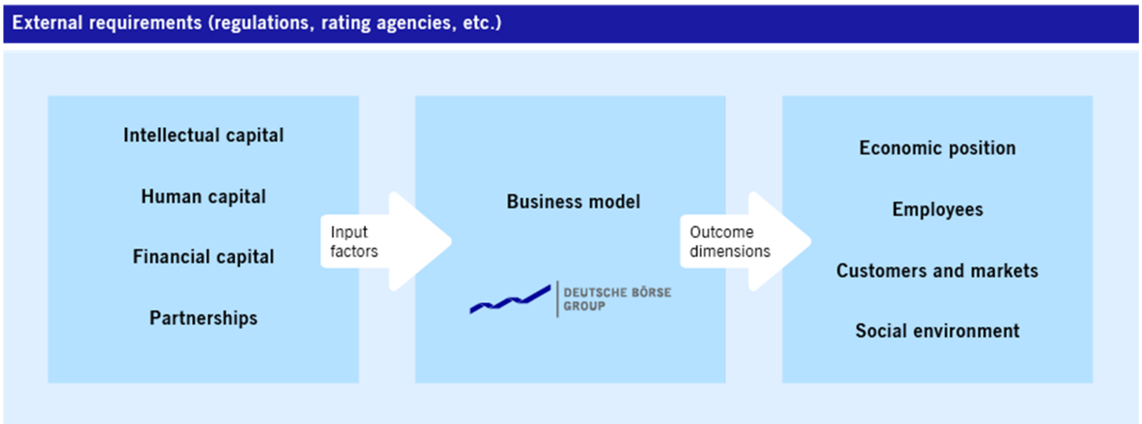
CEO T. Weimer	CFO G. Pottmeyer	CIO/COO C. Böhm	Trading & Clearing T. Book	Governance, People & Culture H. Eckert	Pre- & Post-Trading S. Leithner
Group Strategy/ Mergers & Acquisitions/ Chief of Staff	Financial Accounting & Controlling	Derivatives & Cash Trading IT	Derivatives Markets Trading	Chief Compliance Officer	Strategy & Governance
Group Communications & Marketing	Investor Relations	Clearing and Risk IT	Clearing	HR Global Business Partner	Clearstream Security Services
Group Regulatory Strategy	Treasury	Group Security	Business Analytics & Strategy	People Strategy & Initiatives	Clearstream Fund Services
Group Audit	Chief Risk Officer	IT Locations & Digital Journey	FX/360T	HR Global Services	Qontigo
Group Legal	Purchasing & Facility Management	Corporate IT	European Energy Exchange (EEX)	Governance & Organizational Services	ISS
	Group Tax	Chief Technology Officer	Market Data + Services		
		Post Trade IT	Cash Market		
		Information Security Compliance Program			
		IT Strategy/ Chief of Staff			
		Core Infrastructure Services			
		IT Governance, Risk and Transformation			

ESG governance
As of 2021 our Executive Board is informed frequently of relevant market and sales performance with regard to ESG and ESG net revenue[1] 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 Group Strategy department 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 the ESG strategy and the development of the ESG variables being part of the Executive Board remuneration. The Board convenes four times a year and in 2022 its members comprised one representative from each of the Executive Board divisions, plus the Head of Group ESG Strategy and one Executive Board member (2022: CFO). The individual business areas are responsible for the concrete implementation of the ESG strategy. In addition to the individual product areas, our risk management function is also involved with ESG topics. (see chapter "Risk management").

At the Supervisory Board level, the Strategy and Sustainability Committee established in 2021 deals primarily with ESG and advises the Executive Board on matters of strategic importance.

Corporate purpose and value creation process
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



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

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:

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

Employees
As an employer, we take wide-ranging measures to enable our employees to fully realise their development potential. 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.

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.

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.

4. Our strategy and steering parameters

The market environment in which we operate is very dynamic. This applies not only to the financial markets themselves, which we organise and operate via our platforms. Our competitive environment as a market infrastructure operator is also permanently in flux. Over the past twenty years, the market has seen a significant consolidation of providers around the world, mainly due to the scalability of the market infrastructure providers' business models. This scalability is expected to increase in the coming years as the transaction costs will decrease even further via the use of cloud-based technologies and blockchain.

Many global providers have taken advantage of this development to specialise in selected areas of their value chain – with organic initiatives, but also through specific acquisitions, which have been particularly favoured by the low interest rate in the past ten years. We extended our market leadership in the European Union as a fully integrated, end-to-end provider with a broad value chain, from data and analytics to trading and clearing and securities services – both via organic growth and focused acquisitions. As a hybrid of a technology company and financial services provider, we thus have a high degree of integration and diversification in our value chain. This forms the basis for attractive growth opportunities and also makes our business model more robust and resilient to market fluctuations or secular shifts.

We have secured our good market position and continued viability by means of our growth strategy, which defines the strategic direction and financial targets. In our strategy we make a fundamental distinction between organic growth, generated from existing operations, and inorganic growth by means of focused acquisitions to expand our value chain. Organic growth consists mainly of secular initiatives such as product innovation or new customer wins, as well as cyclical growth due to interest rate effects or market volatility.

Our strategy addresses existing market trends in our four operating segments: Data & Analytics, Trading & Clearing, Fund Services and Securities Services. The core of our strategy consists of the Group strategy, which also includes our ESG strategy, and the business strategies of the segments. The priorities of the HR strategy (see chapter "Our employees"), the IT strategy and the risk strategy are derived from those.

The main secular growth drivers support the growth opportunities for our business segments as follows:
- **Data & Analytics**: higher demand for passive investments and ESG services and the increasing importance of the buy side
- **Trading & Clearing**: the shift from OTC to exchange-based trading
- **Fund Services**: the trend towards more outsourcing and efficiency

Additional cyclical growth components may be short-term market fluctuations in the Trading & Clearing segment or interest rate effects in Securities Services. In our M&A activities, we have decided to focus on data, analytics and ESG services in the Data & Analytics segment, on commodities and forex trading in Trading & Clearing and on Fund Services.

Four main features of our business model support our growth strategy:
- **High scalability.** All the Group's business segments are scalable, with Trading & Clearing in first place. This maintains our high profitability across all segments.
- **Low risk profile.** The risk profile is largely determined by operational risks, which can be well managed, as described in more detail in the chapter "Risk management".
- **Low capital intensity.** The regulatory capital requirement is limited and is mainly dependent on operating risks in the banking units. This enables us to keep investing in our growth strategy.
- **High free liquidity.** The dividend payout is between 40-60 per cent of net income. Remaining cash is preferably reinvested in the business to grow organically and support the M&A strategy.

We made considerable progress with our strategy in the course of the last financial year, meeting the ambitious growth targets of our Compass 2023 growth strategy as early as 2022 – one year ahead of target.

In addition to organic growth, our M&A strategy also contributed to growth – while maintaining profitability. Mergers and acquisitions helped to increase the share of net revenue from Data & Analytics from 5 per cent in 2019 to 15 per cent in the reporting year. In total, the assets acquired currently contribute some 15 per cent of net revenue. The following table shows all the realised growth initiatives since 2019.

Our growth initiatives

	Organic growth	Main M&A projects
Data & Analytics	• Strong growth in ESG products and services • New customers for index and analytics	• Axioma • ISS • Rainmaker Information • Discovery Data
Trading & Clearing	• Product innovation (financial derivatives) • Market share (commodities, OTC clearing) • New customers (FX) • Fixed-income derivatives • Volatility: Index derivatives	• Quantitative Brokers • Crypto Finance
Fund Services	• New outsourcing customers and additional services (distribution, data)	• Fondcenter • Ausmaq • Kneip
Securities Services	• Expand global presence in fixed-income securities services • Net interest income	• LuxCSD

We anticipate further growth to come from the digital transformation of our business models, which we can leverage with new technologies such as cloud services, distributed ledger technology (DLT) or artificial intelligence, either on our own or in cooperation with partners. An important implementation channel for us is our corporate venture capital portfolio, which operates under the DB1 Ventures brand.

We review our organic growth initiatives continuously, which we rely on particularly for expansion in structural 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 also described in more detail in the "Report on opportunities" section.

The "Report on expected developments" section describes expected developments in the 2023 financial year.

Moreover, the remuneration system for the Executive Board and managers creates a number of incentives for growth in the individual business segments. The "Remuneration report" provides a detailed description of all targets.

In addition to the Group strategy and the business strategies of the segments, Deutsche Börse Group has an ESG strategy. It maps the topic of sustainability both in our Group strategy and along our business areas. It can be summarised in four areas:

1. **Lead by example.** By integrating four ESG targets (employee satisfaction, ESG net revenues[2], carbon neutrality and ESG ratings) into our Executive Board remuneration we assume our corporate responsibility in a holistic way. This is shown by the fact that we have all sustainability disclosures in our report fully verified with reasonable assurance.
2. **Increase transparency.** With our trading platforms and reporting standards (Prime Standard and guidelines) we 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 8 per cent of our net revenue with ESG products in 2022. For further information see chapter "Definition of our ESG net revenue".

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

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

Overview of chapters & key performance indicators

Key performance indicators	Target	2022
Financial		
Net revenue[*]	10% CAGR 2019–2023	14% CAGR 2019–2022
	>€4.1 bn[1] in 2022	€4,337.6 m in 2022
EBITDA[*]	10% CAGR 2019–2023	15% CAGR 2019–2022
	>€2.3 bn[2] in 2022	€2,525.6 m in 2022
Cash EPS	10% CAGR 2019–2023	15% CAGR 2019–2022
ESG net revenue growth[3]	>10%	31%
Employees		
Employee satisfaction[*]	>71.5%	73%
Women in leaderhsip positions[4,*]	>22%	23%
Customers and markets		
System availability (customer facing IT)[*]	>99.5%	>99.9%
Social environment		
CO_2-emissions per workspace	≤1.51 t CO_2 per workspace	1.01 t CO_2 per workspace

1) Originally ~€3.8 billion (guidance raised over the course of the financial year)
2) Originally ~€2.2 billion (guidance raised over the course of the financial year)
3) ESG net revenue according to the internal definition of Deutsche Börse Group – see "Definition of our ESG net revenue"
4) Group-wide target in senior management
*) Our most significant financial and non-financial key performance indicators. ESG net revenue growth is now classified as significant key financial performance indicator due to the constantly changing regulatory requirements and the associated uncertainties.

Financial steering parameters

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 as reported in the consolidated financial statements. This consists of revenue, plus net treasury income from banking business and similar business, plus 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 amortisations and as such is a gauge of 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 growth[3] is the indicator for the ESG business.

Steering parameters employees

We use two significant 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. With regard to the proportion of women in management positions, the Executive Board has set itself the target of achieving a proportion of over 22 per cent in upper management at global Group level by the end of 2022 as part of a voluntary commitment. For 2023, we have set ourselves the target of achieving a proportion of women in management positions of 23 per cent in upper management and 33 per cent in lower management by the end of 2023 (see "Our employees").

Steering parameters 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 (see section "Our customers and markets").

Steering parameters social environment

Our aim is to keep our Scope 1 and Scope 2 carbon emissions and those for flights and shuttle buses to 1.51 tCO_2 per workspace or less. We will offset the remaining emissions mentioned above by means of emission reduction projects (see chapter "Our social environment").

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 over the years, in order to systematically identify and realise potential for improvements (see section "Our stakeholder engagement").

Outside-in steering parameters ratings

We use our credit ratings from external agencies as an additional control metric. This outside-in perspective serves as an external evaluation of our activities, results and projects and so has an important control function.

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 (see "Credit ratings" in the "Financial position" section).

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

5. Our economic situation

In the following section we 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 and M&A 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. In terms of the reporting year, those factors particularly included Russia's war of aggression against Ukraine and its impacts, as well as the change in monetary policy by almost all central banks in response to high inflation rates. The following aspects are particularly noteworthy:

- Uncertainty among market participants concerning the course of Russia's war against Ukraine.
- High price volatility on electricity and gas markets, principally as a result of sanctions and restrictions on gas imports.
- Higher prices, which are due mainly to a rapid increase in the rate of inflation.
- Higher base rates and tighter monetary policy to curb inflation by central banks in both the US and Europe.
- A significant rise in the value of the US dollar against the euro.
- Local COVID-19 lockdowns, particularly in metropolitan areas in China, which caused problems for supply chains.
- Regulatory projects and the resulting stricter requirements for market participants.

In its January 2023 estimate the International Monetary Fund (IMF) predicted slower global economic growth of 3.4 per cent for 2022 (2021: 6.2 per cent). It expects the euro area to grow by 3.5 per cent (2021: 5.3 per cent) and Germany by just 1.9 per cent (2021: 2.6 per cent).

Business developments

The 2022 financial year was marked particularly by the Russian war of aggression against Ukraine and its economic impacts. Individual countries and communities of states quickly imposed a wide range of sanctions, which also had an impact on commodities prices, making trading conditions more difficult and causing investments to be redistributed. Altogether, this increased the uncertainty among investors and so their need for hedging products across almost all asset classes. Average stock market volatility went up accordingly in the financial year, with the VSTOXX index 36 per cent higher than the previous year. One particular form of price volatility was also seen on the power and gas markets. A significant reduction in the availability of natural gas and the weather conditions during the summer months, which had an adverse effect on power plant operations, came together to cause a sharp increase in power and gas prices. The hedging requirements and trading activity of market participants increased significantly on these markets as a result. It was only when the gas storage facilities in Europe were almost full in late October 2022 that the tension eased on power and gas markets.

An increase in inflation rates was already apparent in the second half of 2021 in the US and the countries of the euro area. Central banks intervened by tightening their monetary policies and quickly raised interest rates. In 2022 alone the US central bank (Fed) increased its interest rate corridor by more than 400 basis points to 4.25–4.50 per cent. The European Central Bank (ECB) was slightly more cautious and only started raising interest rates towards the middle of the year. The ECB's deposit rate at the end of the financial year was 2.00 per cent. This mainly affected the net interest income from banking business in the Securities Services segment.

Results of operations

As described in the "Business developments" section, the 2022 financial year was affected more strongly by cyclical factors. Higher average volatility compared with the previous year resulted in significantly higher trading volumes in the Trading & Clearing segment, particularly in the asset classes financial derivatives and commodities. Here equity index derivatives and gas products saw an exceptionally strong increase in volumes. The US dollar's strong rise against the euro also stimulated foreign exchange trading. Margin fees from cash collateral deposits also went up significantly, as the requirements in the clearing business were higher due to increased volatility. Increases in base rates by central banks to curb high inflation rates had a primarily positive impact on net interest income from banking business in the Securities Services segment. Uncertainty about the next interest rate hikes by central banks also increased market participants' need for hedging instruments and was reflected in higher trading volumes for interest rate derivatives in the Trading & Clearing segment. The secular net revenue growth as a significant component of our strategy also demonstrated strong performance in the financial year. Growth was achieved, among other factors, thanks to higher demand for innovative products and to winning new customers and gaining market share in the Trading & Clearing segment, particularly in the financial derivatives and commodities space. In addition, higher demand in the Data & Analytics segment for products related to Governance Solutions, Corporate Solutions and ESG supported the secular growth. The sale of our stake in the European trade repository REGIS-TR meant that the Securities Services segment profited from a disposal gain of around €50 million in the first quarter of 2022. The deconsolidation of Tradegate Exchange GmbH also resulted in a positive one-time effect of some €13 million in the Trading & Clearing segment in the second quarter of 2022.

Our net revenue therefore increased to €4,337.6 million in the 2022 financial year (2021: €3,509.5 million). Net revenue growth of 24 per cent was made up of secular net revenue growth of 7 per cent, cyclical growth of 14 per cent and M&A effects of 3 per cent (for an explanation, see chapter "Report on opportunities").

In the reporting year, the increase of ESG-related net revenue[4] at Group level was generated almost exclusively by higher demand for ESG products in Governance Solutions, Corporate Solutions and ESG Analytics in the Data & Analytics segment. Overall, the Group's share of ESG-related net revenue increased by 31 per cent compared to the previous year.

Operating costs went up 17 per cent year on year in 2022, to €–1,822.2 million (2021: €–1,551.6 million). Of the total, 4 per cent is due to M&A-related growth and 3 per cent to exchange rate effects resulting from the US dollar's rise against the euro. The remaining organic cost increase of 10 per cent breaks down into 5 per cent higher costs, among other factors, due to inflation, which also includes an inflation compensation bonus paid to employees, 3 per cent from variable and share-based payments, and other costs of 2 per cent. Staff costs came to €–1,212.7 million in the reporting period (2021: €–1,002.1 million) and other operating expenses to €–609.5 million (2021: €–549.5 million).

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

Earnings before interest, tax, depreciation and amortisation (EBITDA) amounted to €2,525.6 million (2021: €2,043.7 million), an increase of 24 per cent. This includes the result from financial investments of €10.2 million (2021: €85.8 million). The significant decline is due mainly to higher valuation effects in the previous year (€45 million) and weaker performance by various minority investments.

Depreciation, amortisation and impairment losses, which are reported separately from the operating costs, came to €–355.6 million (2021: €–293.7 million). The increase stems inter alia from purchase price allocation effects for acquired companies, additional depreciation and amortisation on recognised assets and impairment losses on software.

The financial result was €–63.5 million (2021: €–40.1 million) and included higher interest expenses from the early refinancing of a corporate bond which was due to expire in the financial year, as well as the issue of a new hybrid bond to strengthen the credit rating. Provisions were also recognised in the second quarter of 2022 for interest on expected tax payments. The previous year's result also benefited from the positive impact of adjusting the expected interest rate for potential tax back-payments. 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 €1,494.4 million (2021: €1,209.7 million). This represents a year-on-year increase of 24 per cent. Undiluted earnings per share were €8.14 million (2021: €6.59 million) for an average of 183.6 million shares. Earnings per share before the effects of purchase price allocations (cash EPS) were €8.61 (2021: €6.98).

Net profit for the period attributable to non-controlling interests amounted to €68.8 million (2021: €55.2 million) and mainly comprised earnings attributable to non-controlling shareholders of EEX Group, ISS HoldCo Inc. and Qontigo GmbH.

Comparison of results of operations with the forecast for 2022

On the basis of our diversified business model and the resulting growth opportunities, we predicted an increase in net revenue to some €3.8 billion for the 2022 financial year. Over the course of the financial year, this forecast has been raised to more than €4.1 billion. The growth rate for secular net revenue should be at least 5 per cent. We expected additional net revenue contributions from acquisitions, particularly of ISS. Business areas dependent on cyclical factors were also predicted to see the first slightly positive effects on cyclical net revenue in the 2022 financial year as a result of lower market volatility in 2021 and potential US interest rate rises. However, there was no sign of the rapid increase in inflation which resulted in massive intervention by central banks. At the time of the forecast it was possible to see the deteriorating conflict between Russia and Ukraine, but its escalation and far-reaching macroeconomic impacts could not be predicted in full. Due to the significant changes in the market situation, particularly in terms of higher market volatility and higher interest rates worldwide, the proportion of the Group's net revenue growth attributable to cyclical effects increased very sharply to 14 per cent. The share accounted for by secular net revenue growth was slightly above expectations at 7 per cent. This meant that we significantly exceeded our forecast overall, with net revenue of €4,337.6 million.

We expected ESG net revenue[5] to increase by more than 10 per cent in the financial year. With growth of 31 per cent, we also exceeded this forecast.

Furthermore, we predicted an increase in earnings before interest, tax, depreciation and amortisation (EBITDA) to around €2.2 billion. This guidance was also increased to more than €2.3 billion in the course of the financial year. Operating costs went up by more than originally expected, due partly to the stronger US dollar and higher inflation. Despite this, EBITDA climbed by 24 per cent to €2,525.6 million, which is significantly higher than forecast.

Comparison of financial position with the forecast for 2022

As expected, the figure of 1.2 was below the target of 1.75 for maximum net debt for rating purposes in relation to EBITDA. The ratio of free funds from operations (FFO) was 68 per cent and thus greater than the minimum of 50 per cent. The cash flow from operating activities was significantly positive. Investments in intangible assets and property, plant and equipment stood at €323.5 million and was greater than the planned amount of €200 million. The increase is due mainly to IT and growth investments. Based on the dividend proposal to the Annual General Meeting of €3.60 per share, the dividend ratio of 44 per cent will be in the range of 40 to 60 per cent.

Comparison forecast 2022 with financial year 2022

	Forecast 2022	Financial year 2022
	€bn	€m
Net revenue	>4.1[1]	4,337.6
EBITDA	>2.3[2]	2,525.6
ESG net revenue growth[3]	>10%	31%

1) Originally ~€ 3.8 billion (guidance raised over the course of the financial year)
2) Originally ~€ 2.2 billion (guidance raised over the course of the financial year)
3) ESG net revenue according to the internal definition of Deutsche Börse Group – see “Definition of our ESG net revenue”

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 the course of 2022. In the reporting year, it was at 18.8 percent (2021: 18.2 per cent).

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

Data & Analytics segment

Key indicators Data & Analytics segment

	2022 €m	2021 €m	Change %
Net revenue[1]	651.7	482.6	35
Index	215.6	182.8	18
Analytics	75.4	75.9	– 1
ESG[1]	238.6	158.2	51
Other[1,2]	122.1	65.7	86
Operating costs	– 383.2	– 278.7	37
EBITDA	261.5	244.0	7

1) Institutional Shareholder Services, Inc. was fully consolidated as of 25 February 2021.
2) Includes, among other factors, the consolidation of Discovery Data, Inc. and Rainmaker Information Pty Ltd.

Since the first quarter of 2022, the Data & Analytics segment has consisted of the former Qontigo and ISS segments. One element of our reporting here is our index business, which 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. Net revenue in this business is made up of ETF, exchange and other licence revenue. While ETF licence revenues depend on the volume invested in exchange-traded index funds (ETFs) based on the STOXX® and DAX® indices, exchange licence revenues are derived mainly from the volume traded in index derivatives on STOXX and DAX indices on Eurex. By licencing sustainable index solutions that mirror the entire index product portfolio, we contribute to the ESG trend. The Data & Analytics segment also includes the analytics business. Here we offer our customers software for risk analytics and portfolio management.

Data & Analytics also comprises our ESG business, which is generated by our subsidiary Institutional Shareholder Services Inc. (ISS) that was acquired in early 2021. ISS is a US-based, leading global provider of corporate governance and sustainable investment solutions, market intelligence and editorial content, especially for institutional investors and companies. ISS operates at-arm's-length and we have adopted principles protecting the independence and integrity of ISS' research offerings. 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[6] within our Group in 2022.

In 2022, the Data & Analytics segment benefitted significantly from the ongoing strong demand for ESG products. The two businesses Governance Solutions (especially ISS' well-established services for proxy solutions) and ESG Analytics (support for institutional investors and banks to develop responsible investment strategies and ESG reporting) both made very positive contributions to net revenue growth in the reporting period. At the same time, the Corporate Solutions unit, which is also part of ESG, reported strong growth due to higher demand from companies seeking to comply with market standards. As a leading provider, ISS supports its clients in terms of designing and managing their corporate governance, executive compensation, sustainability, and cyber risk programmes. Growth in the "Other" line is due partly to the acquisitions of Discovery Data and Rainmaker in 2021. At the same time, the existing range of market intelligence products also saw good growth. In addition, currency effects had a positive impact on net revenue thanks to the stronger US dollar.

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

In the Index business, the financial year was dominated by uncertainty among market participants due to the geopolitical and monetary policy situation, so equity indices, which had risen sharply to record highs in the previous year, fell back significantly over the course of 2022. For example, both the DAX and the leading European index, the EURO STOXX 50, lost around 10 per cent of their value in the reporting period. Accordingly, the average assets under management in ETF based on STOXX and DAX indices declined in 2022. Business with exchange licences increased significantly, however, due to much higher market volatility. Other licence revenues benefited from growth in business with buy-side clients and issuers of structured products. Index net revenue also included a volume-based licence fee reimbursement of €19 million from the Trading & Clearing segment, Financial Derivatives. Net revenue in the analytics business also significantly rose year on year. This was due mainly to positive currency effects.

The EBITDA of the 2021 financial year contained a positive effect of some €45 million related to the former equity method measurement of Clarity AI, Inc. on the result from financial investments.

Trading & Clearing segment

Key indicators Trading & Clearing segment

	2022 €m	2021 €m	Change %
Net revenue	2,187.1	1,809.1	21
Financial derivatives	1,234.4	995.8	24
Equities	509.0	439.4	16
Interest rates	367.9	282.8	30
Margin fees	117.6	68.0	73
Other	239.9	205.6	17
Commodities	475.5	341.5	39
Power	183.3	188.2	– 3
Gas	89.2	54.9	62
Other	203.0	98.4	106
Cash equities	344.4	364.0	– 5
Trading	176.2	188.6	– 7
Other	168.2	175.4	– 4
Foreign exchange	132.8	107.8	23
Operating costs	– 876.3	– 770.7	14
EBITDA	1,330.8	1,083.6	23

Since the first quarter of 2022, the Trading & Clearing segment consists of the former Eurex, EEX, Xetra and 360T segments. In the **financial derivatives** asset class, we report on the performance in the financial derivatives trading and clearing business at Eurex Exchange. Performance is driven mainly by the trading activities of institutional investors and proprietary trading by professional market participants and depends, to a large extent, on market volatility and our clients' hedging needs. Revenue is also generated from marketing data and infrastructure services.

In the **commodities** asset class, we report on trading activities on the 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. The EEX Group's most important revenue drivers are the power spot and derivatives markets, and the gas markets. These include products such as green power derivatives, emissions trading and certificates of origin.

The **cash equities** asset class shows the development of our trading venues in the cash market (Xetra® and the Frankfurt Stock Exchange). Besides trading and clearing services income, revenue stems from the ongoing listing of companies' securities and exchange admissions, the marketing of trading data, infrastructure services and from services provided to partner exchanges. The activities of the recently acquired Crypto Finance AG are also recognised here 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.

The Trading & Clearing segment also includes the **foreign exchange** asset class, which reports on business performance on the trading platforms operated by our subsidiary 360T. Net revenue is generated mainly by the trading activities of institutional investors, banks and internationally active companies.

The Trading & Clearing segment contributes to our Group's ESG net revenue[7] in various ways. One is the broad product portfolio that exists for sustainable investment opportunities, such as ESG equity index derivatives and ESG interest rate derivatives, which are traded on the Eurex platform. Our EEX subsidiary focuses on developing sustainable commodity markets, for example, by trading European emissions certificates. EEX pursued various initiatives in this area in 2022, which made it the second-largest contributor to the Group's ESG net revenue[8]. Finally, products related to trading in green bonds and ESG ETFs also contribute to ESG net revenue[9].

The 2022 financial year was marked by the geopolitical situation and the resulting market risks, rising inflation and increases in interest rates by central banks. The resulting uncertainty in all market areas, combined with higher market volatility, led to a greater need for trading and hedging across all asset classes. Here our business model clearly proved its scalability.

In the case of **financial derivatives**, these factors were reflected particularly in significantly higher trading volumes in equity index derivatives (+21 per cent) and interest rate derivatives (+20 per cent), which led to a strong increase in net revenue from these products. In the product group interest rate derivatives, the central clearing of over-the-counter (OTC) traded, euro-denominated interest rate derivatives had a positive effect. The outstanding notional volume rose by some 30 per cent over the year to €27 trillion. This corresponds to a global market share of 20 per cent of all OTC interest rate derivatives denominated in euros (as of January 2023). In the wake of higher market volatility, the collateral required for trading financial derivatives also increased, resulting in significantly higher net revenue in this area.

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

Driven by great uncertainty on energy markets, trading and clearing volumes for gas products more than doubled. In combination with market share gains in the spot and derivatives markets, this meant that the **commodities** business made a positive contribution to segment performance. Net revenue from the power trading business declined slightly year on year in 2022, despite winning market share, because trading activity on power markets was lower overall due to the higher margin requirements. Net interest income on collateral deposited for commodities trading also increased as a result of increased market volatility and thus made a very positive contribution to the other net revenue in this asset class.

In the **cash equities** business, global stock markets came under pressure due to the central banks' monetary policy. As a result, trading volumes on the cash market in 2022 were slightly lower than in the previous year. The deconsolidation of Tradegate Exchange GmbH led to a positive one-time effect of €13 million in the second quarter. In addition, the previous year's net revenue included a positive effect of approximately €16 million resulting from the sale of the Regulatory Reporting Hub. Secular growth in the listing business decreased slightly due to reduced activity accessing capital markets.

In **foreign exchange** trading, higher volatility on currency markets had a very positive impact on average daily trading volumes, which rose by some 30 per cent over the year. This development is also reflected in the net revenue generated by this business.

Fund Services segment

Key indicators Fund Services segment

	2022 €m	2021 €m	Change %
Net revenue	375.9	382.4	– 2
Fund processing	211.5	203.2	4
Fund distribution	89.7	77.6	16
Other	74.7[1]	101.6	– 26
Operating costs	– 171.5	– 125.9	36
EBITDA	203.8	255.9	– 20

1) Kneip Communication S.A. was fully consolidated as of 31 March 2022, see Note 2.

The Fund Services segment, which was known as IFS until the first quarter of 2022, summarises order routing and settlement activity and custody volumes of mutual, exchange-traded, and alternative funds processed by Clearstream in the line fund processing. Clients can settle and manage their entire fund portfolio via the Vestima® fund processing platform. The fund distribution business consists of the fund platform business at Clearstream Fund Centre. With this the segment offers one of the leading platforms for fund services in the European market. Fund Services' ESG product range consists of custody and settlement services for ESG funds, where investors see sustainability features. Net revenue in this segment is largely a function of the value of assets under custody and the number of orders and transactions processed.

The financial year in the Fund Services segment was defined by lower market index levels, resulting from market participants' uncertainty concerning monetary policy measures, which put stock markets around the world under pressure. Despite the difficult market environment, both fund processing and fund distribution reported further gains thanks to organic product development, combined with broader market coverage and new customer wins, and thus confirmed the ongoing growth trend in the fund services sector.

At the end of March 2022, Deutsche Börse AG acquired Kneip Communication S.A. to expand its range of data services in the fund space. Under the terms of the deal, Deutsche Börse AG acquired 100 per cent of the shares in the Luxembourg-based fund data manager. The revenue generated by Kneip Communication S.A. is recognised in the Fund Services segment's other net revenue. In the second quarter of the previous year, this also included a positive valuation effect of around €40 million from the acquisition of the remaining shares in Clearstream Fund Centre.

Securities Services segment

Key indicators Securities Services segment

	2022 €m	2021 €m	Change %
Net revenue	1,122.9	835.4	34
Custody	585.0	526.1	11
Settlement	104.8	120.2	– 13
Net interest income from banking business	260.0	50.0	420
Other	173.1[1]	139.1	24
Operating costs	– 391.2	– 376.3	4
EBITDA	729.5	459.6	59

1) The deconsolidation of REGIS-TR was completed on 31 March 2022.

Our settlement and custody activities are reported under the Securities Services segment (former Clearstream segment). In providing the post-trade infrastructure for Eurobonds and other markets, our subsidiary Clearstream is responsible for the issuance, settlement, management, and custody of securities from 60 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 includes net interest income from banking business. Securities Services contributes to the ESG business with services for proxy voting instruction and distribution services, offered as part of investor services supporting customers to comply with regulatory, governance and market standard requirements

The Securities Services segment was affected most in 2022 by the monetary policy measures taken by central banks around the world in response to higher inflation. Net interest income from banking business, which in the Securities Services segment stems from our clients' cash deposits, benefitted significantly from increased reference rate levels in both the US and Europe. The average increase in cash balances of around 20 per cent also made a positive contribution, especially with regard to US dollar deposits. The cash handling fee which had been introduced in 2020 was therefore cancelled again in the course of the year, both for US dollars and euros.

Bond markets saw a high level of issuance throughout the 2022 reporting year, particularly by the public sector. This resulted, among other things, in a 3 per cent increase in the average value of assets under custody in the Central Securities Depository (CSD) and the International Central Securities Depository (ICSD). The average outstanding volume in the collateral management and securities lending business increased by around 6 per cent in the reporting period. Coupled with the more restrictive monetary policy measures, this led to an increase in net revenue from this area. The number of settlement transactions was down on the previous year. This was related to the macroeconomic situation, which led to less trading on the stock markets and thus less need for settlement services. Accordingly, net revenue in this area also declined.

The sale of our stake in the European trade repository REGIS-TR meant that other net revenue benefitted from a disposal gain of some €50 million in the first quarter of 2022.

Definition of our ESG net revenue

The EU Taxonomy Regulation 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 2021, we have been explicitly measuring our ESG net revenue according to this definition, which we describe in more detail below. With regard to the EU taxonomy, we refer to the chapter "Disclosures on EU Taxonomy".

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 is then broken down into more detail at the segment level. From the Group perspective, net revenues are 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.

Each operating segment in Deutsche Börse Group can increase its information transparency in the three ESG 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

Data & Analytics	ESG	The corresponding ESG net revenue includes the Corporate Solutions, ESG Analytics and Governance Solutions businesses of ISS, excluding LiquidMetrix and SCAS (Securities Class Action Services). Corporate Solutions offers web-based tools for governance and sustain-ability analytics, ESG data, ratings, scores, and reporting helping corporate clients to helping them to design and manage their corporate governance, executive compensation, and sustainability programs. ESG Analytics comprises solutions enabling investors to develop and integrate responsible investing policies and practices, engage on responsible investment issues and monitor portfolio company practices through screening and analytics. Governance Solutions includes objective governance research and recommendations, end-to-end proxy voting and reporting solutions as well as an outsourced proxy service including i.a. the delivery of vote instructions.
	Index Analytics	The corresponding ESG net revenue includes all proceeds from licensing of sustainable index solutions. Licensing revenues from such products can either be directly observed (e.g., in the case of ETF licenses) or an allocation is performed whenever they are sold as part of packages. Revenues from sustainable Analytics solutions will be added as soon as these products are launched and will be commercialized.
Trading & Clearing	Cash equities	The corresponding ESG net revenue refers to the trading of ESG ETFs (best-in-class approach, exclusion method, thematic investment) and green bonds but also to trainings on ESG matters such as the Master Class SDG Strategy (E) seminars on fostering female financial literacy (S), or the examination of the qualified Supervisory Board Member (G).
	Financial derivatives	ESG net revenue at Eurex comes from the trading of ESG equity index and fixed income index derivatives (based on licenses from different index providers) on the trading platform.
	Foreign-exchange	The asset class does not yet report ESG net revenue.
	Commodities	The asset class commodities defines ESG net revenue as revenue linked to sustainable commodity markets (environmental markets, both compliance and voluntary markets). This includes contracts on green power, emission allowances, and related registry/ guarantee of origin services today. They may also refer to freight or agricultural products in the future.
Fund Services		For Fund Services, ESG net revenue is defined as revenue linked to Vestima's custody and settlement services for processed funds that have been classified as ESG funds. Vestima provides a single entry point and standardised process for all fund transactions driving operational efficiency.
Securities Services		Securities Services defines ESG net revenue as revenues linked to proxy voting instruction / distribution services offered as part of investor ser-vices. These products support compliance with regulatory, governance or market standards, and shareholders in their governance rights to facilitate active ownership.

Financial position

Cash flow

Consolidated cash flow statement (condensed)

	2022 €m	2021 €m
Cash flows from operating activities (excluding CCP positions)	2,141.6	1,181.4
Cash flows from operating activities	2,483.6	908.9
Cash flows from investing activities	– 1,406.5	– 2,168.0
Cash flows from financing activities	– 951.1	798.7
Cash and cash equivalents at 31 December	2,128.2	2,040.0
Other cash and bank balances as at 31 December	1,275.6	1,029.7

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 €2,141.6 million (2021: €1,181.4 million) before changes in CCP positions on the reporting date and was made up primarily of net income for the period of €1,563.2 million (2021: €1,264.9 million) and from changes in working capital.

Cash flow for investing activities came to €1,406.5 million in 2022 (2021: €2,168.0 million) which was mainly for the acquisition of Kneip. This resulted in total cash outflow of €190.7 million. Capital expenditure on intangible assets and property, plant and equipment of €323.5 million (2021: €206.4 million) was higher than in the previous year, which consisted mainly of IT and growth investments.

Cash outflow for financing activities was €951.1 million (2021: cash inflow of €798.7 million) and consists mainly of the dividend distributed for the 2021 financial year of €587.6 million (2021: dividend for the 2020 financial year of €550.6 million), the issue of two bonds for a nominal €1.1 billion for refinancing, the redemption of a bond for €600 million and the net repayment of commercial paper, which resulted in a net cash outflow of €741.0 million.

Cash flow for 2022, which is the sum of all inflows and outflows of cash from operating, investing and financing activities, came to €1,376.7 million (2021: €-460.5 million) and was dominated by cash flow from operating activities.

The positive cash flow from operating activities, sufficient credit lines and our flexible management and planning system meant that we were again adequately supplied with liquidity in 2022.

For further details of cash flow, see the consolidated cash flow statement and note 22 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. Generally speaking, we invest cash on a short-term basis, in order to ensure rapid availability, and it is 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 25 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 2022)

Type	Issue volume	ISIN	Term to	Maturity	Coupon (p.a.)	Listing
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	€600 m	DE000A3MQXZ2	10 years	April 2032	1.500%	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
Fixed-rate bearer bond (hybrid bond)	€500 m	DE000A3MQQV5	Call date 6.25 years/ final maturity in 26.25 years	June 2028/ June 2048	2.000% (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 2022 was €2,541 million.
- FFO for rating purposes is calculated by deducting interest and tax expenses from EBITDA for rating purposes. FFO for rating purposes in 2022 was €2,127 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 2022 was €3,129 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 include 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 2022 came to €49 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	2022
Net debt / EBITDA		≤ 1.75	1.2
Free funds from operations (FFO) / net debt	%	≥ 50	68
Interest coverage ratio		≥ 14	52
Tangible equity of Clearstream Banking S.A. (as at the reporting date)	€m	≥ 1,100	1,464.3

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 €1,464.3 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 adjusted net profit for the period attributable to our 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 €3.60 per no-par value share for the financial year 2022 (2021: €3.20). This dividend is equivalent to a distribution ratio of 49 per cent of adjusted net profit for the period attributable our shareholders. Given 183.7 million no-par shares bearing dividend rights, this would result in a total dividend payment of €661.6 million (2021: €587.6 million). The number of shares with dividend rights is produced by deducting 6.3 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 22 June 2022, 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.

S&P Global Ratings confirmed its AA credit rating for Deutsche Börse AG, Clearstream Banking AG and Clearstream Banking S.A. on 30 January 2023. 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.

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 2022 €m	31 Dec 2021 €m
ASSETS	**269,108.8**	**222,919.3**
Non-current assets	20,758.4	20,462.4
thereof intangible assets	8,610.0	8,162.9
thereof goodwill	5,913.7	5,596.0
thereof other intangible assets	1,942.6	1,913.6
thereof financial assets	11,322.8	11,460.4
thereof financial assets measured at amortised costs	1,894.7	1,634.7
thereof financial assets measured at FVOCI	182.8	227.1
thereof financial instruments held by central counterparties	9,078.4	9,442.4
Current assets	248,350.5	202,457.0
thereof financial instruments held by central counterparties	129,932.8	103,195.7
thereof restricted bank balances	93,538.3	78,542.0
thereof other cash and bank balances	1,275.6	1,029.6
EQUITY AND LIABILITIES	**269,108.8**	**222,919.3**
Equity	9,060.9	7,742.4
Liabilities	260,047.9	215,177.0
thereof non-current liabilities	14,183.9	13,623.0
thereof financial instruments held by central counterparties	9,078.4	9,442.4
thereof financial liabilities measured at amortised cost	4,535.0	3,539.9
thereof deferred tax liabilities	388.2	338.5
thereof current liabilities	245,864.0	201,554.0
thereof financial instruments held by central counterparties	129,568.8	103,267.7
thereof financial liabilities measured at amortised cost	19,712.9	16,618.7
thereof cash deposits by market participants	93,283.1	78,292.5

Deutsche Börse Group's total assets increased year on year by 21 per cent. The increase in non-current assets mainly results from the acquisition of Kneip, which is reflected in the increase in intangible assets, as well as from currency-related fluctuations in goodwill. The significant increase in current assets was particularly due to the volatility of the current assets of the restricted bank balances and financial instruments of the central counterparties at the reporting date.

Group equity rose by 17 per cent compared with the previous year. This was mainly due to the net profit for the reporting year 2022, less the dividend payment for the previous financial year 2021.

Deutsche Börse Group invested a total of €323.5 million in the reporting year (2021: €206.4 million) in intangible assets and property plant and equipment (capital expenditure, CAPEX). The Group's largest investments were in the Clearstream and Eurex segments. In total, Deutsche Börse Group invested €323.5 million (2021: €206.4 million) in intangible assets and property, plant and equipment (capital expenditure, CAPEX) mainly in connection with IT and growth investments and relates to the Securities Services and Trading & Clearing 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 €2,588.6 million (2021: €1,387.7 million). As Deutsche Börse Group collects fees for most of its services on a monthly basis, the trade receivables of €2,289.2 million included in current assets as at 31 December 2022 were relatively low compared with net revenue (31 December 2021: €969.4 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 €2,802.8 million (2021: €1,214.7 million, excluding technical closing-date items). The Group had a working capital of €214.2 million at year-end (2021: negative working capital of €173.0 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 13 and 25 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 €83.1 billion and €119.5 billion (2021: between €32.9 billion and €78.3 billion).

Overall assessment of the economic position by the Executive Board

The 2022 financial year was particularly affected by the Russian war of aggression against Ukraine and its economic impacts. Higher market volatility overall, including in financial derivatives and commodities derivatives, reflected the great uncertainty and need for hedging among market participants, particularly in the Trading & Clearing segment. A rapid rise in inflation also prompted central banks to tighten their monetary policy and increase interest rates worldwide. This had a particularly positive impact on net interest income from banking business in the Securities Services segment. By contrast, share prices fell on stock markets at the same time as a result of higher interest rates. Increasing scepticism about the state of the economy and lower expectations for medium-term corporate profits put additional pressure on share prices. This was also reflected in the segments Trading & Clearing (cash equities), Fund Services and Data & Analytics (index). With net revenue of €4,337.6 million, we achieved year-on-year growth of 24 per cent for the Group, which is significantly above the Executive Board's expectations for the financial year. Growth from cyclical factors was strongest, accounting for 14 per cent. Another 7 per cent stemmed from secular net revenue growth and 3 per cent from M&A activities. Growth in ESG-related net revenue came to 31 per cent in the reporting year and resulted mainly from the Data & Analytics segment (ESG). Costs went up by 17 per cent, due partly to M&A activities and the US dollar's rise against the euro. Higher inflation, higher variable and share-based payments and other cost increases also contributed. Earnings before interest, tax, depreciation and amortisation (EBITDA) rose year on year by 24 per cent to €2,525.6 million and so were also above the Executive Board's expectations.

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. The ratio of net debt to EBITDA, which is important for the credit rating, came to 1.2 and was thus below the limit of 1.75.

As in recent years, we are again proposing an increasing dividend for the 2022 financial year to our shareholders. The proposed dividend is €3.60 (2021: €3.20), a year-on-year increase of 13 per cent. Thus, the dividend ratio would decrease to 44 per cent (2021: 49 per cent), which reflects the Group's ambitions for inorganic growth.

Deutsche Börse Group: five-year overview

		2018	2019	2020	2021	2022
Consolidated income statement						
Net revenue	€m	2,779.7	2,936.0	3,213.8	3,509.5	4,337.6
thereof treasury result from banking and similar business	€m	204.5	247.7	196.6	142.7	532.2
Operating costs (excluding depreciation, amortisation and impairment losses)	€m	– 1,340.2	– 1,264.5	-1,368.7	-1,551.6	-1,822.2
Earnings before interest, tax, depreciation and amortisation (EBITDA)	€m	1,443.7	1,678.2	1,869.4	2,043.7	2,525.6
Depreciation, amortisation and impairment losses	€m	– 210.5	– 226.2	– 264.3	– 293.7	– 355.6
Net profit for the period attributable to Deutsche Börse AG shareholders	€m	824.3	1,003.9	1,079.9	1,209.7	1,494.4
Earnings per share (basic)	€	4.46	5.47	5.89	6.59	8.14
Consolidated cash flow statement						
Cash flows from operating activities	€m	1,298.2	926.1	1,412.0	908.9	2,483.6
Consolidated balance sheet						
Non-current assets	€m	15,642.0	11,706.9	14,570.5	20,462.4	20,758.4
Equity	€m	4,963.4	6,110.6	6,556.1	7,742.4	9,060.9
Non-current interest-bearing liabilities[1]	€m	2,283.2	2,286,2	2,637.1	3,037.3	4,123.4
Performance indicators						
Dividend per share	€	2.70	2.90	3.00	3.20	3.60[2]
Dividend payout ratio[3]	%	61	53	51	49	44[4]
Employees (average annual FTEs)		5,397	5,835	6,528	8,855	10,143
Deutsche Börse shares						
Year-end closing price	€	104.95	140.15	139.25	147.10	161.40
Average market capitalisation	€bn	21.5	24.0	27.7	27.0	30.9
Rating key figures						
Net debt / EBITDA		1,1	1.0	1.0	2.0	1.2
Free Funds from Operations (FFO) / net debt	%	69	79	76	38	68

1) Bonds that will mature in the following year are reported under “other current liabilities”
2) Proposal to the Annual General Meeting 2023
3) The ratios for the years 2018–2020 have been adjusted. The dividend payout ratio is determined using reported net profit.
4) Amount based on the proposal to the Annual General Meeting 2023

6. 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 HR strategy, promote diversity and inclusion, and systematically measure how attractive we are as an employer.

Human resources strategy

Working in its four strategic dimensions (Attract, Develop, Engage, Lead), our HR strategy aims to attract the best 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 four long-term projects within which we want 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 re-engaged our workforce and employees under volatile COVID-19 pandemic restrictions with special focus on return to the office, mental health and wellbeing. In this context we launched our hybrid working model and are continuing to transform our offices into a space for collaboration, creativity and innovation. This process is backed up by DigitizeHR, an initiative to fully digitise our operating HR processes and provide actionable analytics. MissionGrow! is our initiative for optimising development opportunities for our employees. We continue to bank on transparency, equal opportunities and a culture of continuous feedback. Based on the results of our People Survey 2021, the additional WorkFlows initiative was launched in 2022 to make Group-wide corporate processes more efficient and user-friendly as well as dedicated measures based on notable results.

Employer attractiveness

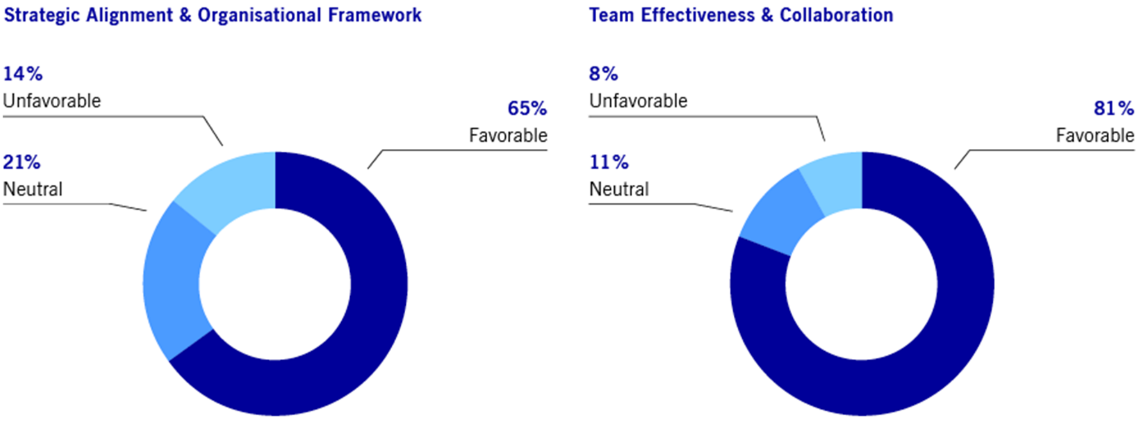
We can only achieve lasting success if we attract and retain both new talents as well as specialized, experienced and engaged employees to Deutsche Börse Group and ensure they are enthusiastic about working for us as their employer of choice. In this spirit, we are continuously working on the implementation of our talent attraction strategy by considering the market situation and adjust it accordingly. Our strategy 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 development programmes in 2022. Since 2022, we have introduced our new global talent programme Evolve! as well as a leadership development programme which is offered across all career paths. These formats strengthen our personnel development offering.

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 of 31 December 2022”.

In our annual staff survey, the People Survey, which also deals with subjects such as pervading strategy and teamwork, we got very satisfying marks for our attractiveness as an employer (84 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 childcare, 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 2022, we achieved a value of 73.0 per cent. The following graph “Results of our annual “People Survey 2022” shows what employees think about the subjects of understanding strategy and teamwork.

Results of our annual “People Survey 2022”



Promotion of diversity and inclusion

Deutsche Börse Group operates around the world. At our 55 locations around the world we have over 11,000 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. The low single-digit number of respective cases have been reported in 2022 either by our whistle-blower system, to the respective Line Management or directly to the local Human Resources Department. All relevant cases requiring further remedial actions have been dealt in a fully compliant manner ensuring a high level of dignity and closed.

Furthermore, we deliberately decided against the centralised management of our diversity and inclusion programmes. The members of our Diversity & Inclusion 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.

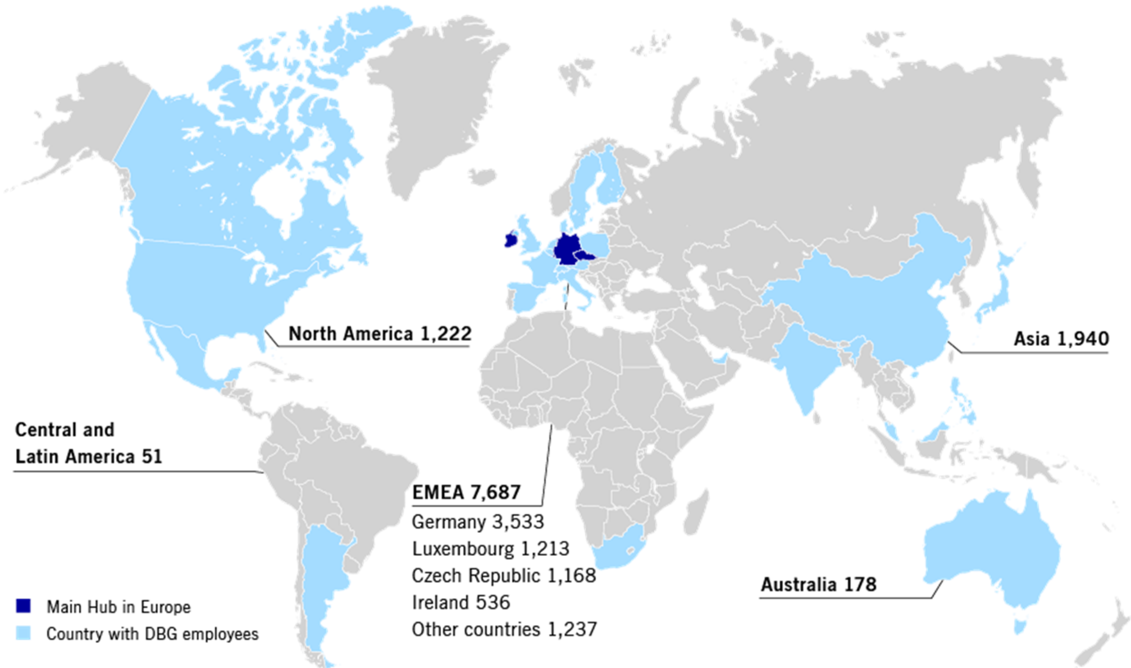
It remains a particular aspiration for us to increase the proportion of women at the management level. Our various programmes for promoting talent, and so also for qualifying women for management positions, contribute to the long-term advancement of women. Other measures include focused succession planning, as well as internal and external mentoring and training programmes. Exchanges among female colleagues are encouraged by an internal women's network. Furthermore, we organised our "One Global Team Week" with a focus on diverse abilities. We provided special support for applicants and our employees directly and indirectly effected by the military conflict in Ukraine. We are also committed to providing better opportunities for underprivileged people through dedicated programs.

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 2022".

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



11,078
Employees

55
Locations worldwide

115
Nationalities

As of 31 December 2022, Deutsche Börse Group employed a total of 11,078 staff (women: 4,546; men: 6,514; other: 18; 31 December 2021: 10,200), drawn from 115 nationalities at 55 locations[10] worldwide. The average number of employees in the reporting period was 10,675 (2021: 9,347). At Group level, this corresponds to an increase of around 14.2 per cent compared with the previous year.

10) The definition of locations has been adjusted from the year 2022 on (according to the updated categorization there are 59 locations for the year 2021).

Employees

	2022	2021
Average number of employees during the year	10,675	9,347
Employed at the reporting date	11,078	10,200
Employees (average annual FTEs)	10,143	8,855

Our fluctuation rate was 14.8 per cent (31 December 2021: 12.7 per cent). At the end of the year under review, the average length of service for the company was 6.8 years (2021: 7.3 years).

The number of Deutsche Börse AG's employees rose by 29 during the year under review, to 1,772 as of 31 December 2022 (comprising 679 women and 1,093 men; 31 December 2021: 1,743). The average number of employees at Deutsche Börse AG in the 2022 financial year was 1,752 (2021: 1,715). On 31 December 2022, employees of Deutsche Börse AG worked at 6 locations.

For more details, please refer to the table entitled "Key data on Deutsche Börse Group's workforce as of 31 December 2022".

Key data on Deutsche Börse Group's workforce as of 31 December 2022 (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]	**1,093**	**679**	**2,102**	**1,429**	**735**	**478**	**723**	**445**
50 years and older	394	154	621	293	252	120	48	13
40–49 years	272	155	566	352	242	150	222	107
30–39 years	321	266	704	561	175	149	344	217
Under 30 years	106	104	211	223	66	59	109	108
Average age	44	40	43	40	44	42	38	35
Employee classification								
Full-time employees	1,043	527	1,965	1,023	708	349	710	390
Part-time employees	50	152	137	406	27	129	13	55
Length of service								
Under 5 years (%)	37	44	41	44	34	38	50	53
5–15 years (%)	36	33	35	35	27	25	48	47
Over 15 years (%)	27	23	24	21	39	37	2	0
Staff turnover								
Joiners	102	76	250	184	85	63	127	95
Leavers	82	59	180	123	63	38	102	48
Training								
Training days per employee (FTEs)	2.6	3.2	2.5	3.2	2.7	3.9	3.7	5.0

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

Key data on Deutsche Börse Group's workforce as of 31 December 2022 (part 2)

	Deutsche Börse Group						
	Ireland		USA		Other locations		
	Male	Female	Male	Female	Male	Female	Total (part 1 and 2)
Employees (Headcount)[1]	**276**	**260**	**756**	**403**	**1,922**	**1,531**	**11,078**
50 years and older	23	13	168	105	222	80	1,960
40–49 years	75	93	171	84	382	216	2,660
30–39 years	78	91	239	104	617	458	3,742
Under 30 years	100	63	178	110	702	777	2,716
Average age	35	37	40	40	35	32	38
Employee classifacation							
Full-time employees	275	230	754	389	1,884	1,449	10,144
Part-time employees	1	30	2	14	38	82	934
Length of service							
Under 5 years (%)	64	41	57	59	72	74	54
5–15 years (%)	20	29	35	27	24	22	31
Over 15 years (%)	16	30	8	14	4	4	15
Staff turnover							
Joiners	83	44	192	104	601	578	2,415
Leavers	61	46	181	75	340	323	1,581
Training							
Training days per employee (FTEs)	3.2	4.3	0.6	0.5	0.9	1.1	2.2

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

7. Our customers and markets

Regarding the value creation for our customers and our market, we have identified in addition to the measurable performance indicator of system availability (see section "Our strategy and control parameters") two other important qualitative parameters as part of our materiality analysis: Infor-mation Security and Market Transparency. As a provider of market infrastructure, we consider our fundamental responsibility is to support the stability and economic success of capital markets. In this area, we make a distinction between mandatory requirements and non-binding guidelines for issuers. This chapter reports on these aspects.

System stability and availability

The availability of our customer-facing 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 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 again in 2022 – 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). This kind of disaster recovery test was also carried out after every larger software release. Other disruptions, such as workstation malfunctions or personnel failures, were also tested.

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 in the reporting year. The plan is to introduce further technical measures to gain greater independence from infrastructure providers of critical technologies.

Information security

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 analyses, 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 information security and information security risk management requirements 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. 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. Furthermore, we are a member of the ECB's Euro Cyber Resilience Board for pan-European financial infrastructures (ECRB).

For a description of the risks we refer to the section in the chapter "Risk management".

Transparent markets
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 transparency requirements such as Prime Standard
- Create incentives for companies to publish ESG information such as the ESG Best Practice Guide

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

Mandatory transparency requirements
Section 42 (1) of Börsengesetz (BörsG, German Exchange Act) authorises exchanges to impose additional admission requirements and further notification obligations on equity issuers, for parts of the regulated market. Frankfurter Wertpapierbörse (FWB®, the Frankfurt Stock Exchange) used this authorisation in its Exchange Rules (section IV) 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.

Admission to Prime Standard requires the fulfillment of the following transparency criteria:
- Financial statements according to international accounting standards (IFRS or US-GAAP)
- Publication of quarterly reports also in English-Maintenance of a corporate calendar
- Maintenance of a corporate calendar
- At least one analyst conference per year
- Publication of ad-hoc announcements in English

Being listed in Prime Standard is a prerequisite for an equity to be included in the selection indices of FWB Frankfurter Wertpapierbörse (DAX®, MDAX®, SDAX®, TecDAX®).

All reports and data submitted to FWB are subsequently available on 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.

All the measures initiated by the Deutsche Börse Group in 2021 – revoking the Prime Standard listing automatically in the event of insolvency, and the publication of action taken and penalties – were used again in 2022.

In the period ending 31 December 2022, the Prime Standard listing was revoked automatically for one issuer because it filed for insolvency. Decisions on measures and penalties imposed on issuers in accordance with section 22 (1) sentences 1 and 2, and section 42 (2) sentence 1 of Börsengesetz were published on the exchange website on three occasions.

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 and offers 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 customer focus is at the core of our Group-wide growth strategy (see "Our strategy and steering parameters"). 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 and functioning IT security (see "Risk management").

We carry our regular customer surveys for external quality assurance. The aim is to identify customer needs and prioritise and address enhancement requests to further improve products and services. The results of this survey are taken up to take concrete actions to address customer needs. In 2020 the surveys were harmonised Group-wide; 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 social environment

We describe the fourth category of our value creation in the section entitled "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 therefore 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. Our value added is defined very broadly as a result. We play an active part in financial market initiatives, 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 continuously review the regulatory requirements and the demands made of us by rating agencies and (voluntary) market standards and initiatives. At the same time, 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 ask our stakeholders about our company and our impact on society and the economy.

We use this external validation of our own ESG endeavours through ESG ratings 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	2022	2021	Comments
S&P	79	73	We improved in all ESG dimensions
Sustainalytics	82	76	Increase in absolute result with market position still strong
MSCI	AAA	AAA	AAA rating unchanged since 2016

Regarding the initiatives that we support, we refer to our website.

Climate strategy and reporting

As part of the Executive Board compensation system, we have integrated CO2- emissions from Scope 1, Scope 2, flights and shuttle buses per workspace and their neutralization into our Executive Board remuneration since 2021. In this context, we defined a reference value of 1.51 t CO2 per workspace. Our aim is to achieve a figure of 1.51 t CO2 per workspace or less. In the reporting year the figure came to 1.01t CO2 per workspace.

We will no longer pursue our target of reducing emissions per workspace by 70 percent compared with the base year 2019 due to new framework conditions on the creditability of offset projects in CO2 reporting. In the future, it will be replaced by the reference value of 1.51 metric tons of CO2 per workspace as set out in the Executive Board compensation system. Irrespective of this, following a comprehensive review of our carbon footprint, we are also recording all Scope 3 emissions relevant to Deutsche Börse Group for the first time this year, which we report separately in the GRI Index.

In addition, we published an overview based on the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). Information on our approach to climate risks and opportunities is summarized in this overview. For more information, please refer to our website.

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

Human rights matters

Deutsche Börse Group is aware of its corporate responsibility and is 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. 5 per cent of our purchasing volume have currently signed an agreement based on the Code of Conduct. New suppliers must by default acknowledge and accept Deutsche Börse Group's Code of Conduct in our Onboarding Tool.

9. Risk management

Risk management for Deutsche Börse AG and reporting of risks for the whole Deutsche Börse Group to the Executive Board is centralised with the Chief Risk Officer (CRO) Area. Deutsche Börse AG's risk management is guided by the standards that apply to our banking regulated subsidiaries. This includes inter alia regular reporting to the Executive Board on a number of metrics, covering operational risks (e.g. system availability and litigations), financial risks, business risks and other special risks. For each of these areas, the Executive Board has defined the so-called risk appetite, which is monitored by means of the monthly reporting. The Group's capital and liquidity position is also part of the detailed reporting to the Executive Board. This ensures that the effectiveness of capital and liquidity planning is reviewed continuously. The following sections will go into more detail regarding the above mentioned areas. Given their economic importance, we will focus in particular on the largest credit institutions in our Group, namely Clearstream Banking S.A. and Clearstream Banking AG (hereafter Clearstream, including Clearstream Holding AG), as well as Eurex Clearing AG and European Commodity Clearing AG.

As part of our core components of the risk management approach our credit institutions follow international standards and comply with the minimum capital requirements set by the Capital Requirements Regulation (CRR). In addition, internal processes for banks ensure the adequacy of capital and liquidity (Internal Capital Adequacy Assessment Process, ICAAP, and Internal Liquidity Adequacy Assessment Process, ILAAP) including the corresponding internal stress tests.

As of 2022 Clearstream companies must also comply with the Minimum Requirements for Own Funds and Eligible Liabilities (MREL). The central securities depositories Clearstream Banking AG and Clearstream Banking S.A. are also subject to the Central Securities Depositories Regulation (CSDR).

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). Moreover, Clearstream and Eurex Clearing AG have wide-ranging recovery and resolution plans to comply with the EU Banking Recovery and Resolution Directive (BRRD).

In addition, other Group entities hold different licences to provide activities in the financial services sector and are as such, subject to comprehensive statutory requirements, including risk management (for further information please refer to the section "Regulatory capital requirements and regulatory capital ratios"). In addition to the above mentioned statutory requirements, there are national requirements, the Minimum Requirements for Risk Management (MaRisk) issued by the Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin), and the circular 12/552 issued by the Financial Supervisory Authority of Luxembourg (Commission de Surveillance du Secteur Financier, CSSF) to be followed. In this context, significant parts of the risk management are defined for a number of our Group's companies in the context of the second pillar of the Basel Standard for Banking Supervision.

The second core component of our risk management approach is the three lines of defence (3LoD) model, which is established within Deutsche Börse AG and our Groups subsidiaries (credit institutions and securities companies). This model defines a clear segregation 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 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 the three principles: risk limitation, implementation of the business strategy aligned with our risk appetite, and maintaining an appropriate balance between risk and return.

Risk limitation

From a normative perspective, regulatory capital requirements are the relevant steering metrics. This means risk management aims to meet the regulatory capital requirements for the banks and securities companies in the Group. From an economic perspective the aim of risk limitation is to ensure that the risk-bearing capacity is not exhausted more than once in 1,000 years. In other words, to ensure with a probability of at least 99.9 per cent that we do not exhaust our entire economic capital within the next twelve months.

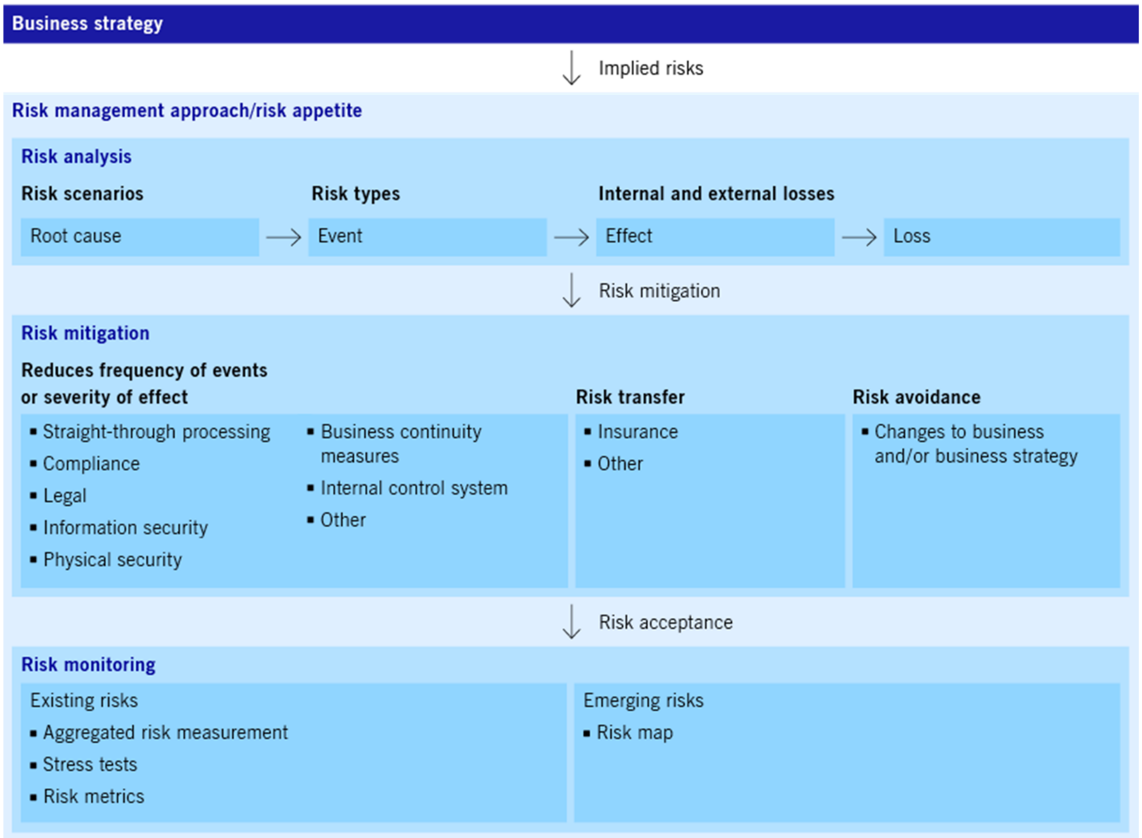
Supporting the business strategy

As the business segments expand (e.g. through organic growth, M&A activities, extension of transformative technology), risk management supports a strategy implementation consistent with the risk appetite by identifying risks and communicating them clearly. The aim is to be able to make well-founded strategic decisions within the boundaries of the defined risk tolerance. This approach also considers embedded, cross-sectional risks, such as environmental, social and governance risks (ESG).

Appropriate risk/return ratio
We aim to ensure that risk and return are not only proportionate for each business area in general, but also for each region, product and customer.

Internal risk management is based on the Group-wide assessment and management of risks, which is focused on its risk appetite, see chart “Interlocking business strategy and risk management approach”. Deutsche Börse AG’s Executive Board bears 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 subsidiaries controls their own risks independently.

Interlocking business strategy and risk management approach



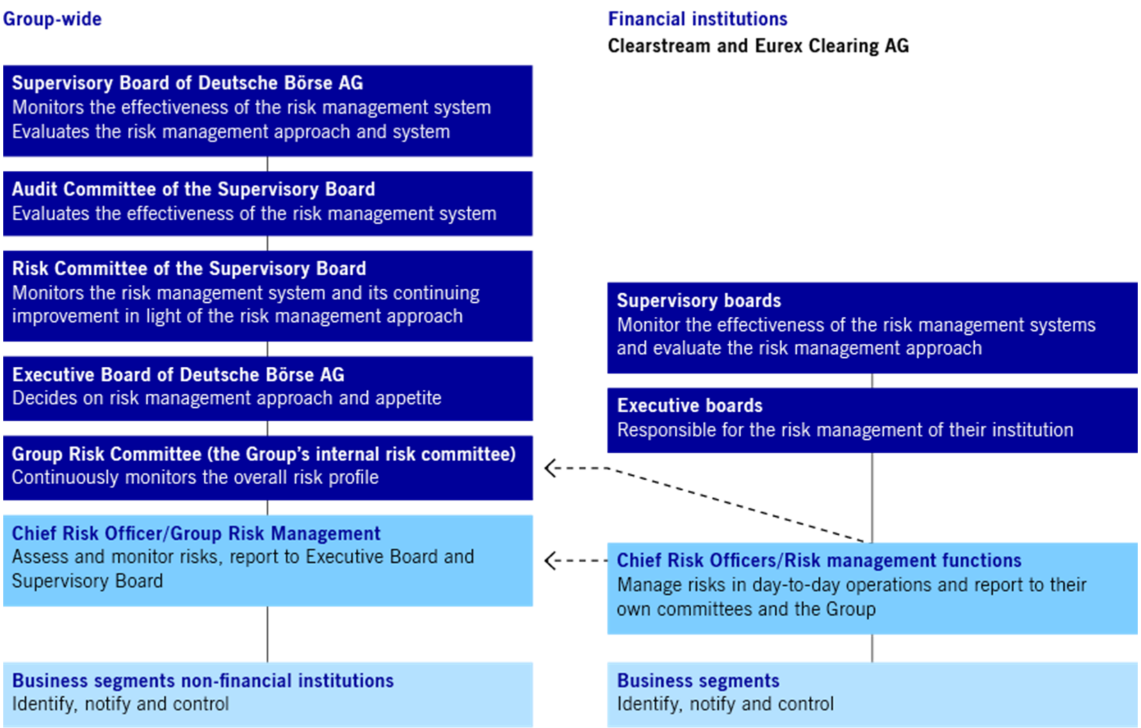
Implementation in the organisational structure and workflow

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, see chart, “Risk management – organizational structure and reporting lines”. Regular training sessions are held, which were developed in the course of a project to strengthen the risk culture of employees. The Executive Board is responsible for the overall risk management, whereas within the subsidiaries it is the responsibility of the respective executive 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 continuous development. The Supervisory Board has delegated the evaluation to its Audit Committee. In addition, the Risk Committee examines the risk appetite framework on an annual basis.

Deutsche Börse AG's Executive Board determines the Group-wide risk management approach as well as the 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 which parameters are used to assess risks and how risk capital is allocated. It ensures that the requirements for the risk management approach and 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.

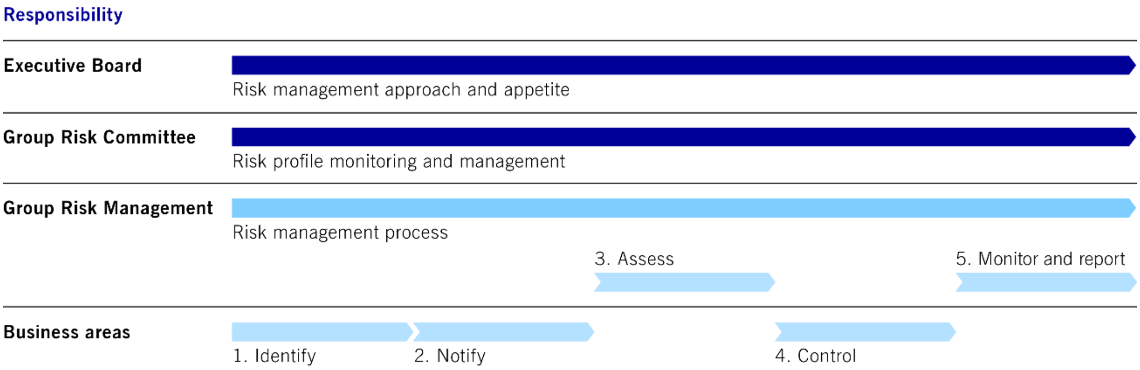
The Chief Risk Officer leads the development of proposals for the risk management framework, risk appetite, approaches and methods for risk monitoring and control, capital allocation and the necessary processes. Risks are continuously analysed, evaluated and reported: regularly to the GRC, once a month 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 consistently complied with.

Our 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. The same applies to the executive boards and the corresponding risk management functions. Clearstream and Eurex Clearing AG implement the risk management approach with specific features derived for their own businesses. They equally use metrics and reporting formats adjusted to the overarching group structure. In general, the management of the respective subsidiary is responsible for structuring its risk management approach as well as complying with the legal requirements. This also applies e.g. to ISS.

Centrally coordinated risk management process

Our risk management is implemented in a five-stage process. All potential losses should be identified in a timely manner, centrally recorded and, whenever possible quantitatively measured. If necessary, mitigating measures are to be recommended and their implementation ensured (see chart "The five-stage risk management system").

The five-stage risk management system



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 short-term measures. In addition to its regular monthly and quarterly reports, the CRO division compiles ad hoc reports for the Executive and Supervisory Boards. The risk management functions at Clearstream, Eurex Clearing AG and European Commodity 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.

Approaches and methods for risk monitoring

We use quantitative and qualitative approaches and methods for risk monitoring, with the objective to provide as complete picture as possible of our risk situation. To this end, the Group continuously reviews internal events with regard to their risk properties, whilst also considering regional as well as global developments. We are thus able to recognise and analyse existing risks; at the same time, to swiftly and adequately respond to emerging risks, as well as to changes in the market or in the business environment.

Existing risks

We use a series of instruments to measure and monitor operational, financial, pension and business risks continuously (see chart, "Deutsche Börse Group's risk profile"). Additionally, there are project risks and environmental, social and governance (ESG) risks, which impact the four risk types.

We adopt an economic perspective to quantify and aggregate risks. The normative perspective is also adopted by the credit institutions that are the focus of the following comments – particularly Clearstream and Eurex Clearing AG – and the investment firms in the Group. The value at risk (VaR) model is the main tool for quantifying capital requirements. 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, but 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 own risks, is complementary risk metrics. These risk metrics are based on operational risks (IT and security risks, potential losses, etc.), credit, liquidity and business risks, as well as the indicators defined for recovery plans.

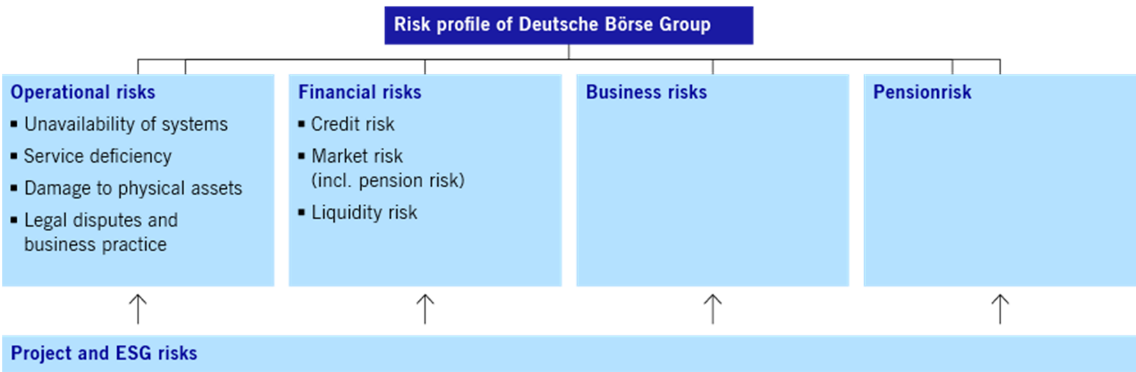
Risk-bearing capacity from an economic perspective

The economic perspective measures risk positions resulting from business operations, regardless of accounting standards or regulatory models. This perspective is used to derive the minimum required economic capital (REC), so that our risk-bearing capacity is not exhausted in more than once in 1,000 years. REC calculated in this manner for our subsidiaries Clearstream and Eurex Clearing AG also complies with the requirements of the second pillar of the Basel Standard for Bank Supervision. At Group level we determine our risk-bearing capacity on the basis of reported equity in accordance with International Financial Reporting Standards (IFRSs). Clearstream, Eurex Clearing AG and European Commodity Clearing AG determine their economic risk-bearing capacity on the basis of their regulatory own funds (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 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 remained below the defined threshold throughout the reporting period.

Regulatory capital requirements from a normative perspective
Our banks Clearstream and Eurex Clearing AG also calculate their regulatory capital requirements in line with the applicable European Capital Requirements Regulation (CRR), which corresponds to the first pillar of the Basel Standard for Bank Supervision. In addition, Eurex Clearing AG and European Commodity Clearing meet the EMIR capital requirements, while Clearstream Banking AG and Clearstream Banking S.A. have to comply with CSDR capital requirements since they were authorised as central securities depositories (CSD) by BaFin and the CSSF in 2020 and 2021 respectively (for details see the section "Regulatory capital requirements and regulatory capital ratios"). In 2023, additional "combined pillar" capital requirements from CRR and CSDR come into effect for Clearstream Banking AG and Clearstream Banking S.A.

Deutsche Börse Group's risk profile



Clearstream, Eurex Clearing AG and European Commodity Clearing AG use the standard approach for analysing and evaluating credit and market risk. The institutions have adopted different approaches regarding operational risk: Clearstream uses the considerably more complex advanced measurement approach (AMA) in all Clearstream entities, which has been approved and is regularly audited by BaFin. In contrast, Clearing AG and European Commodity Clearing AG employ the basic indicator approach in order to calculate regulatory capital requirements.

Liquidity risk management

Deutsche Börse Group's liquidity risk management objective is twofold: we aim to cover short-term liquidity needs while safeguarding the long-term financing of our Group and thereby reducing liquidity risks.

Existing liquidity risks stem mainly from the business models of Clearstream, Eurex Clearing AG and European Commodity Clearing AG. They are managed from both a normative and an economic perspective. The normative perspective comprises measurement and limitation of indicators required by applicable regulations. In the economic perspective the existing liquidity risks are monitored with the help of limit systems according to internal bank treasury policies. The banks also calculate their liquidity requirement in specific stress scenarios in order to identify potential risks early and hold sufficient liquidity at all times to cover them.

Stress tests
Stress tests are carried out regularly and on an ad hoc basis in order to simulate extreme, but plausible, events for all material types of risk both at stand-alone as well as aggregate level. 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 investment firms in the Group. Reverse stress tests are also carried out. They calculate which loss scenarios or liquidity squeezes would have to materialise for the risk-bearing capacity to be exceeded from a capital or liquidity perspective. Additional adverse scenarios are simulated for the normative perspective of banks and investment firms. The recovery plans for the banks include additional recovery stress tests.

An ad hoc stress test was carried out for all risk types in 2022 in response to the war between Russia and Ukraine (for details see section Credit risk).

Risk metrics
Risk metrics are used to quantify the exposure to the most important internal risks against set limits. These supplement the Value-at-Risk approach and serve to monitor risks metrics other than the capital requirement, and non-quantifiable risks. Any under- or overshoot of the defined 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.

Risks maps for emerging risks
Our risk management approach also includes a sustainable, long-term component. In addition to the current existing risks, additional risks are also considered over a horizon of twelve months. 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. The risk maps categorise risks according to their probability of occurrence, and their potential financial impact, and show how the results relate to environmental, social and governance (ESG) aspects. An explanation of material risks shown in the Regulatory Risk Map is given in the Business risk section.

Structure of the internal control system
Deutsche Börse has a Group-wide internal control system (ICS) that defines a framework with minimum requirements for all entities in the Group. The framework provides the basis for the risk-based implementation of the ICS. It supports the effective and efficient implementation and operation of the ICS regardless of the degree of regulation, or the size of the entity, for example.

The ICS helps to manage risks and particularly covers risks at the process level. This entails defining requirements for the consistent documentation and assessment of process risks, in aggregate and at the individual risk level. It should be emphasised that both financial and non-financial effects are taken into account when assessing the materiality of risks. A review cycle defines minimum requirements for continuous improvements and ICS reporting and is carried out at least once a year. The cycle also includes an assessment of the appropriateness and effectiveness of the measures taken by the business units as the first line of defence.

The ICS implementation particularly focuses on measures to manage material risks related financial reporting ("accounting-related ICS") and on measures to expand the ICS in the field of ESG reporting as part of ESG governance.

The Financial Accounting and Controlling (FA&C) department, which reports directly to the CFO, as well as decentralised units based on FA&C guidelines, are responsible for preparing the financial statements in accordance with legal requirements and internal and external guidelines. Group Tax is responsible for determining tax items for accounting purposes. The relevant department head is 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.

FA&C provides the subsidiaries included in the consolidated financial statements with accounting guidelines to ensure Group-wide consistent and correct financial statements.

Moreover, we continuously monitor and analyse changes in the accounting environment and adjust our processes accordingly.

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.

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.

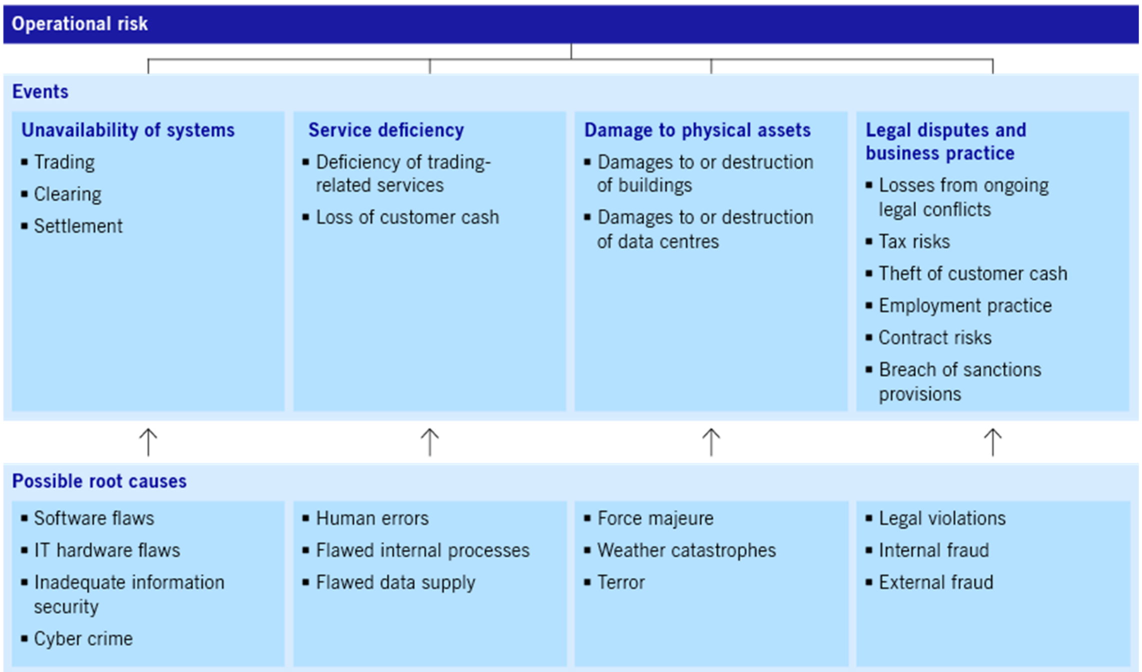
The processes, systems and controls described above aim to provide reasonable assurance that our accounting system complies with the applicable principles and laws. In addition, Compliance and Internal Audit act as a further line of defence, performing risk-based, process-independent controls on whether 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 quantification and management

Operational risk
Most of the risks in Deutsche Börse Group are operational by nature. Operational risks comprise the unavailability of systems, service deficiency, damage to physical assets as well as legal offences and business practices (see the chart below: "Operational risk at Deutsche Börse Group"). Operational risks are measured using scenarios. Overall, 67 per cent of the REC is linked to Operational Risks as of 31 December 2022.

In the course of implementing ESG requirements in non-financial risk management, the relevant scenarios for operational risk are flagged as E-S-G for most of the bank-regulated entities as of this year.

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 not 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 outage for one of these systems is, 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 at the T7 system, for instance. In practice, there has never been a system failure lasting longer than one day. We have taken several measures to further minimize the risk of failure lasting an entire day or longer, such as the redundancy of the network infrastructure. Malfunctions in the IT infrastructure can never be ruled out completely, however, despite all mitigating measures. If such incidents do occur, action is taken quickly to address them.

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 leads to complaints or legal disputes. For example, errors in the settlement of securities transactions due to product or process deficiencies or faulty manual input. The related processes are tested at least annually. Other sources of errors may lie with suppliers or defective products. 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 severe damage or destruction of a data center. Business Continuity Management aims at averting significant financial damage (see the chart “Business Continuity Management”).

Legal disputes and business practices

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 the case law to a sufficient degree. Legal risks also include losses due to fraud and labor law issues. Substantial litigations as well as tax risks are described in more detail in note 26 and are an integral part of this concise management report.

Furthermore, losses resulting from insufficient anti-money laundering controls, violations of competition law or of banking secrecy are included. Such risks can also arise if government sanctions are not observed, e.g., in case of conflicting requirements of different states, or in the event of breaches of other governmental or overarching regulations.

Since the Russian invasion of Ukraine the Group has permanently monitored medium and long-term risks and initiated the risk-mitigation measures necessary in this context (e.g. suspending trading in Russian securities as part of sanctions measures, provision of certain customer services in relation to Ukrainian and Russian currencies, and higher levels of collateral at the clearing houses in the Group). In terms of operational risk the focus was on the implementation of the full scope of sanctions and other political measures to isolate Russia.

The geopolitical and macroeconomic environment also had an impact on energy and commodities markets. For this reason, and because of supply and demand effects, there were considerable increases in prices and volatility in 2022 for many of the gas and electricity contracts cleared by European Commodity Clearing AG (EEC). Various policy market interventions occurred, with the final one in 2022 being the price cap for the wholesale natural gas market agreed by EU member states on December 19. This market correction mechanism, as it is known, is limited to one year and only applies in specific circumstances. The gas price cap particularly creates the risk that gas trading shifts away from transparent, regulated and safe exchange markets in the bilateral OTC space. There were no defaults by clearing members or other material disruptions to operations at ECC in 2022.

Measures to mitigate operational risk

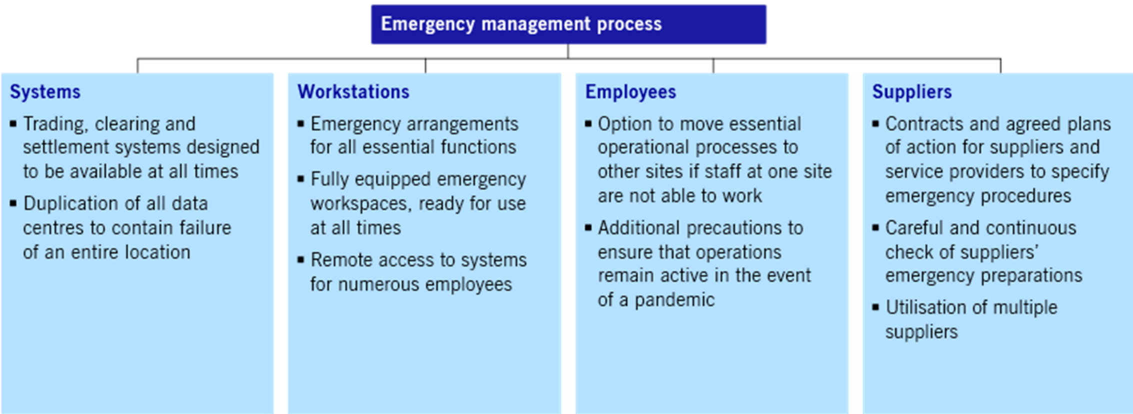
We take specific measures to mitigate operational risks. Among them are emergency plans, measures to ensure information security and the physical safety of employees and buildings, insurance coverage, as well as compliance regulations and procedures.

Risks associated with cloud services, which are increasingly used by the organization, are covered by the operational risk management framework and established risk management tools. These are also considered in the ongoing development of the framework. The risk management function advises on cloud initiatives both concerning risks assessments of information security and of the IT. On the one hand to ensure compliance with regulatory requirements and on the other hand to monitor any changes in Deutsche Börse Group's risk profile.

Contingency plans

It is vital for our Group to be able to provide our products and services with the greatest possible reliability, in order to retain the trust of customers and markets, and to meet our contractual obligations. We must maintain our business operations and take precautions against failures. If our core processes and resources are not available, this represents not only a substantial risk for the entire Group but also a potential systemic risk for the financial markets in general. A system of contingency plans has therefore been established throughout the Group (Business Continuity Management System, BCMS). This covers all processes designed to ensure continuity of operations in the event of an emergency and reduces unavailability risk. Measures include precautions relating to all material resources (staff, systems, workspace, suppliers), including the redundant design of essential IT systems and the technical infrastructure, as well as emergency measures designed to mitigate the unavailability of staff or workspaces in core functions. This includes unavailability due to pandemic-based events, like the coronavirus outbreak in 2020. This situation was handled as part of the Group's incident management process. Measures defined in the contingency plans were applied and their effectiveness was confirmed. Additional emergency tests in 2022 also confirmed the effectiveness of those measures, which were not explicitly applied. Activities are centrally coordinated to ensure the continuity of the Group's time-critical operations as well as employees' health and safety. Examples of such emergency measures are listed in the following chart "Business continuity management".

Business continuity management



Our Group has introduced and tested a management process for emergencies 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 units have appointed incident managers to act as central contacts and take responsibility during emergencies. The incident managers inform the Executive Board or raise the alarm with them in the case of severe incidents. If the incident escalates, the Executive Board member responsible acts as the crisis manager or delegates this role. Our contingency plans are tested regularly by rehearsing critical situations as realistically as possible. Such tests are generally carried out unannounced; the results are evaluated according to 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 security

As described in the section on information security (see chapter "Our customers and markets"), 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 steadily 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 (for example phishing, denial-of-service, and ransomware attacks). The additional heightened threat of cyber attacks associated with Russia's war of invasion against Ukraine was addressed by continually increased monitoring by the Information Security function.

There was no serious attack on the Group's IT systems in 2022.

Physical security

Physical security is a high priority for us due to continuously changing global security risks and threats. DBAG has developed an integral risk management process 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 on business trips, and are in close contact with national and international authorities (Federal Criminal Police Office – BKA, Federal Office for the Protection of the Constitution – BfV, etc.), security service providers, and security departments of other companies. Multi-level security processes and controls ensure physical security 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).

Insurance Contracts

Operational risks that we 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 optimization.

Financial risk

We divide our financial risk into credit, market and liquidity risk (see the “Financial risk at Deutsche Börse Group” chart below).

Financial risk at Deutsche Börse Group

Credit and market price risks account for around 31 per cent of the REC for the Group. Liquidity risks are not quantified in the REC (see note 25 to the consolidated financial statements). The risks occur mainly at our subsidiaries Eurex Clearing AG (Trading & Clearing segment), European Commodity Clearing AG (Trading & Clearing segment) and Clearstream Banking (Post-Trading segment), as these are credit institutions, as well as at Crypto Finance AG, a FINMA-regulated securities firm and asset manager for digital assets.

Financial derivatives are used across the Group solely for hedging purposes. This relates to interest rate or currency swaps, for instance, which are used as part of a conservative investment policy for Clearstream and Eurex Clearing AG, or futures used to reduce the market risk of existing positions at Crypto Finance AG.

Credit risk

Credit risk and counterparty default risk describe the risk that one of our counterparties might not settle its liabilities, or not settle them in full. The Group's credit risks result from the specific business models of our subsidiaries.

Both Clearstream Banking S.A. and Clearstream Banking AG grant credit to their customers to make securities settlement more efficient. This lending business may give rise to short-term receivables from counterparties of several billion euros, but differs fundamentally from the traditional bank lending business and the associated risk profile. On the one hand, credit is granted solely intraday; on the other hand, it is generally collateralised and only granted to clients with a high credit rating. Furthermore, the credit lines granted can be revoked at any time.

Credit risk can also arise from cash investments, which are the responsibility of the Treasury function. Treasury invests both own funds and those that our customers deposit with Clearstream; the funds are mostly invested on a secured basis.

Finally, there may be short-term unsecured credit balances at correspondence banks in the course of securities settlement.

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 particular exchanges. Eurex Clearing AG also offers this service for over-the-counter (OTC) products such as interest rate swaps and forward rate agreements. It acts as the central counterparty between the business parties. The resulting credit risk is mitigated by Eurex Clearing AG via offsetting reciprocal claims and requiring from clearing members to post collateral. These processes are part of a safety system that complies with EMIR requirements and has been implemented by the Group's central counterparties, i.e. Eurex Clearing AG and European Commodity Clearing AG.

This safety system consists of different levels that prevent one or even several customer defaults from affecting the functioning of the central counterparties. As a first step, each clearing member must establish proof of a minimum amount of liable capital or, in the case of funds, assets under management. The second stage requires the daily provision of collateral in the form of money or liquid securities of high credit quality ("margins"), which, upon request of the central counterparties, must be supplemented or even replaced by customers intra-day in case, that securities no longer meet the high quality requirements. All collateral requirements, as well as details on margin types and calculation models, are publicly available on the websites of the respective central counterparties.

As a third stage, all clearing participants are obliged to pay additional collateral into a default fund on a pro rata basis according to their individual risk profile. This fund is jointly and severally liable for the financial consequences of a default of a clearing member if the collateral of the defaulting clearing member and a designated limited own contribution of the relevant central counterparty are not sufficient to mitigate these consequences. The amount of the default fund is reviewed daily on the basis of stress tests by the central counterparties and adjusted if necessary. Should the default fund still not cover the financial consequences, the central counterparties have the right of making margin calls on the not defaulted clearing members up to twice the value of the original default fund, representing a fourth level of security. To this end, the central counterparties must also provide new own contributions up to twice the value of their originally reported limited own contributions.

In order to provide own payments Eurex Clearing AG has, in addition to its own funds, the option of drawing on a letter of comfort issued by Deutsche Börse AG. A maximum of €600 million is available, from which own equity payments can already be used on a pro rata basis in the fourth stage of the safety scheme described above. Third parties have no rights under this comfort letter.

Since its licence was extended to a bank under the German Banking Act (Kreditwesengesetz) Eurex Clearing AG , can also use the permanent facilities of the Deutsche Bundesbank and thus is able to manage the majority of its client funds at the central bank or affiliated institutions. Investment losses on currencies for which Eurex Clearing AG has no access to the respective central banks and therefore holds with investment 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 to be borne by Eurex Clearing AG is limited to €50 million.

As with Clearstream, Treasury also invests its own funds and client deposits for Eurex Clearing AG; here too, most of the investments are secured.

Various risk indicators are used to measure and manage risk of our subsidiaries. In addition to REC, which is assessed via Monte Carlo simulations, regulatory capital requirements and stress tests for credit risk, the indicators include the extent to which individual clients make use of their credit facilities and credit concentrations. The measurement criteria also include the credit rating of the counterparties and the collateral provided. Inverse stress tests for banks show, how many clients would have to default for the losses to exceed the risk-bearing capacity.

Clearstream, Eurex Clearing AG and European Commodity Clearing AG also run stress tests to analyse the impact of the default of their largest client. The resulting figures 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 central counterparties in the Group.

The extended covid stress scenarios, established during the previous year, were again simulated in financial year 2022.In addition, special stress tests were developed and carried out in the context of geopolitical developments, especially in Ukraine. Financial risks arose both from capital controls by the Ukrainian central bank and from countermeasures by the Russian government in response to European and non-European sanctions. All known impacts are actively managed within the Group and potential new risks are analysed on an ongoing basis. In this case revolving FX swap facilities were arranged as active measures to reduce foreign exchange and credit risk exposure to counterparties in these countries.

As a further measure to manage and monitor default risks within the Group our subsidiaries assess the credit-worthiness 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 taking into account customer requirements and the results of regular credit checks, which our subsidiaries supplement with ad hoc analyses if necessary.

Our subsidiaries define haircuts 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 against collateral 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.

To date, no default by one of our customers with a secured credit line has resulted in a financial loss for us. However, as a consequence of measures taken by the Russian state in the course of the Russia-Ukraine war, blocked customer deposits stored in the name of Clearstream at the Russian central securities depository had to be written down in full (€134.1 million). The Group, however, did not incur any loss on this in the financial year, as the customer liabilities relating to this item were adjusted in the same amount in accordance with Clearstream's terms and conditions. We therefore continue to consider the probability that we will incur material losses as a result of a customer's default to be low. In addition, we regularly assess how reliable the recovery plans of our subsidiaries Clearstream and Eurex Clearing AG are in various scenarios (including contractual defaults) and the resulting credit risk.

Equally, there have also been no defaults of clearing members or other material disruptions to the business operations of European Commodity Clearing AG. Due to the geopolitical situation as well as supply and demand effects, gas and electricity contracts cleared by European Commodity Clearing AG have experienced significant price and volatility increases since September 2021, which continued in 2022 and were intensified in spring 2022. These effects fell back during the last quarter of 2022 to the level as of at the beginning of 2022. The models used to calculate the initial margin reflect these price and volatility increases, causing the initial margin to increase significantly. However, this has not yet led to a default of a clearing member or other disruptions.

Market risk

Market risk includes risks of an adverse development of interest rates, exchange rates or other market prices, which can arise e.g. from the investment of own assets or clients deposits, from open risk positions in foreign currencies or crypto assets or from ring-fenced pension plan assets.

Our subsidiaries Clearstream and Eurex Clearing AG invest parts of their equity in securities with the highest credit rating. Some of these securities have a variable interest rate, so the interest rate risk is low.

Other market price risks arise for Crypto Finance AG as open positions in crypto assets may arise from its brokerage business. As mentioned above, however, these risks are reduced by the use of corresponding derivatives.

Furthermore, market risk could result from ring-fenced pension plan assets for our employees (Contractual Trust Arrangement (CTA), Clearstream's pension fund in Luxembourg). These are actively managed according to investment guidelines aligned upfront and therefore bear limited market risk. We also reduced the risk of extreme losses by deciding to invest the bulk of the CTA on the basis of a value preservation mechanism.

To minimise foreign currency risks, we avoid open currency positions whenever possible. Foreign exchange risks may exist for short periods of time at European Commodity Clearing AG.

We measure these risks using Monte Carlo simulations based on historical price data, as well as corresponding stress tests. We did not sustain any significant losses from market price risks in 2022.

Liquidity risk

Liquidity risk arises if a Group company is unable to meet its upcoming payment obligations in time and in full or if it can only do so at a higher refinancing cost.

Short-term operating liquidity is mainly covered internally, by retaining earnings. The 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 on a short-term basis to ensure that they are available. Short-term investments are also largely secured by liquid bonds from first-class issuers. In addition, 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.

The investment strategy for Clearstream focuses on ensuring its ability to repay customer deposits at all times. Maturity limits are therefore set cautiously. 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 their role as central counterparties, Eurex Clearing AG and European Commodity Clearing AG also have strict liquidity guidelines and their investment policy is correspondingly conservative. Regular analyses ensure the suitability of the liquidity guidelines. In addition, Eurex Clearing AG can use Deutsche Bundesbank's permanent facilities.

Despite this robust framework for liquidity risk management, we are exposed to some liquidity risks. We may be exposed to liquidity risk in the event of a customer default, for instance. Our subsidiaries have certain risk mitigation measures in place for such eventualities. In case a clearing member of Eurex Clearing AG or European Commodity Clearing AG should default, its position is covered by selling as much as necessary of the collateral provided by this member. 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 also increase the liquidity risk exposure at Group level. This is offset partly by means of appropriate discounts on collateral and the access to short-term sources of financing mentioned above.

In order to get an early warning of potential risks, Clearstream, Eurex Clearing AG and European Commodity Clearing AG all use daily stress tests to measure the liquidity requirement that would be caused by the default of their two largest clients. The maintain sufficient liquidity to cover the requirement as determined by this testing. Furthermore, potential risks that are identified in the course of stress tests are analysed, and corresponding risk-reduction measures initiated.

Aggregated across all currencies, European Commodity Clearing AG, Eurex Clearing AG and Clearstream always had sufficient liquidity to cover their actual liquidity needs in 2022.

Pension risk

Pensions for past and present employees are managed in a variety of pension funds. Pension risk (in the narrow sense) is defined as the risk of losses due to increased costs from post-employment benefit plans based on non-market risk factors (life expectancy, salary growth and inflation increase). It is calculated with the support of actuaries during the first quarter of the financial year. At the time of the reporting date, the pension risk for the Group amounts to around 2 per cent of the total REC.

Business risk

Business risk is the unexpected residual loss, which arises when the Earnings at Risk exceed the anticipated net income after tax, which can be due to the competitive environment (e.g. customer behaviour, investment failure, industry trend), macro-economic and geopolitical developments or erroneous strategic management decisions. Factors influencing this residual loss could be lower revenues or higher costs than planned. Business risk is reported when the calculated value at risk is higher than the budgeted net income for the next four quarters. This approach is based on the use of historical forecasts and actual expenses and income. Business risks are constantly monitored to understand the business risk environment and identify possible changes in the underlying risk profile. As of December 31, 2022, there was no business risk to be reported for the Group.

As a sustainable, long-term component of our risk management we are tracking emerging business risks over a period of more than 12 months and evaluate these in our risk maps. The revision of the Markets in Financial Instruments Regulation and Directive (MiFID II/ MiFIR) is described in more detail below, with a focus on its potentially material impact on business risks for Deutsche Börse Group. The legislative process is expected to be completed in the course of 2023.

Revision of the Markets in Financial Instruments Regulation and Directive (MiFID II/ MiFIR)

The following business risks arise in connection with the ongoing revision of the Markets in Financial Instruments Regulation and Directive (MiFID II/MiFIR). In particular in connection with declining volumes in the cash market business and at our futures exchange Eurex. The plan to create a consolidated data ticker for equities, ETFs, bonds and OTC derivatives, which would comprise pre-trading data in addition to real-time post-trading data for equities, could give rise to business risks for our market data business in connection with stricter rules for pricing market data.

Relevance of ESG regulation on business risks

The Group Risk Committee carries out a process to review the relevance of environmental, social and governance risks. The entries in the risk maps are labelled accordingly (E, S, G risk map items).

In the field of ongoing environmental, social and governance regulation, combined with efforts to improve economic resilience, there are a number of potential risks for our data, derivatives and index business, particularly in view of the current geopolitical tension and economic volatility. If less ambitious sustainability policies lead to reduced investment in ESG products and to changes in investor preferences, then demand for our range of ESG products and services could decline or shift. A proposal for European legislation to regulate ESG data and ratings providers is also expected in 2023. The latter could have an adverse impact on Institutional Shareholder Services, Inc. if the proposal includes a standardisation of methodologies for ESG ratings, and also affect other business units indirectly, such as our index business. In addition, if ESG regulation in the field of sustainability standards and labels is deficient or too prescriptive, this could cause problems and uncertainty concerning its legal status, as well as a loss of market confidence. A decline in confidence in such standards and labels may have an adverse impact on our ESG products across all business units, while an excessively prescriptive approach could inhibit innovation and growth in the ESG segment of our data, derivatives and index business, as well as in the market overall.

If it is no longer possible to allocate capital efficiently to sustainable investments, or the calibration of sustainability policies and ESG regulation is not successful, this could impair the maturity, quality and liquidity of the market, the marketability and pricing of products, and risk management. Risks could also result from a lack of interoperability between European ESG regulation and global developments. Business risks could also be increased by far-reaching due-diligence obligations in supply and value chains, and so represent revenue risks.

The Federal Financial Supervisory Authority (BaFin) regularly considers whether to classify Deutsche Börse AG as a financial holding company. It has currently come to the conclusion that Deutsche Börse AG is not a financial holding company. Classification as a financial holding company could have an impact on our capital requirements.

Compliance – including measures against corruption and bribery

Responsible business operations imply adherence to laws and regulations; they and are also based on the principle of integrity and ethically irreproachable conduct at all times. We have implemented a compliance management system (CMS) based on regulatory requirements, which aims to prevent misconduct and avoid liability and reputational risks for the Deutsche Börse Group, its legal representatives, executives and staff. Beyond business-related and regulatory compliance requirements, the focus is on strengthening a uniform compliance culture throughout the Group, especially with a view to enhancing compliance awareness.

Code of business conduct

Our Group's code of business conduct summarises the most important aspects with regard to corporate ethics and compliance as well as appropriate conduct. It is communicated to all employees in the Group and is available on the internet and intranet sites. Our code of business conduct summarises our core values and principles, which are intended to act as support for decision-making and enforce market integrity, transparency, efficiency and security. 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 regarding the principles of responsible corporate governance, see the section "Corporate governance statement".

As a member of the UN Global Compact we are committed to its principles, notably to support human and labour rights, to protect the environment and to work against corruption in all its forms, which includes extortion and bribery. These principles are also an integral part of our code of business conduct, which also prohibits any involvement in corruption or any activities which may lead to the impression that the Group promises, arranges, provides, receives or asks for unlawful benefits. Bribery and facilitation payments are prohibited.

Objectivity and integrity are the guiding principles for employees of Deutsche Börse Group. Our management is fully aware of their function as role models and the importance of the meaning "tone from the top", which makes it possible to draw the attention of every individual employee towards managing compliance risks, both within the Group and among market participants. In order to sustainably anchor these guiding principles, and to prevent the Group and its staff from legal sanctions and reputational damage, Group Compliance has implemented risk-based compliance and preventive measures.

Compliance management system

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. Group Compliance manages the CMS as a second line of defence function and ensures compliance with legislation, regulations and internal rules, and promotes best practice within the Group. In addition, Group Compliance monitors, verifies and implements compliance measures to mitigate risks with negative impacts (e.g. direct or indirect financial losses, regulatory penalties or reputational damage). Such a CMS provides the foundation for sustainable risk transparency; specifically, it facilitates the mitigation of compliance risks in the areas of money laundering/terrorism financing, criminal offences, data protection, corruption, market manipulation, conflicts of interest and insider trading, as well as monitoring of requirements concerning financial sanctions and embargoes.

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

The CMS is assessed at least once a year using relevant criteria to ensure it is appropriate and effective, and a report is presented to the Audit Committee of Deutsche Börse AG's Supervisory Board. The criteria include i.a. the evaluation of compliance policies and frameworks, risk analyses, controls, training and the regular reporting. In addition, risk-based internal and external audits are performed to validate the CMS.

To ensure that the CMS is appropriate and effective, and to reflect increasing complexity and growing regulatory demands, the CMS is regularly enhanced and improved. Our compliance measures enable us to identify, measure and manage compliance risks, particularly in the fields of money-laundering/ terrorism financing, criminal offences, data protection, corruption, market manipulation, conflicts of interest, insider trading, financial sanctions and embargoes.

When determining the focus and improvements of the CMS, we are guided by applicable prudential legislation and regulatory requirements, as well as by the recommendations of internationally accepted standards. Based on these standards, Group Compliance identifies fields of action and measures to continuously adapt the CMS to changing requirements.

Currently, Group Compliance is implementing the function of a Human Rights Officer to ensure that the requirements of the German Act on Corporate Due Diligence in Supply Chains are met.

Compliance organisational structure

The Group Chief Compliance Officer reports directly to the Executive Board of Deutsche Börse AG. Compliance reporting comprises the relevant compliance risks in the context of the compliance mandate, as well as other compliance-relevant information and activities. The Chief Compliance Officers from group companies that are covered by banking regulation have functional reporting lines to the Group Chief Compliance Officer. The same applies to the Chief Compliance Officers of Qontigo, ECC/EEX and 360T.

ISS is regulated by the US Investment Advisers Act and has therefore set up a compliance function in accordance with the statutory requirements and designated a Chief Compliance Officer. In view of the decision to manage ISS at arm's length, however, there is currently no functional reporting line to the Chief Compliance Officer of the Group. In the course of implementing a group-wide compliance approach, the implementation of the compliance group standards is still being pursued at ISS.

The Group Compliance Committee is an interdisciplinary committee at management level that aims to support and advise the respective Executive Boards and Compliance functions within Deutsche Börse Group on compliance topics. Committee members are the senior managers of the business units, the Chief Compliance Officers of group companies and representatives of the relevant control functions. Group Compliance also informs the committee about important compliance topics and incidents, as well as potential trends and regulatory developments.

Compliance measures

Compliance rules

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 mitigate and manage identified risks; communicates about risks and incidents as well as the effectiveness of the measures taken. Further Group Compliance ensures the continuous improvement of the CMS by regular adjustments to the relevant internal policies and processes.

The group-wide applicable compliance policies have been implemented to ensure that the internal stakeholder groups and employees acting on behalf of the Group implement and follow its rules and requirements. In this way, group-wide compliance violations shall be addressed preventively, detectively, and sanctionally. 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 trainings are a fundamental instrument for promoting the compliance culture and compliance awareness across the Group. Our employees around the world are trained regularly on the relevant compliance topics. Our compliance trainings particularly cover the topics of money-laundering/terrorism financing, criminal offences, ethics, data protection, corruption, market manipulation, conflicts of interest, insider trading, financial sanctions and embargoes. Our management, that is exposed to a higher compliance risk by virtue of their work receive additional training as required. Participation in above mentioned trainings is mandatory for our employees, as well as for management.

Whistleblowing system

We support, by lived compliance awareness, an open approach towards managing misconduct. For this reason, employees are encouraged to address their concerns directly to the responsible line manager, HR or to Group Compliance. Deutsche Börse Group's whistleblowing system (BKMS) offers an additional and anonymous channel for reporting potential or confirmed breaches of prudential or regulatory requirement and ethical standards. Employees, service providers and third parties can submit reports via telephone or e-mail. The anonymity of whistleblowers is guaranteed at all times.

Analysis of compliance risks

In line with regulatory requirements, we carry out risk analyses regularly and, if needed, on an ad hoc basis in order to be able to understand and assess relevant compliance risks and to derive risk mitigating measures based on the results. Such risk analyses and assessments comprise the Group's own business activities as well as business relationships, market participants, products and services.

A Group-wide compliance risk assessment framework was implemented last year to standardise the process of identifying, analysing and assessing compliance risks within the Deutsche Börse Group. The developed methodology is to be applied for the first time in 2023.

In the context of the current geopolitical events in Ukraine and the resulting potential economic policy consequences, Group Compliance continues to analyse which risks could have an impact in the individual business areas and which measures need to be taken and implemented. 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. The Group has implemented a robust and flexible system to manage any sanctions and embargo risks. Dedicated sanctions experts monitor current developments carefully and are in regular contact with stakeholders and the business areas of the Deutsche Börse Group in order to be able to react to restrictions in a timely manner.

Key non-financial performance indicators: corruption and data protection

		2022	2021
Corruption			
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]		1,563	7,177
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 update and completion of the training takes place in odd years, the number of completed trainings in the even year 2022 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 and 360 Treasury Systems AG are also subject to specific provisions applicable to investment firms.

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

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 exposure only results from relatively small open foreign currency positions.

The following table shows the regulatory own funds requirements per risk category which are derived from the risk exposure amount with a capital ratio of 8%.

Composition of own funds requirements

	Own funds requirements for operational risk		Own funds requirements for credit and market risk		Total capital requirements	
	31 Dec 2022 €m	31 Dec 2021 €m	31 Dec 2022 €m	31 Dec 2021 €m	31 Dec 2022 €m	31 Dec 2021 €m
Clearstream Holding Group	338.2	348.6	107.0	83.2	445.2	431.8
Clearstream Banking S.A.	223.7	241.2	56.2	81.8	279.9	323.0
Clearstream Banking AG[1]	132.8	118.1	6.0	6.5	138.8	124.6
Eurex Clearing AG	105.4	100.3	38.0	25.1	143.4	125.4

1) Clearstream Banking AG's previous year's figures were updated based on the previous-year's audited financial statements.

No capital contributions were made in 2022, but they are planned for the years ahead in order to strengthen the capital base. In February 2023, Clearstream Banking AG carried out a capital injection of €30.0 million. The reason for the strengthening of the capital base is primarily a change in the interpretation of capital requirements by the supervisory authorities.

Regulatory capital ratios according to CRR

	Own funds requirements		Regulatory equity		Total capital ratio	
	31 Dec 2022 €m	31 Dec 2021 €m	31 Dec 2022 €m	31 Dec 2021 €m	31 Dec 2022 %	31 Dec 2021 %
Clearstream Holding Group	445.2	431.8	1,792.8	1,790.6	32.2	33.2
Clearstream Banking S.A.	279.9	323.0	1,008.3	1,214.2	28.8	30.1
Clearstream Banking AG[1]	138.8	124.6	420.7	420.1	24.3	27.0
Eurex Clearing AG[2]	143.4	125.4	724.8	724.8	40.5	46.2

1) Clearstream Banking AG's previous year's figures were updated based on the previous-year's audited financial statements.
2) According to Art. 26 Abs. 1 (a) CRR, capitel insturments must comply with the requirements pursuant to Art. 28 CRR. As of 31 December 2021, the profit and loss transfer agreement between Eurex Clearing AG and Eurex Frankfurt AG did not comply with the discretion under Art. 28 (3) (d) CRR. Therefore, the regulatory own funds were reduced subsequently as per 31 December 2021 to the amount of subscribed capital of €25.0 million. Furthermore, previous year's own funds requirements were adjusted.

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 2022 €m	31 Dec 2021 €m	31 Dec 2022 €m	31 Dec 2021 €m
Own funds requirement for operational, credit and market risk	279.2	318.7	138.7	124.4
Other CSDR capital requirements[1]	444.8	369.9	194.7	192.2
Total CSDR capital requirements under Article 47 CSDR	**724.0**	**688.6**	**333.4**	**316.6**
CSDR capital	**1,008.3**	**1,214.2**	**420.7**	**420.7**

1) As the annual financial statements of Deutsche Börse AG and Deutsche Börse Group are published prior to the finalization of Clearstream Banking S.A.'s and Clearstream Banking AG's approved annual financial statements, the calculation of the other CSDR capital requirements have been based on the previous year's approved annual financial statements.

Capital adequacy requirements under EMIR

	Eurex Clearing AG		European Commodity Clearing AG	
	31 Dec 2022 €m	31 Dec 2021 €m	31 Dec 2022 €m	31 Dec 2021 €m
Own funds requirement for operational, credit and market risk	143.4	125.4[1]	37.4	35.1
Other EMIR capital requirements	112.4	135.5	67.2	58.5
Total EMIR capital requirements under Article 16 EMIR	**255.8**	**260.9[1]**	**104.6**	**93.6**
Equity	749.8	749.8	218.0	158.0
EMIR deductions	0	0	0	0
Own contribution to default fund	– 200.0	– 200.0	– 35.0	– 23.0
EMIR capital adequacy	**549.8**	**549.8**	**183.0**	**135.0**

1) Previous year adjusted

The Investment Firm Regulation requires 360 Treasury Systems AG as an investment firm of category 2 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 as small and non-interconnected investment firm based on the higher of a) or b) as described above. The capital requirement for 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 2022 €m	31 Dec 2021 €m	31 Dec 2022 €m	31 Dec 2021 €m	31 Dec 2022 €m	31 Dec 2021 €m
Eurex Repo GmbH	0	0	3.4	3.2	3.4	3.2
360 Treasury Systems AG	0	0	13.4	12.8	13.4	12.8

Compliance with own funds requirements

	Own funds requirements		Regulatory equity		Total capital ratio	
	31 Dec 2022 €m	31 Dec 2021 €m	31 Dec 2022 €m	31 Dec 2021 €m	31 Dec 2022 %	31 Dec 2021 %
Eurex Repo GmbH	3.4	3.2	21.4	21.4[1]	627,7	668,8[1]
360 Treasury Systems AG	13.9	12.8	32.9	34.1	245.4	267.2

1) According to Art. 26 Abs. 1 (a) CRR, capital instruments must comply with the requirements pursuant to Art. 28 CRR. As of 31 December 2021, the profit and loss transfer agreement between Eurex Clearing AG and Eurex Frankfurt AG did not comply with the discretion under Art. 28 (3) (d) CRR. Therefore, the regulatory own funds were reduced subsequently as per 31 December 2021 to the amount of subscribed capital of €25.0 million. Furthermore, previous year's own funds requirements were adjusted.

Compliance with own funds requirements

	Own funds requirements		Regulatory equity		Total capital ratio	
	31 Dec 2022 Mio. €	31 Dec 2021 Mio. €	31 Dec 2022 Mio. €	31 Dec 2021 Mio. €	31 Dec 2022 %	31 Dec 2021 %
EEX Asia Pte. Limited	0.6	1.1	3.2	2.3	485.7	209.1
Nodal Clear, LLC	31.9	28.2	51.8	31.5	162.4	111.7
Crypto Finance (Brokerage) AG	8.0	7,3	64.7	15.0	808.8	206,0
Crypto Finance (Asset Management) AG	0.3	0,3	4.0	6,1	1,175	2033

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

Summary

The risk profile of Deutsche Börse Group did not change significantly in the 2022 financial year. All known impacts of the geopolitical and macroeconomic developments were actively managed within the Group and potential new risks were analysed on an ongoing basis. The aggregate total risk of Deutsche Börse Group comprising of all risk types (operational, financial, pension and business risk) was always matched by sufficient covered funds. As of 31 December 2022, Deutsche Börse Group's required economic capital (REC) amounted to €1,754 million, an almost 4 per cent decline year on year (31 December 2021: €1,827 million, measured with a 99.9 per cent confidence level). It is covered by a risk-bearing capacity of €7,742 million.

No significant change in the risk situation of the Group is foreseeable for the Executive Board at the present time.

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 2023. Furthermore, it cannot identify any risk that would endanger the Group's existence as a going concern.

In 2023 we intend to continue strengthening and expanding its risk management and internal control system (ICS). This includes, for example, the expansion of information security management, ongoing methodological improvements in risk management and the ICS, and a closer coordination between control functions, also by means of a Groupwide governance, risk and compliance tool.

10. 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 (see chapter "Our strategy and steering parameters"). 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 exchange-traded solutions to over-the-counter (OTC) transactions) 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 the clearing of new financial derivatives, OTC derivatives and further growth in the trading of energy and gas products. Foreign exchange trading is also expected to provide a contribution to net revenue growth. Another focus is on the further development of the investment fund business. The growth focus in Data & Analytics 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 off-exchange 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 the company has continued to expand its notional outstanding volumes and market share.

Trading and clearing of commodities: The Leipzig-based European Energy Exchange AG (EEX) allows us to offer a broad product range for trading and clearing spot and derivatives contracts for electricity and gas as well as emission certificates. EEX has become the central market for energy in continental Europe and its product range includes the markets of 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 based mainly on the growing importance of renewable energies for generating energy. 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 forex trading: 360T® is a leading global foreign exchange trading platform. 360T's broad customer base includes corporates, 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 profit from a long-term secular trend: even though, at present, the vast majority of daily foreign-exchange trading volumes is still executed off-exchange, demand for transparent, electronic multi-bank trading platforms is rising.

Cross-border settlement and distribution of investment funds: Our clients can use Clearstream's settlement, custody and distribution 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. So, for example, we have 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 secular trend towards passive investment products (ETFs). An increasing number of private clients and asset managers are now following 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 first step in this direction was taken in 2021 with the acquisition of Institutional Shareholder Services (ISS). We expect further secular growth to come from developing new products and winning new customers across our entire company.

Cyclical opportunities

In addition to 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.

- The volumes of interest rate derivatives traded on the Group's derivatives markets could rise if expectations change concerning trends in long-term yields on German and other European government bonds, and if the spread between the various European government bonds continues to narrow.
- Compared with last year, net interest income in the Securities Services segment, which is based on cash deposits by our customers, would profit from further increases in interest rates worldwide.

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. The challenge for incumbent providers is in finding the right way to open up new business models and innovative technologies.

With regard to cloud services, we are working on transferring services and processes with clients to the cloud and optimising internal processes. 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.

In addition, on 9 February 2023, we announced a new strategic partnership with Google Cloud to enhance, economize and concentrate Deutsche Börse Group's cloud adoption. Google Cloud will become our preferred partner for the next ten years and help to further enhance the group's cloud adoption and efficiency. Specifically, we will leverage Google Cloud's secure infrastructure and leading data and analytics capabilities to accelerate the development of our digital securities platform D7, innovate our digital asset market operations, and enhance our data distribution and data use cases in the cloud.

As already stated, 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. This enables, e.g., the development of digital issuance of financial products via the D7 platform which shortens the extensive and multi-day issuance process to just a few minutes. The enhancement of D7 platform with decentral capabilities, in line with the respective regulations and market interest, could complement the offer in further jurisdictions. Like this, the central securities depository is creating a fully digital alternative to conventional securities issuance. Kreditanstalt für Wiederaufbau (KfW) is the first issuer to have launched a digital fixed-income bond in the form of central register security based on the German Electronic Securities Act (eWpG) in December 2022.

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 data, 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.

11. Report on expected developments

The forecast describes our expected performance in the 2023 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

Economic growth slowed significantly over the course of 2022. This was due partly to the macroeconomic effects of Russia's war of aggression against Ukraine. High inflation rates and risks to energy supplies also played a role. In the forecast period we expect a further deterioration in the conditions for economic growth. An end to the war in Ukraine, a sustainable solution for energy supplies or looser monetary policy by central banks as a result of lower inflation rates could have a positive impact on future economic performance, however.

Future development of results of operations

Given our diversified business model and multiple sources of revenue, and despite the tense 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 "Opportunities report"), as well as on additional forecast inorganic growth.

In line with our strategy, we assume that net revenue will increase by at least 5 per cent in the forecast period on the basis of secular growth opportunities. 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. Thanks to the very good cyclical performance in 2022, higher market volatility and rising interest rates, we assume that the cyclical net revenue contribution will either be only slightly positive or even negative in the forecast period. This depends largely on future changes in market volatility and interest rates, particularly with regard to net interest income from banking business. In total, we therefore anticipate net revenue in the €4.5–4.7 billion range for the forecast period.

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. This enables us to manage operating costs partly in line with net revenue growth. In the forecast period, we expect earnings before interest, tax, depreciation and amortisation (EBITDA) to increase to €2.6–2.8 billion.

Forecast for results of operations 2023

	Basis 2022 €m	Forecast 2023 €bn
Net revenue	4,337.6	4.5–4.7
Earnings before interest, tax, depreciation and amortisation (EBITDA)	2,525.6	2.6–2.8

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 2023 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 2023, 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 27 per cent, respectively.

Moreover, on a global group level the Executive Board adopted a voluntary commitment to increase the share of women holding upper management positions to 23 per cent by the end of 2023, and of women holding lower management positions to 33 per cent during the same period. We have extended the scope of our voluntary commitment over and above the legal requirements.

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.

Targets for non-financial key performance indicators 2023

	Basis 2022	Target 2023
System availability (customer facing IT)	>99.9%	>99.5%
Employee satisfaction	73%	>71.5%
Women in leadership positions[1]	23%	>23%
ESG ratings	98th percentile	>90th percentile

1) Group-wide target in senior management

Development of the 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 €300 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 €3.60 per share to the Annual General Meeting to be held in May 2023. This would represent a cash outflow of about €661,6 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 25 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 broadly diversified 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 structural growth areas further, and to increase their contribution to net revenue again by at least 5 per cent. Taking cyclical effects into account, we are planning an increase in net revenue to €4.5–4.7 billion in the forecast period. We expect EBITDA to go up to €2.6–2.8 billion in the forecast period. Overall, on this basis we assume 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.

12. Report on post-balance sheet date events

There are no material events to report.

13. 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 23 of the Deutscher Corporate Governance Kodex (the "Code", German Corporate Governance Code). The statement contains the corporate governance statement pursuant to section 315d in conjunction with section 289f of the Handelsgesetzbuch (HGB, German Commercial Code).

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

On 7 December 2022, 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

All recommendations of the German Corporate Governance Code (GCGC) in the current version dated 28 April 2022, which was published in the Federal Gazette on 27 June 2022, are currently complied with and shall continue to be complied with in the future.

Since the last declaration of conformity was issued on 8 December 2021, all recommendations of the GCGC in the version dated 16 December 2019, which was published in the Federal Gazette on 20 March 2020, have also been complied with.

The annual declaration of conformity pursuant to section 161 of the 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.4 GCGC was not applicable to the company in 2022 because of the overriding statutory requirement of section 4 b of the German Stock Exchange Act. Recommendation D.4 GCGC states that the Supervisory Board shall form a Nomination Committee composed exclusively of shareholder representatives. In accordance with section 4 b 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 GCGC 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 of the 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 of the HGB

The current remuneration report and the auditors' statement pursuant to section 162 of the AktG, the underlying remuneration system pursuant to section 87a (1) and (2) sentence 1 of the AktG as well as the latest resolution on remuneration pursuant to section 113 (3) of the AktG are 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 legal, social and ethical 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 at www.deutsche-boerse.com > Responsibility > Sustainability > Our 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 environmental regulations and to comply with minimum standards in these areas. The minimum standards also incorporate the requirements of the German Lieferkettensorgfaltspflichtengesetz (Supply Chain Due Diligence Act) and the UK Modern Slavery Act. Service providers and suppliers must sign this code of conduct or enter into an equivalent voluntary commitment before they can do business with Deutsche Börse Group. The code of conduct for suppliers is reviewed regularly in the light of current developments and amended if necessary. It can be found at www.deutsche-boerse.com > Responsibility > Sustainability > Our social environment > Procurement.

Sustainability and values
Deutsche Börse Group's business activities are based on the legal frameworks and ethical standards of the different countries in which the Group operates. A key way in which we underscore the values we consider important for the Deutsche Börse Group 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 by the cross-functional Group Sustainability Board, which is chaired by the CFO. The Group Sustainability Board is the central management board for sustainability topics in the Deutsche Börse Group. It deals with company initiatives relating to environmental, social and governance topics (ESG). One of the Group Sustainability Board's particular responsibilities is to ensure that sustainability is incorporated into the company strategy. This includes advising on and monitoring the integration of sustainability into corporate planning and controlling. The Group ESG Strategy team, 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 the Deutsche Börse Group.

At the level of the Supervisory Board the responsibilities of the former Strategy Committee were expanded in 2021 to reflect the strategic importance of sustainability and it was renamed the Strategy and Sustainability Committee. 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.

To promote the sustainable development of the Deutsche Börse Group, ESG targets are an integral part of the remuneration system for the Executive Board. Details of the Executive Board remuneration system can be found in the "Remuneration report".

Further information on this subject can be found online at www.deutsche-boerse.com > Responsibility > Sustainability. More information about the Supervisory Board committee Strategy and Sustainability can be found in the chapter "Supervisory Board committees". Details of the work carried out by the Strategy and Sustainability Committee are included in the "Supervisory Board Report".

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. They comprise both statutory and internal rules that can be adapted specifically to individual industry segments. They include policies on whistleblowing, risk management and the internal control system.

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 made 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 and principles

Functioning control systems are an important part of stable and sustainable 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. Key aspects of its design and implementation are also reported 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. The internal control system and risk management system also cover sustainability-related targets. Details of the internal control system and risk management at the Deutsche Börse Group can be found in the "Risk management" section.

From its examination of the internal control and risk management system and the reports of the Internal Audit function regarding its risk-oriented and process-independent controls conducted, the Executive Board does not have any indications which would result in reservations regarding the appropriateness and efficacy of the systems.

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 Rules of Procedures for the Executive Board and Supervisory Board contain provisions on the corresponding information rights and obligations of the Executive Board and Supervisory Board exceeding statutory regulations.

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 Governance, People & Culture. The business areas cover the operating business units, such as the company's cash market activities, the derivatives business, securities settlement and custody, fund distribution services as well as the market data, financial and sustainability information business. For details, see the "Deutsche Börse: Fundamental information about the Group" section and www.deutsche-boerse.com > Company > Deutsche Börse Group > Business areas.

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. This also covers sustainability matters. The Supervisory Board supports the Executive Board in significant business decisions and provides assistance on strategically important issues. In the Rules of Procedures for the Executive Board, the Supervisory Board has defined transactions of fundamental importance which require its approval. 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 2022 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. This also applies to an employee representative who was appointed by the court to the Supervisory Board of Deutsche Börse AG in 2022 after the early voluntary retirement of another employee representative.

The Supervisory Board holds at least six regular meetings every year. In addition, extraordinary meetings are held as required. Executive Board members attend the meetings unless the Supervisory Board decides otherwise in any particular case. The Supervisory Board also meets regularly without the Executive Board. Exchanges also take place as necessary with the annual auditors. 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 under 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 a catalogue of specific targets, including qualification requirements, which, in turn, are reviewed regularly by the Supervisory Board. 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 Chair of 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, and arranges talks to prepare for the Supervisory Board meetings as necessary.

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 in 2021 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. Outside the meetings the Chair of the Audit Committee also reports regularly to the Audit Committee and the full Supervisory Board on her regular exchanges with the annual auditor. 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) ▪ Katrin Behrens[1] (until 28 April 2022) ▪ Andreas Gottschling ▪ Oliver Greie[1] (since 18 May 2022) ▪ Susann Just-Marx[1] ▪ Achim Karle[1] ▪ Michael Rüdiger	▪ 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] ▪ All members familiar with the financial sector ▪ Prerequisites for the chair of the committee: the person concerned must be independent, and must have specialist knowledge and experience either (i) in the application of accounting principles and internal control and risk management systems or (ii) in auditing, whereby accounting and auditing also include sustainability reporting and its auditing ▪ 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 decision on and the commissioning of assigning the auditor (i) to review or audit the half-yearly financial reports, (ii) to review the non-financial reporting and (iii) to audit the remuneration report, as well as determining 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 ▪ Every member of the Audit Committee has the right to obtain information via the Chair of the Audit Committee from the heads of the company's main central departments; the Chair of the Audit Committee notifies all the committee members of the information obtained.

1) Employee representatives
2) Ms Barbara Lambert has the expertise in auditing and Mr Michael Rüdiger has the expertise in financial reporting required by section 100 (5) AktG. For details see the chapter "Targets for composition and qualification requirements of the Supervisory Board".

Nomination Committee

Members	Composition
▪ Martin Jetter (Chair) ▪ Markus Beck[1] ▪ Prof. Dr Nadine Brandl[1)] ▪ Dr Anja Greenwood[1)] ▪ Michael Rüdiger ▪ Clara-Christina Streit	▪ 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 and identifies potential candidates ▪ Develops a diversity concept for the Supervisory Board ▪ Deals with the regular, at least annual assessment of the structure, size, composition and performance of the Executive Board and Supervisory Board, as well as possible improvements ▪ Deals with the regular, at least 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 ▪ Prepares resolutions of the Supervisory Board on the system for the compensation of the Executive Board ▪ Prepares resolutions of the Supervisory Board on 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 ▪ Prepares the compensation reporting with regard to the Executive Board and Supervisory Board ▪ 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] ▪ Barbara Lambert ▪ Daniel Vollstedt[1)]	▪ 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 and Sustainability Committee

Members	Composition
▪ Martin Jetter (Chair) ▪ Dr Anja Greenwood[1] ▪ Achim Karle[1)] ▪ Peter Sack[1)] ▪ 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 (unless another committee is responsible) ▪ Deals with significant projects for Deutsche Börse Group

1) Employee representatives

Technology Committee

Members	Composition
▪ Shannon A. Johnston (Chair; since 18 May 2022) ▪ Karl-Heinz Flöther (Chair; until 18 May 2022) ▪ Markus Beck[1] (since 4 March 2022) ▪ Andreas Gottschling ▪ Achim Karle[1)](until 4 March 2022) ▪ Peter Sack[1] ▪ Charles Stonehill ▪ Daniel Vollstedt[1)]	▪ 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) ▪ Markus Beck[1] ▪ Prof. Dr Nadine Brandl[1] ▪ Clara-Christina Streit	▪ 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] ▪ Katrin Behrens[1] (until 28 April 2022) ▪ Karl-Heinz Flöther (until 18 May 2022) ▪ Oliver Greie[1] (since 18 May 2022) ▪ Barbara Lambert (since 18 May 2022)	▪ 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 31 (3) of the MitbestG

1) Employee representatives

Targets for composition and qualification requirements of the Supervisory Board

In accordance with recommendation C.1 GCGC, 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. The targets 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. The targets, including the qualification requirements, are reviewed by the Supervisory Board regularly, at least annually, and modified as necessary. The status of implementation can be seen in the qualification matrix at the end of this statement.

In the reporting year, the Supervisory Board, on the recommendation of the Nomination Committee, expanded the specific targets in the qualification requirements explained below to include expertise in sustainability matters, and moreover adapted them to changes in statutory and regulatory requirements. 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. For this purpose, the Supervisory Board has determined necessary basic competences and particular competences. The requirements regarding the particular competences are derived from the business model, the company targets, as well as from specific regulations applicable to Deutsche Börse Group.

Basic competencies
Ideally, each Supervisory Board member holds the following basic competencies:

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

Particular competences
The requirements for particular competences 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
- Clearing, settlement and custody business
- Information technology and security
- Strategy and sustainability
- Accounting, finance and audit
- Risk management and compliance
- Regulatory requirements

The current composition of the Supervisory Board fulfils these criteria concerning the qualification of its members. The requirements of the German Stock Corporation Act and the GCGC for professional knowledge of accounting and auditing in the Audit Committee are also met. Barbara Lambert, the Chair of the Audit Committee, has the necessary professional knowledge of both auditing and accounting. The same applies to Michael Rüdiger, a member of the Audit Committee, who also has the necessary specialist knowledge of both auditing and accounting.

Barbara Lambert studied economics in Switzerland, where she also obtained her diploma as an auditor. As an active auditor of financial statements and banks over many years she can draw on extensive experience of conducting and managing audit activities, particularly in the financial sector. She continues to update her auditing knowledge on a regular basis to this day. In addition to chairing the Audit Committee of Deutsche Börse AG, Barbara Lambert was or is a member or chair of several audit and risk committees of boards of directors and supervisory boards, including Banque Pictet & Cie SA (until 2022), Implenia AG (since 2019), Synlab AG (since 2021) and UBS Switzerland AG (since 2022). In these functions, she regularly attends the training sessions offered by the respective companies. Alongside her work on boards of directors and supervisory boards, Barbara Lambert is a member of many relevant professional associations and networks, such as the Swiss expert association for auditing, tax and trusts (EXPERTsuisse), where in 2007 she was also a member of the expert group for bank auditing, and the German Audit Committee Chair Network. The membership in these associations and networks serve not only the professional exchange but also her further professional training. Her full curriculum vitae is available from www.deutsche-boerse.com > Investor Relations > Corporate Governance > Supervisory Board > Barbara Lambert.

Michael Rüdiger has a degree in business studies with focus on finance and controlling. He has many years of experience of the finance industry and until 2019 was CEO of DekaBank Deutsche Girozentrale. In addition to his work on the Supervisory Board of Deutsche Börse AG, where he has also been a member of the Audit Committee since 2020, Michael Rüdiger chairs the Audit Committee at Evonik Industries AG and chairs the Supervisory Board of BlackRock Asset Management Deutschland AG. In these functions he regularly attends the training sessions offered by the respective companies. Michael Rüdiger is a member of relevant networks, such as the German Audit Committee Chair Network of the Audit Committee Institute e.V., where he discusses professional issues and receives ongoing training. He also regularly attends individual training courses on aspects of auditing and accounting, where he makes use of the expertise offered by large auditing firms. His full curriculum vitae is available from www.deutsche-boerse.com > Investor Relations > Corporate Governance > Supervisory Board > Michael Rüdiger.

Independence of Supervisory Board members

In accordance with recommendation C.6 GCGC, 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 GCGC 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 GCGC, 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 of the 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 its 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, re-appointment 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 reached 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 over 55 locations from 115 nations. We are proud of the diverse 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.

Regulations require us to consider one aspect of this diversity in particular detail in this report: the share of women holding management positions.

Deutsche Börse AG meets the statutory requirements for the proportion of women on the Executive Board and the Supervisory Board. This applies particularly to the diversity requirements for the Executive Board that have been in force since 2021.

37.5 per cent 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) of the 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 quota 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 six women on the Supervisory Board: three among the shareholder representatives and three women among the employee representatives. The statutory gender quota is therefore fulfilled.

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 (section 76 (3a) AktG). This statutory minimum participation requirement replaces the obligation of companies to set a legally non-binding target quota. Deutsche Börse AG meets these statutory requirements and reports on them in accordance with Section 289f (2) No. 5a of the HGB.

International profile

The composition of the Executive Board and the Supervisory Board shall reflect the company's international activities. With Dr Andreas Gottschling, Shannon A. Johnston, Barbara Lambert, Charles Stonehill, Clara-Christina Streit and Chong Lee Tan, there are six shareholder representatives on the Supervisory Board who are not or not exclusively German citizens. 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 reflects 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 professional 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.

The following qualification matrix provides an overview of how the main targets for the composition of the Supervisory Board are met, and of the extent to which the particular competences defined in the qualification requirements are present.

Qualification matrix: Profile and particular competences of Supervisory Board members

	Martin Jetter (Chair)	Markus Beck	Nadine Brandl	Andreas Gottschling	Anja Greenwood	Oliver Greie	Shannon A. Johnston	Susann Just-Marx
Member since	2018	2018	2018	2020	2021	2022	2022	2018
Independence	independent	employee representative	employee representative	independent	employee representative	employee representative	independent	employee representative
Sex	male	male	female	male	female	male	female	female
Year of birth	1959	1964	1975	1967	1974	1976	1971	1988
Nationality	German	German	German	German, Swiss	German	German	USA	German
International experience	yes	no	no	yes	yes	no	yes	yes
Educational and professional background [1]	Engineering	Law	Law	Financial econometrics, business studies	Law	Nursing	General Studies	Administration, business studies
Particular competences								
Capital markets, business models of stock exchanges and data business	✓	✓						
Clearing, settlement and custody business					✓			✓
Information technology and security	✓			✓			✓	
Strategy and sustainability	✓	✓	✓		✓			
Accounting, finance and audit		✓	✓	✓		✓		✓
Risk management and compliance	✓		✓	✓		✓		✓
Regulatory requirements	✓	✓	✓	✓	✓		✓	

1) The curricula vitae of the Supervisory Board members can be found at www.deutsche-boerse.com > Investor Relations > Corporate Governance > Supervisory Board.

Achim Karle	Barbara Lambert	Michael Rüdiger	Peter Sack	Charles Stonehill	Clara-C. Streit	Chong Lee Tan	Daniel Vollstedt	
2018	2018	2020	2021	2019	2019	2021	2021	Member since
Employee representative	independent	independent	Employee representative	independent	independent	independent	Employee representative	Independence
male	female	male	male	male	female	male	male	Sex
1973	1962	1964	1962	1958	1968	1962	1976	Year of birth
German	German, Swiss	German	German	British, USA	German, USA	Singapore	German	Nationality
yes	yes	yes	no	yes	yes	yes	no	International experience
Finance	Banking, business studies, auditor	Banking, business studies	Economics, politics	History	Business studies	Economics and administration	IT and business studies	Educational and professional background [1]
								Particular competences
✓		✓	✓	✓	✓	✓		Capital markets, business models of stock exchanges and data business
		✓	✓	✓	✓			Clearing, settlement and custody business
	✓			✓			✓	Information technology and security
✓	✓	✓		✓	✓	✓		Strategy and sustainability
	✓	✓			✓	✓		Accounting, finance and audit
	✓	✓		✓			✓	Risk management and compliance
	✓	✓		✓	✓			Regulatory requirements

1) The curricula vitae of the Supervisory Board members can be found at www.deutsche-boerse.com > Investor Relations > Corporate Governance > Supervisory Board.

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

Shareholder representative Karl-Heinz Flöther resigned from the Supervisory Board of Deutsche Börse AG at the close of the Annual General Meeting on 18 May 2022. He was succeeded by Shannon A. Johnston, who was elected as a shareholder representative at the Annual General Meeting on 18 May 2022. Ms Johnston was elected following an intensive selection process, during which the Nomination Committee applied the above criteria for the selection of suitable candidates.

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.11 GCGC 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, sustainability and current issues as well as on topics of fundamental importance. Hence, beside a specific workshop on sustainability topics and a technology workshop, workshops were also held on compliance issues and the rights and obligations of the Supervisory Board and Executive Board in the reporting year. 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. Further information about the Supervisory Board workshops can be found in the "Report of the Supervisory Board".

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.12 GCGC – as a key component of good corporate governance. The annual effectiveness review in the reporting year was carried out with the support of an external service provider, as is the case in every third year. It was based on a structured questionnaire followed by interviews. The effectiveness review covered topics such as the tasks and composition of the Supervisory Board, collaboration within the Supervisory Board and with the Executive Board, as well as Supervisory Board and committee meetings. In addition, topics relating to the discussion and working culture and how current matters are dealt with by the Supervisory Board were addressed. Compliance with relevant statutory and regulatory requirements was also reviewed in the course of a compliance check. 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. No cases of non-compliance with relevant statutory and regulatory requirements were identified.

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) 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 was planned to reach 15 per cent and 22 per cent, respectively. As of 31 December 2022, the share of women holding positions on the first and second management levels beneath the Executive Board at Deutsche Börse AG in Germany was 12 per cent and 27 per cent, respectively.

Changes at the first management level had an impact on the number of female executives and the achievement of the target percentage at this level. At the second management level the proportion of women at Deutsche Börse AG is significantly above target and makes a positive contribution to the future proportion of women holding management positions overall. The Deutsche Börse Group is highly international, which means that for the development of female managers and appointments to management positions the consideration of a cross-company and cross-country perspective plays an important role.

In this context, the Executive Board had set a groupwide target share of women holding upper management positions (first three management levels below the Executive Board) of 22 per cent by 31 December 2022, 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 2022, these quotas stood at 23 per cent for upper management levels and 33 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 and enabling immediate engagement.

For instance, Deutsche Börse AG shareholders may follow the AGM live over the internet and can be represented at the AGM by proxies nominated by Deutsche Börse AG, also by means of electronic communication. The proxies exercise voting rights solely in accordance with shareholders' instructions and can also be reached during the AGM. Additionally, shareholders may exercise their voting rights by post or online.

Section 118a (1) AktG establishes that a company's articles of associations may stipulate that the Annual General Meeting is to be held online, without the physical presence of shareholders or their proxies, or may authorise the Executive Board to adopt the corresponding resolutions. To the extent that Deutsche Börse AG should make use of such an authorisation in the articles of associations in future, it will take the circumstances of the individual case and the interests of the company and its shareholders into account. Regardless of the format chosen, transparency and interactive dialogue with shareholders are vitally important for Deutsche Börse AG.

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, approves intercompany agreements and amendments to the company's articles of Association, the Supervisory Board remuneration, approval of the remuneration system for the Executive Board and the remuneration report, 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) of the Gesetz über Maßnahmen im Gesellschafts-, Genossenschafts-, Vereins-, Stiftungs- und Wohnungseigentumsrecht zur Bekämpfung der Auswirkungen der COVID-19-Pandemie of 27 March 2020 (German Federal Gazette I No. 14/2020, p. 570), which was subsequently amended (German Federal Gazette I N0. 67/2020, p. 3332) and extended until 31 August 2022 (Federal Gazette I No. 63/2021, p. 4153) (Act on Measures in Corporate, Cooperative, Association, Foundation and Residential Property Law to Combat the Effects of the Covid-19 Pandemic). Shareholders were able to follow the entire Annual General Meeting live online and exercise their voting rights, also via electronic communications, 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 to the company in advance. 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.

In order to make the virtual Annual General Meeting even more interactive, shareholders were also given the option in the reporting year of commenting on the agenda in advance in writing or by video message, and of speaking via a live video and audio feed during the meeting. Shareholders could also address further questions to the company by means of electronic communication during the Annual General Meeting, which were also answered in full during the meeting.

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 2022 to the UN Global Compact. Good corporate governance is one of Deutsche Börse Group's core concerns, which is why it 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 > Responsibility > Sustainability > Our social environment > Self-commitments.

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 the recommendation by the Supervisory Board, the Annual General Meeting 2022 again elected PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft, Frankfurt am Main, (PwC) as the auditors for the annual and consolidated financial statements 2022 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 form and contents of the remuneration report during the 2022 financial year. The auditors responsible are Marc Billeb and Dr Michael Rönnberg. They have both been responsible for the audit since 2021. 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 2022. 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 7 to the consolidated financial statements.

14. Deutsche Börse AG (disclosures 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 Trading & Clearing segment (formerly Eurex, EEX, 360T and Xetra). Deutsche Börse AG also operates essential parts of the Group's information technology. The performance of the Securities Services segment (formerly Clearstream) is primarily reflected primarily in Deutsche Börse AG's business performance via the profit and loss transfer agreement with Clearstream Holding AG. The business and the operating environment of Deutsche Börse AG are largely the same as for the 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 sales revenue increased by 11.0 per cent in the 2022 financial year, which was above 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 19.5 per cent. EBITDA was €1,215.1 in the 2022 financial year and was below the forecast for the 2022 financial year of €1.25 billion. Net profit was down by 7.2 per cent compared with the previous year. The financial year was mainly defined by the geopolitical situation and the resulting market risks, rising inflation and interest rate increases by the central banks. In the previous year the dividend income also included non-recurring positive effects. In addition, total costs have increased in the current financial year compared to the previous year. On the basis of these developments, the Executive Board of Deutsche Börse AG considers its performance in 2022 to be positive in context.

Performance figures for Deutsche Börse AG

	2022 €m	2021 €m	Change %
Sales revenue	1,647.9	1,485.0	11.0
Total costs	1,199.8	1,003.8	19.5
Net income from equity investments	524.2	652.5	– 19.7
EBITDA	1,215.1	1,233.9	– 1.5
Net profit for the period	875.1	943.3	– 7.2
Earnings per share (€)[1]	4.76	5.14	– 7.3

1) Calculation based on weighted average of shares outstanding

Results of operations of Deutsche Börse AG

Deutsche Börse AG's net revenue rose by 11.0 per cent in 2022 to €1,647.9 million (2021: €1,485.0 million). At €1,501.0 million, the largest contribution to revenue came from the Trading & Clearing segment (2021: €1,330.1 million). The change in the distribution key for income and expenses in the Eurex operational management strcutre (85:15 to 88:12) resulted in a positive effect of €33.0 million on Deutsche Börse AG's revenues. The breakdown of revenue by company segment is provided in the "Sales revenue by segment" table. The table "Sales revenue by region" shows the distribution of revenue by geography.

For more information on the development of the Trading & Clearing segment, please refer to the "Trading & Clearing segment" section.

The revenue that is attributable to the Securities Services and Fund Services segments results from IT services that Deutsche Börse AG provides for companies from the Clearstream Holding AG subgroup. Revenues in the Data & Analytics segment result primarily from intragroup services. The segments mentioned, on the other hand, have a significant influence on the dividend income of Deutsche Börse AG.

Other operating income went up to €108.7 million during the year under review (2021: €39.8 million). The development resulted primarily from an increase in income from foreign currency translation of €45.0 million and income from the sale of investments in the amount of €17.9 million.

Income for the 2022 financial year includes transfer income of €278.0 million from other companies in the Group (2021: €256.3 million).

The company's total costs of €1,199.8 million were up 19.5 per cent year on year (2021: €1,003.8 million). For a breakdown, please refer to the table "Overview of total costs". Staff costs rose by 13.7 per cent year on year during the year under review, to €293.9 million (2021: €258.4 million). The increase in personnel costs is mainly due to increased additional benefits for employees and the larger number of employees.

Amortisation of intangible assets and depreciation of property, plant and equipment increased to a total of €73.6 million in the year under review (2021: €65.1 million).

Other operating expenses were up 22.3 per cent year on year, to €832.3 million (2021: €680.3 million). The development resulted primarily from an increase in expense from foreign currency translation by €60.1 million and a conversion effect of the transfer pricing rules of the Eurex operational management construct amounting to €56.9 million.

Total expenses for 2022 include €414.9 million in internal Group transfer expenses (2021: €347.4 million).

Deutsche Börse AG's result from equity investments for the 2022 financial year totalled €524.2 million (2021: €652.5 million). It consisted of dividend income of €161.6 million (2021: €298.1 million) and income from the transfer of profits of €412.2 million (2021: €349.4 million). Compared to the previous year, the profit receipt from the distribution of Qontigo GmbH in the same phase is not included in the financial year (2021: €58.6 million). In addition, there were unscheduled depreciations of €76.2 million on financial assets. These are related to the participation in Crypto Finance AG (€19.7 million), in Forge Global Holdings Inc. (€48.9 million) and China Europe International Exchange AG (€7.6 million).

Earnings before interest, tax, depreciation and amortisation (EBITDA) fell to €1,215.1 million (2021: €1,233.9 million). Net income for the period amounted to €875.1 million, a fall of 7.2 per cent (2021: €943.3 million).

Sales revenue by segment

	2022 €m	2021 €m	Change %
Trading & Clearing	1,501.0	1,330.1	12.8
Securities Services	116.3	122.3	– 4.9
Fund Services	25.9	26.7	– 3.0
Data & Analytics	4.7	5.9	– 20.3
Total	**1,647.9**	**1,485.0**	11.0

Sales revenue by geographical regions

	2022 €m	2021 €m	Change %
Germany	511.2	478.4	6.9
Other European Union	552.6	480.5	15.0
Other Europe	475.7	424.9	12.0
America	100.5	92.5	8.6
Asia/Pacific	7.9	8.7	– 9.2
Total	**1,647.9**	**1,485.0**	11.0

Overview of total costs

	2022 €m	2021 €m	Change %
Staff costs	293.9	258.4	13.7
Depreciation and amortisation	73.6	65.1	13.1
Other operating expenses	832.3	680.3	22.3
Total	**1,199.8**	**1,003.8**	19.5

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 2022. Return on equity declined from 26.2 per cent in 2021 to 21.9 per cent in the year under review.

Financial position of Deutsche Börse AG

At the reporting date, cash and cash equivalents amounted to €442.0 million (2021: €215.5 million). This includes balances on current accounts, fixed-term deposits and other short-term investments, whereby the majority is held in cash.

Deutsche Börse AG has external credit lines available of €600.0 million (2021: €600.0 million), which were unused as at 31 December 2022. 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 €60.0 million (2021: €801.0 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 four 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 2022 financial year, Deutsche Börse AG generated cash flow from operating activities of €1.209.4 million (2021: €906.7 million).

Cash flow from investing activities amounted to €–392.5 million (2021: €–2,978.6 million). The change is particularly related to the higher investments in the 2021 financial year. In 2021 financial year, for example, there were cash outflows due to the acquisition of shares in Institutional Shareholder Services Inc. in the amount of €1,665.4 million, in Clearstream Fund Center AG in the amount of €735.2 million and in Crypto Finance AG in the amount of €132.1 million.

Cash flow from financing activities amounted to €–812.2 million in the year under review (2021: €1,261.9 million). A dividend of €587.6 million was paid for the 2021 financial year. Commercial paper were also repaid in the reporting year with a nominal value of €741.0 million. Cash and cash equivalents amounted to €–756.5 million as of the reporting date 31 December 2022 (2021: €761.2 million). It is made up of liquid funds of €442.0 million (2021: €215.5 million), less cash-pooling liabilities of €1,198.5 million (2021: €976.6 million).

Cash flow statement (condensed)

	2022 €m	2021 €m
Cash flow from operating activities	1,209.4	906.7
Cash flow from investing activities	– 392.5	– 2,978.6
Cash flow from financing activities	– 812.2	1,261.9
Cash and cash equivalents as at 31 December	**– 756.5**	**– 761.2**

Net assets of Deutsche Börse AG

As at 31 December 2022, the non-current assets of Deutsche Börse AG amounted to €8,805.5 million (2021: €8,559.5 million). At €8,024.7 million, most of the non-current assets consisted of shares in affiliated companies (2021: €7,824.1 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 €128.2 million during the year under review (2021: €61.5 million) and were thus significantly higher than in the previous year. The increase results primarily from investments in hardware. The amortisation of intangible assets and property, plant and equipment in 2022 amounted to €73.6 million (2021: €65.1 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 €412.1 million. Liabilities to affiliated companies resulted mainly from cash-pooling amounting to €1,199.6 million (2021: €976.5 million) and trade liabilities of €84.8 million (2021: €48.8 million).

Working capital amounted to €-646.9 million in 2022 (2021: €–1,852.1 million). The change is mainly due to the repayment of an issued bond with a nominal value of €600 million and commercial paper with a nominal value of €741 million.

Non-current assets (condensed)

	2022 €m	2021 €m
Intangible assets	125.9	116.8
Property, plant and equipment	117.0	72.1
Financial assets	8,562.6	8,370.6
Non-current assets as at 31 December	**8,805.5**	**8,559.5**

Deutsche Börse AG employees

The number of employees (as defined by HGB)[11] at Deutsche Börse AG rose by 24 in the reporting year and totalled 1,710 as at 31 December 2022 (31 December 2021: 1,686). The average number of employees at Deutsche Börse AG in the 2022 financial year was 1,701 (2021: 1,664).

During the 2022 financial year, 142 employees left Deutsche Börse AG, resulting in a staff turnover rate of 8 per cent.

On 31 December 2022, Deutsche Börse AG had employees at five 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 2022	%
Germany	1,681	98.3
Great Britain	14	0.8
France	9	0.5
Other European countries	3	0.2
Asia	3	0.2
Total Deutsche Börse AG	**1,710**	**100**

Age structure of employees

	31 Dec 2022	%
Under 30 years	190	11.1
30–39 years	556	32.5
40–49 years	416	24.3
More than 50 years	548	32.1
Total Deutsche Börse AG	**1,710**	**100**

Employee length of service

	31 Dec 2022	%
Under 5 years	673	39.3
5–15 years	586	34.3
More than 15 years	451	26.4
Total Deutsche Börse AG	**1,710**	**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 Opportunities report. 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.

Report on expected developments 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, the revenue of Deutsche Börse AG is largely determined by the Trading & Clearing segment, whereby this is generated mostly generated via Eurex Frankfurt AG (EFAG) and Eurex Clearing AG (ECAG) in the form of revenue transfers (operational management structure).

Additional factors affecting future earnings at Deutsche Börse AG are the investment income from affiliated companies and income from profit transfer agreements.

Deutsche Börse AG expects sales of between €1.5 billion and €1.7 billion and EBITDA of between €1.3 billion and €1.4 billion for 2023.

Further comments on Deutsche Börse AG can be found in the "Report on expected developments" section.

15. 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 as of 31 December 2022 in accordance with sections 289a sentence 1 and 315a sentence 1 of the German Commercial Code (HGB).

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 Aktiengesetz. 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.

Subject to the approval of the Supervisory Board, 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 by issuing new no-par value registered shares in exchange for 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. 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.

Subject to the approval of the Supervisory Board, 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 17 May 2027 by issuing new no-par value registered shares in exchange for 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. Subject to approval by the Supervisory Board, the Executive Board may exclude shareholders' pre-emptive rights with respect to fractional amounts. 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 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 multi-currency 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), and the terms of Deutsche Börse AG's €500.0 million fixed-rated bond issue 2022/2048, 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 €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, the terms of Deutsche Börse AG's €500.0 million fixed-rate bond issue 2021/2031, and the terms of Deutsche Börse AG's €600.0 million fixed-rate bond issue 2022/2032, 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 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.

16. Disclosures on EU Taxonomy

Article 8 of the 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. Since 2022, companies have to report in accordance with the delegated act the share of taxonomy-aligned and non-taxonomy-aligned sales as well as investment and operating expenses.

Basis for determining the proportions

The proportions were determined in accordance with the requirements of Article 8 of the delegated act. The determination of the taxonomy-aligned ratios is based on the following principles:

Turnover

The proportion of taxonomy-aligned economic activities has been determined by dividing the sales shares of taxonomy-aligned economic activities (numerator) by total sales (denominator). The denominator is based on sales in accordance with IAS 1.82(a) as presented in the consolidated statement of income. For further details, please refer to our consolidated financial statements (see note 5, table "Composition of our net revenues" (Part 1--4)"), column "Net revenues 2022").

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 based largely 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-based solutions to reduce greenhouse gas emissions

Operating and capital expenditure

We determined the proportion of taxonomy-aligned operating expenses by comparing our operating expenses (see note 7, table "Composition of other operating expenses," line "IT costs" and line "Occupancy costs") with the economic activities that make a significant contribution to climate protection or adaptation to climate change in accordance with the EU Taxonomy Regulation.

We calculated the proportion of taxonomy-aligned investment expending in the same way. Investment expenses are all additions to intangible and tangible assets (see note 11, table "Intangible assets"", column "Other intangible assets" and note 12, table "Property, plant and equipment (incl. rights of use)"), rows "Additions") without depreciation, amortization, without remeasurement and changes to fair value. Goodwill is also not included in the calculation of taxonomy-aligned capital expenditure as it is not an intangible asset according to IAS 38.

We consider operating and capital expenditures to be taxonomy-aligned if the output stems from a taxonomy-aligned economic activity. We have identified and analysed the following economic activities in the delegated act that could fundamentally give rise to taxonomy-aligned operating costs 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 devices for metering, regulating and controlling the energy performance of buildings
- Installation, maintenance and repair of technologies for renewable energy
- Data processing, hosting and related activities

For 2022, we have not identified any economic activity covered by the delegated act. Furthermore, we did not identify any material investment or operating expenses that fall within the scope of the delegated act in the 2022 financial year.

Proportion of turnover from products or services associated with Taxonomy-aligned economic activities - disclosure covering year 2022

				Substantial contribution criteria						DNSH criteria ('Does Not Significantly Harm')										
Economic activities (1)	Code (2)	Absolute turnover (3)	Proportion of turnover (4)	Climate change mitigation (5)	Climate change adaption (6)	Water and marine resources (7)	Circular economy (8)	Pollution (9)	Biodiversity and ecosystem (10)	Climate change mitigation (11)	Climate change adaption (12)	Water and marine resources (13)	Circular economy (14)	Pollution (15)	Biodiversity and ecosystems (16)	Minimum safeguards (17)	Taxonomy-aligned proportion of turnover, 2022 (18)	Taxonomy-aligned proportion of turnover, 2021 (19)	Category (enabling activity) (20)	Category (transitional activity) (21)
		€m	%	%	%	%	%	%	%	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Percent	Percent	E	T
A. TAXONOMY-ELIGIBLE ACTIVITIES																				
A.1. Environmentally sustainable activities (Taxonomy-aligned)																				
Turnover of environmentally sustainable activities (Taxonomy-aligned) (A.1)		–	0%	0%	0%	0%	0%	0%	0%								0%			
A.2 Taxonomy-Eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)																				
Turnover of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		–	0%																	
Total (A.1 + A.2)		–	0%														0%		0%	
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																				
Turnover of Taxonomy-non-eligible activities (B)		4,692.3	100%																	
Total (A + B)		4,692.3	100%																	

Proportion of CapEx from products or services associated with Taxonomy-aligned economic activities - disclosure covering year 2022

				Substantial contribution criteria						DNSH criteria ('Does Not Significantly Harm')										
Economic activities (1)	Code (2)	Absolute CapEx (3)	Proportion of CapEx (4)	Climate change mitigation (5)	Climate change adaption (6)	Water and marine resources (7)	Circular economy (8)	Pollution (9)	Biodiversity and ecosystem (10)	Climate change mitigation (11)	Climate change adaption (12)	Water and marine resources (13)	Circular economy (14)	Pollution (15)	Biodiversity and ecosystems (16)	Minimum safeguards (17)	Taxonomy-aligned propor-tion of CapEx, 2022 (18)	Taxonomy-aligned propor-tion of CapEx, 2021 (19)	Category (enabling activity) (20)	Category (transi-tional activity) (21)
		€m	%	%	%	%	%	%	%	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Percent	Percent	E	T
A. TAXONOMY-ELIGIBLE ACTIVITIES																				
A.1. Environmentally sustainable activities (Taxonomy-aligned)																				
CapEx of environmentally sustainable activities (Taxonomy-aligned) (A.1)		–	0%	0%	0%	0%	0%	0%	0%	0							0%			
A.2 Taxonomy-Eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)																				
CapEx of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		–	0%																	
Total (A.1 + A.2)		–	0%														0%		0%	
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																				
CapEx of Taxonomy-non-eligible activities (B)		323.5	100%																	
Total (A + B)		323.5	100%																	

Proportion of OpEx from products or services associated with Taxonomy-aligned economic activities - disclosure covering year 2022

				Substantial contribution criteria						DNSH criteria ('Does Not Significantly Harm')										
Economic activities (1)	Code (2)	Absolute OpEx (3)	Proportion of OpEx (4)	Climate change mitigation (5)	Climate change adaption (6)	Water and marine resources (7)	Circular economy (8)	Pollution (9)	Biodiversity and ecosystem (10)	Climate change mitigation (11)	Climate change adaption (12)	Water and marine resources (13)	Circular economy (14)	Pollution (15)	Biodiversity and ecosystems (16)	Minimum safeguards (17)	Taxonomy-aligned proportion of OpEx, 2022 (18)	Taxonomy-aligned proportion of OpEx, 2021 (19)	Category (enabling activity) (20)	Category (transitional activity) (21)
		€m	%	%	%	%	%	%	%	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Y/N	Percent	Percent	E	T
A. TAXONOMY-ELIGIBLE ACTIVITIES																				
A.1. Environmentally sustainable activities (Taxonomy-aligned)																				
OpEx of environmentally sustainable activities (Taxonomy-aligned) (A.1)		–	0%	0%	0%	0%	0%	0%	0%	0							0%			
A.2 Taxonomy-Eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)																				
OpEx of Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities) (A.2)		–	0%																	
Total (A.1 + A.2)		–	0%														0%		0%	
B. TAXONOMY-NON-ELIGIBLE ACTIVITIES																				
OpEx of Taxonomy-non-eligible activities (B)		207.4	100%																	
Total (A + B)		207.4	100%																	

Frankfurt / Main, 3 March 2023
Deutsche Börse AG

Theodor Weimer	Christoph Böhm	Thomas Book
Heike Eckert	Stephan Leithner	Gregor Pottmeyer

Deutsche Börse Group

Consolidated financial statements and notes

as at 31 December 2022

Consolidated income statement

for the period 1 January to 31 December 2022

	Note	2022 €m	2021 €m
Sales revenue	5	4,692.3	4,218.8
Treasury result from banking and similar business	5	532.2	142.7
Other operating income	5	108.7	85.1
Total revenue		**5,333.2**	**4,446.6**
Volume-related costs	5	– 995.6	– 937.1
Net revenue (total revenue less volume-related costs)		**4,337.6**	**3,509.5**
Staff costs	6	– 1,212.7	– 1,002.1
Other operating expenses	7	– 609.5	– 549.5
Operating costs		**– 1,822.2**	**– 1,551.6**
Result from financial investments	8	10.2	85.8
Result from financial investments	8	6.8	38.6
Result from financial investments	8	3.4	47.2
Earnings before interest, tax, depreciation and amortisation (EBITDA)		**2,525.6**	**2,043.7**
Depreciation, amortisation and impairment losses	11, 12	– 355.6	– 293.7
Earnings before interest and tax (EBIT)		**2,170.0**	**1,750.0**
Financial income	9	37.6	34.7
Financial expense	9	– 101.2	– 75.4
Earnings before tax (EBT)		**2,106.5**	**1,709.3**
Income tax expense	10	– 543.3	– 444.4
Net profit for the period		**1,563.2**	**1,264.9**
Net profit for the period attributable to Deutsche Börse AG shareholders		1,494.4	1,209.7
Net profit for the period attributable to non-controlling interests		68.8	55.2
Earnings per share (basic) (€)	**23**	**8.14**	**6.59**
Earnings per share (diluted) (€)	**23**	**8.12**	**6.58**

Consolidated statement of comprehensive income

for the period 1 January to 31 December 2022

	Note	2022 €m	2021 €m
Net profit for the period reported in consolidated income statement		**1,563.2**	**1,264.9**
Items that will not be reclassified to profit or loss:			
Changes from defined benefit obligations		132.3	61.0
Equity investments measured at fair value through OCI		– 37.5	52.2
Other		0.8	– 4.8
Deferred taxes	16	– 36.9	– 29.1
		58.7	**79.3**
Items that may be reclassified subsequently to profit or loss:			
Exchange rate differences	16	226.7	269.0
Other comprehensive income from investments using the equity method		– 0.3	– 0.3
Remeasurement of cash flow hedges		53.7	52.7
Deferred taxes	16	– 30.1	– 3.4
		250.0	**318.0**
Other comprehensive income after tax		**308.7**	**397.3**
Total comprehensive income		**1,871.9**	**1,662.2**
thereof Deutsche Börse AG shareholders		1,784.6	1,585.2[1]
thereof non-controlling interests		87.3	77.0[1]

1) Previous year adjusted, see note 4.

Consolidated balance sheet

as at 31 December 2022

Assets

	Note	31 Dec 2022 €m	31 Dec 2021 €m
NON-CURRENT ASSETS		20,758.4	20,462.4
Intangible assets	11	**8,610.0**	**8,162.9**
Software		595.2	553.2
Goodwill		5,913.7	5,596.0
Payments on account and assets under development		158.5	100.1
Other intangible assets		1,942.6	1,913.6
Property, plant and equipment	12	**631.2**	**593.7**
Land and buildings		437.0	438.0
Fixtures and fittings		45.3	57.0
Computer hardware, operating and office equipment		132.7	90.1
Payments on account and construction in progress		16.2	8.5
Financial assets	13	**11,322.8**	**11,460.4**
Financial assets measured at FVOCI			
Strategic investments		182.8	224.3
Debt instruments		0	2.8
Financial assets measured at amortised cost	13	1,894.7	1,634.7
Financial assets at FVPL			
Financial instruments held by central counterparties		9,078.4	9,442.4
Other financial assets at FVPL		166.8	156.2
Investment in associates		111.5	88.9
Other non-current assets		21.1	16.8
Deferred tax assets	10	61.8	139.8
CURRENT ASSETS		248,350.5	202,457.0
Financial assets measured at FVOCI	13	0	1.5
Financial assets measured at amortised cost	13		
Trade receivables		2,289.2	969.4
Other financial assets at amortised cost		18,876.1	15,799.6
Restricted bank balances		93,538.3	78,542.0
Other cash and bank balances		1,275.6	1,029.6
Financial assets at FVPL	13		
Financial instruments held by central counterparties		129,932.8	103,195.7
Other financial assets at FVPL		15.8	116.0
Income tax assets	10	79.3	115.5
Other current assets	15	2,343.3	2,675.6
Assets held for sale	2	0	11.9
Total assets		**269,108.8**	**222,919.3**

Equity and liabilities

	Note	31 Dec 2022 €m	31 Dec 2021 €m
EQUITY	14		
Subscribed capital		190.0	190.0
Share premium		1,370.8	1,359.6
Treasury shares		– 449.6	– 458.2
Revaluation surplus		22.7	– 61.7
Retained earnings		7,337.9	6,178.3[1]
Shareholders' equity		**8,471.8**	**7,208.1**[1]
Non-controlling interests		589.1	534.3[1]
Total equity		**9,060.9**	**7,742.4**
NON-CURRENT LIABILITIES		**14,183.9**	**13,623.0**
Provisions for pensions and other employee benefits	16, 17	23.9	149.0
Other non-current provisions	17, 18	110.8	127.2
Financial liabilities measured at amortised cost	12	4,535.0	3,539.9
Financial liabilities at FVPL	12		
Financial instruments held by central counterparties		9,078.4	9,442.4
Other financial liabilities at FVPL		32.9	8.4
Other non-current liabilities	19	14.6	17.5
Deferred tax liabilities	9	388.2	338.5
CURRENT LIABILITIES		**245,864.0**	**201,554.0**
Income tax liabilities		335.4	244.6
Other current provisions	18	389.2	335.3
Financial liabilities at amortised cost	12		
Trade payables		2,041.3	704.4
Other financial liabilities at amortised cost		17,671.5	15,914.3
Cash deposits by market participants		93,283.1	78,292.5
Financial liabilities at FVPL	12		
Financial instruments held by central counterparties		129,568.8	103,267.7
Other financial liabilities at FVPL		119.3	4.7
Liabilities held for sale	19	2,455.4	2,788.6
Other current liabilities		0	1.9
Total liabilities		**260,047.9**	**215,177.0**
Total equity and liabilities		**269,108.8**	**222,919.3**

1) Previous year adjusted, see note 4.

Consolidated cash flow statement

for the period 1 January to 31 December 2022

	Note	2022 €m	2021 €m
Net profit for the period		1,563.2	1,264.9
Depreciation, amortisation and impairment losses	11, 12	355.6	293.7
Decrease in non-current provisions		– 9.9	– 53.1
Deferred tax expense/(income)	10	64.6	– 0.1
Cash flows from derivatives		67.1	– 6.4
Other non-cash expense/(income)		104.8	– 163.6
Changes in working capital, net of non-cash items:		54.0	– 154.4
Increase in receivables and other assets		– 1,417.5	– 358.2
Increase in current liabilities		1,472.9	206.6
Decrease in non-current liabilities		– 1.4	– 2.8
Net (gain)/loss on disposal of non-current assets		– 57.9	0.3
Cash flows from operating activities excluding CCP positions		**2,141.6**	**1,181.4**
Changes in liabilities from CCP positions		432.6	– 2,552.8
Changes in receivables from CCP positions		– 90.5	2,280.3
Cash flows from operating activities	**22**	**2,483.6**	**908.9**
Payments to acquire intangible assets		– 215.6	– 168.6
Payments to acquire property, plant and equipment		– 109.6	– 37.8
Payments to acquire non-current financial instruments		– 850.9	– 1,359.3
Payments to acquire investments in associates		– 13.5	– 12.0
Payments to acquire subsidiaries, net of cash acquired		– 185.5	– 1,843.0
Effects of the disposal of (shares in) subsidiaries, net of cash disposed		27.1	0
Net decrease in current receivables and securities from banking business with an original term greater than three months		240.4	506.0
Net (decrease)/increase in current liabilities from banking business with an original term greater than three months		– 343.6	229.3
Proceeds from disposals of non-current financial instruments		44.6	516.5
Proceeds from disposals of intangible assets		0.1	0.9
Cash flows from investing activities	**22**	**-1,406.5**	**– 2,168.0**
Proceeds from sale of treasury shares		11.9	8.7
Payments to non-controlling interests		– 37.8	– 40.9
Proceeds of long-term financing		1,079.3	999.1
Repayment of long-term financing		0	– 356.0
Repayment of short-term financing		– 2,397.0	– 1,900.0
Proceeds from short-term financing		1,056.0	2,701.0
Finance lease payments		– 75.9	– 62.6
Dividends paid	17	– 587.6	– 550.6
Cash flows from financing activities	**22**	**–951.1**	**798.7**
Net change in cash and cash equivalents		**126.0**	**– 460.5**

	Notes	2022 €m	2021 €m
Net change in cash and cash equivalents (brought forward)		**126.0**	**– 460.5**
Effect of exchange rate differences		-37.8	– 6.3
Cash and cash equivalents at beginning of period		2,040.0	2,506.7
Cash and cash equivalents at end of period	**22**	**2,128.2**	**2,040.0**
Interest-similar income received		1,197.6	441.2
Dividends received		24.2	10.2
Interest paid		-660.5	– 340.9
Income tax paid		-365.4	– 470.7

Consolidated statement of changes in equity

for the period 1 January to 31 December 2022

	Attributable to owners of Deutsche Börse AG							
	Subscribed capital €m	Share premium €m	Treasury shares €m	Revaluation surplus €m	Retained earnings €m	Share-holders' equity €m	Non-controlling interests €m	Total equity €m
Balance as at 31 December 2022	**190.0**	**1,352.4**	**– 465.2**	**– 196.3**	**5,287.4**	**6,168.3**	**387.8**	**6,556.1**
Retrospective adjustment	–	–	–	–	– 0.4	– 0.4	0.4	–
Balance as at 1 January 2021	**190.0**	**1,352.4**	**– 465.2**	**– 196.3**	**5,287.0[1]**	**6,167.9[1]**	**388.2[1]**	**6,556.1**
Net profit for the period	–	–	–	–	1,209.7	1,209.7	55.2	1,264.9
Other comprehensive income after tax	–	–	–	133.3	242.2[1]	375.5[1]	21.8[1]	397.3
Total comprehensive income	**–**	**–**	**–**	**133.3**	**1,451.9[1]**	**1,585.2[1]**	**77.0[1]**	**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/de-creases	–	–	–	–	–	–	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**	**6,178.3[1]**	**7,208.1[1]**	**534.3[1]**	**7,742.4**
Balance as at 1 January 2022	**190.0**	**1,359.6**	**– 458.2**	**– 61.7**	**6,178.3[1]**	**7,208.1[1]**	**534.3[1]**	**7,742.4**
Profit for the period	–	–	–	–	1,494.4	1,494.4	68.8	1,563.2
Other comprehensive income	–	–	–	81.7	208.5	290.2	18.5	308.7
Total comprehensive income	**–**	**–**	**–**	**81.7**	**1,702.9**	**1,784.6**	**87.3**	**1,871.9**
Other adjustments	–	–	–	–	– 1.9	– 1.9	0.1	– 1.8
Sale of treasury shares	–	0.5	0.4	–	–	0.8	–	0.8
Sales under the Group Share Plan	–	10.7	8.2	–	–	18.9	–	18.9
Increase in share-based payments	–	–	–	2.7	–	2.7	–	2.7
Changes due to capital increases/de-creases	–	–	–	–	48.3	48.3	28.2	76.5
Change consolidation group	–	–	–	–	– 2.2	– 2.2	– 24.2	– 26.4
Dividends paid	–	–	–	–	– 587.6	– 587.6	– 36.6	– 624.2
Transactions with shareholders	**–**	**11.2**	**8.6**	**2.7**	**– 543.2**	**– 520.8**	**– 32.5**	**– 553.3**
Balance as at 31 December 2022	**190.0**	**1,370.8**	**– 449.6**	**22.7**	**7,337.9**	**8,471.8**	**589.1**	**9,060.9**

1) Previous year adjusted, see note 4.

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, that offer banking services to customers, have a banking licence. Eurex Clearing AG is a central counterparty (CCP), a bank and its role is to mitigate performance risks for buyers and sellers. For further details on internal organisation and reporting see the section "Fundamental information about the Group" in the combined management report.

Basis of reporting

The 2022 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 European Council on the application of international accounting standards.

The disclosures required by section 315e (1) of Handelsgesetzbuch (HGB, German Commercial Code) are 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.

Disclosures on capital management that are also part of these consolidated financial statements can be found under the heading "Regulatory capital requirements and regulatory capital ratios" in the section "Risk management" in the combined management report.

The consolidated financial statements have been prepared on a going concern basis.

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 IFRSs that are described in the following. They were applied consistently to the periods shown.

Assets and liabilities and items in the consolidated statement of comprehensive income and any mandatory disclosures 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 2022 reporting year. They were not applied earlier than required.

Standard/Amendment/Interpretation

		Application date	Effects at Deutsche Börse Group
IFRS 3	Amendments to IFRS 3 relating to a reference in the Conceptual Framework.	1. Jan. 2022	none
IAS 16	Amendments to IAS 16: Clarifications	1. Jan. 2022	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

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 respective 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 at Deutsche Börse Group
IAS 1	Amendments in classification of liabilities as current or non-current	1. Jan. 2024	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
IAS 8	Clarification on how changes in accounting policies should be better distinguished from changes in 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
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
IFRS 16	Accounting for liabilities from sale and leaseback transactions at the seller`s/lessee`s side.	1. Jan. 2024	See notes under this table

Amendment to IAS 1 Classification of Liabilities as Current or Non-current
The amendments relate to the classification of liabilities that are subject to covenants. The IASB clarifies that covenants that must be met before or on the balance sheet date may have an effect on the classification as current or non-current. By contrast, covenants that are only required to be met after the balance sheet date have no impact on classification. Instead of being taken into account in the classification, such ancillary conditions are to be disclosed in the notes. This is intended to enable users of the financial statements to assess the extent to which non-current liabilities may become repayable within 12 months. These amendments have no material impact on 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. These amendments have no material effect on the consolidated financial statements.

The amendments to Deferred Tax related to Assets and Liabilities arising from a Single Transaction
The amendment to IAS 12 (Income Taxes) deals with more specific guidance on accounting for deferred taxes in connection with leases and decommissioning obligations. The amendment 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. These amendments have no material impact on the Group's financial performance or financial position.

IFRS 17 "Insurance Contracts"

The new accounting standard IFRS 17 (Insurance Contracts) was published in May 2017 and replaces the IFRS 4 standard. Generally speaking, the new standard is not only relevant to insurance companies, but to all entities that issue insurance contracts within the scope of the standard. It is not relevant for accounting by the insured party, however. IFRS 17 aims for the consistent, rules-based accounting treatment of insurance contracts and provides for insurance liabilities to be measured at their current settlement value. Furthermore, the objective is to form a uniform basis regarding the recognition, measurement and presentation of insurance contracts, including the notes. The standard is 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. We do not expect it to have any effect on the financial position or financial performance of the Group.

Amendments to IFRS 16 concerning accounting by the seller-lessee for liabilities under sale and leaseback transactions.

The amendments relate to the measurement of lease liabilities under sale and leaseback transactions and require a seller-lessee to subsequently measure lease liabilities arising from a leaseback in such a way that it does not recognise any amount of the gain or loss that relates to the right of use it retains. The new examples explain various different procedures, particularly for variable lease payments. The amendments are applicable to financial years beginning on or after 1 January 2024. The IASB permits the amendments to be applied earlier, subject to an EU endorsement. These amendments are not expected to have an impact on the Group's financial performance or financial position.

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 result of banking and similar business or as net income from financial investments in the period in which they arise, unless the underlying transactions are hedged. Notwithstanding the basic principle, exchange rate differences for equity instruments designated as at FVOCI 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". Any resulting

exchange rate differences are recognised directly in equity under “Retained earnings”. When the relevant subsidiary is sold, these exchange rate differences are recognised in the net income 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 2022	Average rate 2021	Closing price as at 31 Dec 2022	Closing price as at 31 Dec 2021
Swiss francs	CHF (Fr.)	1.0030	1.0800	0.9864	1.0337
US dollars	USD (US$)	1.0524	1.1821	1.0671	1.1317
Czech koruna	CZK (Kč)	24.5458	25.6569	24.1469	24.8605
Singapore dollar	SGD (S$)	1.4491	1.5871	1.4309	1.5277
British pound	GBP (£)	0.8547	0.8589	0.8850	0.8371

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 the acquisition date by the corresponding proportion of the identifiable net assets of the acquired entity.

Deutsche Börse AG's equity interests in subsidiaries and associates included in the consolidated financial statements as at 31 December 2022 are presented in the list of shareholdings in note 35.

Material acquisitions

Acquisition of Institutional Shareholder Services Inc., Rockville, USA (ISS)
The acquisition of Institutional Shareholder Services Inc., Rockville, MD, USA (ISS) in the first quarter of 2021 resulted in the following effects after the final purchase price allocation:

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

	Final 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 1[3]	– 8.7
Cash flow hedges[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	2.3
Other current assets	9.1
Trade receivables	35.5
Acquired bank balances	199.7
Deferred tax liabilities	– 77.2
Miscellaneous non-current liabilities	– 69.5
Contract liabilities	– 103.8
Miscellaneous current liabilities	– 225.8
Non-controlling interests[5]	– 68.0
Total assets and liabilities acquired	**414.5**
Goodwill (not tax-deductible)[6]	**1,238.8**

1) Purchase price payments to an escrow account until final settlement
2) Original costs of seller
3) As part of the acquisition, 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 (based on the net assets excluding goodwill) are calculated on the basis of the transaction price paid
6) The opening balance sheet was subsequently restated after the twelve-month measurement period. This resulted in a reduction of €6.1 million in goodwill

Acquisition of Discovery Data Holdings Inc., New Jersey, USA (DiscoveryData)

The acquisition of Discovery Data Holdings Inc., New Jersey, USA (Discovery Data) in the fourth quarter of 2021 resulted in the following effects after the final purchase price allocation:

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

	Final goodwill calculation 9 Dec 2021 €m
Consideration transferred	
Purchase price in cash	201.6
Total consideration	**201.6**
Acquired assets and liabilities	
Database	37.4
Customer relationships	36.0
Trade names	2.8
Software	9.0
Property, plant and equipment	0.6
Other non-current assets	0.1
Current assets (without bank balances)	3.7
Acquired bank balances	18.0
Deferred tax liabilities	– 15.9
Other non-current liabilities	– 0.4
Contract Liabilities	– 9.4
Other current liabilities	– 18.2
Total assets and liabilities acquired	**63.9**
Goodwill (not tax-deductible)	**137.7**

Acquisition of Crypto Finance AG, Zurich, Switzerland (Crypto Finance)

The acquisition of Crypto Finance AG, Zurich, Switzerland (Crypto Finance) in the fourth quarter of 2021 resulted in the following effects after the final purchase price allocation:

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

	Final goodwill calculation 15 Dec 2021 €m
Consideration transferred	
Purchase price in cash	89.4
Call Option[1]	– 5.7
Cashflow-Hedge[2]	– 4.2
Total consideration	**79.5**
Acquired assets and liabilities	
Customer relationships	16.2
Tradename	2.6
Software	4.4
Property, plant and equipment	0.2
Deferred tax assets	1.0
Other current assets (without bank balances)	18.8
Aquired bank balances	23.5
Deferred tax liabilities	– 2.9
Other non-current liabilities	– 2.2
Other current liabilities	– 14.4
Non-controlling interests[3]	– 20.1
Total assets and liabilities acquired	**27.1**
Goodwill (not tax-deductible)	**52.4**

1) Within the scope of the acquisition, a call option was purchased for €5.7 million that is recognised as a financial instrument in accordance with IFRS 9 rather than in accordance with IFRS 3

2) Reclassification of effective portion of cash flow hedge for the purchase price to acquisition cost of the investment

3) The non-controlling interests are calculated on the basis of the acquired net assets, without goodwill

Acquisition of Kneip Communication S.A., Luxembourg, Luxembourg, (Kneip)
In the first quarter of 2022, Deutsche Börse AG completed the acquisition of 100 per cent of the shares in Kneip Communication S.A. (Kneip) for a purchase price of €187.7 million, thereby assuming control. Upon completion of the transaction on 31 March 2022, Kneip was allocated to the Fund services segment. The iInitial recognition of Kneip, a provider of fund data and services, in the consolidated financial statements of Deutsche Börse Group took place using the purchase method.

Kneip will grow its business as part of Deutsche Börse Group and expand its range of services, including data and post-trade services provided by Clearstream. Furthermore, the Group intends to link Kneip''s services with its existing fund service platforms. Significant synergies are expected from the transaction, also in terms of revenue, which will be reflected in the amount of goodwill.

The identifiable assets and liabilities of Kneip 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 from the business combination with Kneip Communication S.A., Luxembourg, Luxembourg (Kneip)

	Final goodwill calculation 31 Mar 2022 €m
Consideration transferred	
Purchase price in cash	151.2
Deferred purchase price	12.6
Debt repayment/seller transaction expense	25.0
Total consideration	**188.7**
Acquired assets and liabilities	
Customer relationships	27.2
Tradename	15.0
Software	7.1
Property, plant and equipment	5.1
Other current assets	19.2
Acquired bank balances	16.0
Deferred tax liabilities	– 9.6
Other non-current liabilities	– 4.3
Contract Liabilities	– 12.8
Other current liabilities	– 31.3
Total assets and liabilities acquired	**31.6**
Goodwill (not tax-deductible)	**157.1**

The full consolidation of Kneip resulted in an increase in net revenues of €48.7 million as well as in an increase in profit after tax of €4.0 million. If the company had been fully consolidated as at 1 January 2022, this would have resulted in an increase in net revenues of €21.3 million as well as in an increase in profit after tax of €4.3 million.

Sale of shares in REGIS- TR
As at 3 September 2021, Clearstream International S.A. and Clearstream Holding AG have entered into binding agreements to sell their shares in REGIS-TR S.A. and REGIS-TR to Sociedad de Gestión de los Sistemas de Registro, Compensación y Liquidación de Valores, S.A. Unipersonal (SIX Group). The transaction was completed in the first quarter of 2022 and the deconsolidation resulted in a one-off income effect of €48.7 million, which was recognised in the item "Other operating income".

Loss of control over Tradegate Exchange GmbH, Berlin, Germany (Tradegate) and Börse Berlin AG, Berlin, Germany (Börse Berlin)
An equity issue at Tradegate Exchange GmbH (Tradegate) on 17 June 2022 caused Deutsche Börse AG's share of voting rights in the company to fall from 60.0 per cent to around 42.8 per cent. Deutsche Börse AG can therefore no longer exercise control over Tradegate and its subsidiary Börse Berlin AG (Börse Berlin) and has deconsolidated both companies. Tradegate will be accounted for in future as an associate using the equity method. The deconsolidation gave rise to a one-off gain of €12.5 million, which is recognised in the item "Other operating income".
The full consolidation of Kneip resulted in an increase in net revenue of €0 million as well as of income after tax amounting to €0 million. If the company had been fully consolidated as at 1 January 2022, this would have resulted in an increase of net revenue amounting to €257.7 million as well as an increase of income after tax amounting to €18.0 million.

Associates

Investments in associates 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. Impact of the Russia-Ukraine war

Clearstream Banking S.A., Luxembourg (CBL) has fully written off receivables from the Russian National Settlement Depository, NSD) in the amount of €134 million as at 31 December 2022, as CBL no longer expects repayment from NSD.

The fact that CBL is not able to control its assets held with NSD and to execute its clients' instructions constitutes a force majeure event.

Accordingly, by virtue of its general terms and conditions and the applicable laws of Luxembourg, CBL is released from its obligation to repay the rouble funds to its clients by reason of its inability to dispose of such funds due to force majeure. The reduction of these liabilities resulted in income of €134 million, which fully compensated for the funds written off.

The war did not have any other direct impact on these consolidated financial statements.

4. Adjustments

Segment reporting

In order to reduce the complexity of financial reporting and to highlight the Group's growth areas more clearly, Deutsche Börse AG has adjusted its segment reporting in line with internal corporate management as of the first quarter of 2022. As such, the previous eight segments were combined into four segments: Data & Analytics (including Qontigo and ISS), Trading & Clearing (Eurex, EEX, 360T and Xetra), Fund Services (IFS) and Securities Services (Clearstream). The previous year's figures were adjusted accordingly, see note 24.

Non-Controlling Interests

In the financial year 2022, a retrospective correction was made to non-controlling interests due to an incorrect allocation of foreign currency effects from the translation of goodwill in the context of applying the partial goodwill method. As of January 1, 2021, this resulted in a decrease in retained earnings of €0.4 million and a corresponding increase in non-controlling interests. As at 31 December 2021, this resulted in an increase in retained earnings of €14.9 million and a corresponding decrease in non-controlling interests as well as an increase in total comprehensive income attributable to Deutsche Börse AG shareholders of €14.6 million and a corresponding decrease in total comprehensive income attributable to non-controlling interests.

Notes on the consolidated income statement

5. Net revenues

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 14.

Sales revenue
We report our sales revenue on the basis of our segment structure. Revenue recognition for the main product lines in the segments as we define and present them is described below:

Data & Analytics

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. The customer simultaneously receives and consumes the benefits provided by the entity's performance during the contract term.

Revenue is 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. Analytics offers its clients risk-analytics and portfolio-construction tools. Customers 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 from SaaS Front Office fees is recognised at a specific point in time, as all contractual obligations are fulfilled when the licence key is transferred to the customer and the customer obtains control over the software. 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. For multi-year contracts, additional costs of obtaining a contract are capitalised.

ESG's product portfolio includes Corporate Solutions, ESG Analytics and Governance Solutions. Most of this revenue stems from fixed-term contracts and recurring services. Revenue is recognised on a pro rata basis over the term of the contracted services to customers. Proxy voting services are provided at a specific point in time and revenue is recognised accordingly when the contractually agreed service is provided. Fees for exceeding the minimum volumes for proxy research and services in connection with the exercise of voting rights are also variable considerations. Upon commencement of the contract, there is an expectation that the period between providing the service and receiving the consideration from the client will be no more than one year, so there is no significant financing component. For multi-year contracts, additional costs of obtaining a contract are capitalised.

Trading & Clearing

Financial derivatives

Revenue in the financial derivatives business is generated 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. Revenue is also generated with clearing and settlement services for over-the-counter (OTC) transactions. This comes mainly in the form of booking and management fees. 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.

Revenue for transactions in listed derivatives is recognised as soon as contracts are matched/registered and there is no unfulfilled obligation towards the customer. In the case of OTC transactions, posting fees are recognised at novation on a monthly basis. These fees are recognised at a point in time. Fees for the administration of financial derivative positions are recognised over time as the service is provided until the transaction has been closed, terminated or has matured.

Commodities

Its product portfolio comprises contracts on electricity, 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 for transactions is recognised as soon as contracts are matched/registered and there is no unfulfilled obligation towards the customer.

Securities

Contracts for trading and clearing of cash market products in securities are accounted for in the same way as described in the financial derivatives section. 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 Exchange 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. 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.

Foreign exchange

In the foreign exchange business, revenue is recognised for the entire trading process of foreign-exchange products and the commissions generated from this in the form of trading fees. Revenue is recognised when the contractually agreed service is provided to customers. The fees include discounts 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.

Fund Services

The Fund services segment provides services to standardise fund processing and to increase efficiency and safety in the investment fund sector. The services offered include order routing, settlement, asset management, custody services and distribution and placement of investments. Processing fees for fund custody and the management of distribution agreements are recognised over time. Transaction-related fees are recognised at the time the agreed service is provided. 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.

Securities Services

The Group generates revenues from infrastructure services and post-trading services, the settlement of securities transactions as well as the custody and administration of securities. The fees are calculated in accordance with the prices set in the price list as well as with any relevant discounts granted. 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. Fees collected for administrative services such as corporate events for securities are recognised when the agreed service is provided to clients. This occurs when instructions are received and the transactions are processed. The service has been fulfilled at this point in time. In accordance with the general terms and conditions, customers authorise direct debiting and consequently no financing component has been identified.

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 policies, 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. In addition, impairment losses from financial instruments as well as income from the reduction of liabilities relating to the banking business are recognised in this item.

Other operating income
Other operating income is income that is not classified as part of our typical business model. Other operating income is realised usually when all chances and risks have been transferred. Other operating income comprises, for instance, income from subleasing property and income from agency agreements, as well as the reversal of impairments recognised on trade receivables. Measurement effects, such as income from exchange rate differences in non-banking business, are also recognised in other operating income.

Volume-related costs
The item "volume-related costs" consists of expenses related directly 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 parties 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	
	2022 €m	2021 €m	2022 €m	2021 €m
Data & Analytics				
Index	235.1	199.1	0	0
Analytics	93.4	90.8	0	0
ESG	250.2	166.9	0	0
Other	131.4	70.3	0	0
	710.1	**527.1**	**0**	**0**
Trading & Clearing				
Financial derivatives	1,211.3	1,019.4	149.6	74.1
Equities	607.7	509.1	0	0
Interest rates	346.9	284.4	0	0
Margin fees	35.9	24.2	149.6	74.1
Other	220.8	201.7	0	0
Commodities	377.2	350.4	108.7	16.9
Power	187.7	199.1	0	0
Gas	91.0	65.2	0	0
Other	98.5	86.1	108.7	16.9
Cash equities	380.8	415.6	0.3	0.4
Trading	197.5	226.9	0.3	0.4
Other	183.3	188.7	0	0
Foreign exchange	138.7	113.2	0	0
	2,108.0	**1,898.6**	**258.6**	**91.4**

Composition of net revenue (part 2)

	Other operating income		Volume-related costs		Net revenue	
	2022 €m	2021 €m	2022 €m	2021 €m	2022 €m	2021 €m
Data & Analytics						
Index	0.9	0.6	– 20.4	– 16.9	215.6	182.8
Analytics	0.6	0.1	– 18.6	– 15.0	75.4	75.9
ESG	0	0	– 11.6	– 8.7	238.6	158.2
Other	0	1.1	– 9.3	– 5.7	122.1	65.7
	1.5	**1.8**	**– 59.9**	**– 46.3**	**651.7**	**482.6**
Trading & Clearing						
Financial derivatives	18.9	16.7	– 145.4	– 114.4	**1,234.4**	**995.8**
Equities	0.4	0.1	– 99.1	– 69.8	509.0	439.4
Interest rates	53.0	24.0	– 32.0	– 25.6	367.9	282.8
Margin fees	– 67.8	– 30.2	– 0.1	– 0.1	117.6	68.0
Other	33.3	22.8	– 14.2	– 18.9	239.9	205.6
Commodities	1.6	1.1	– 12.0	– 26.9	**475.5**	**341.5**
Power	0	0	– 4.4	– 10.9	183.3	188.2
Gas	0	0	– 1.8	– 10.3	89.2	54.9
Other	1.6	1.1	– 5.8	– 5.7	203.0	98.4
Cash equities	29.5	11.9	– 66.2	– 63.9	**344.4**	**364.0**
Trading	21.3	0.9	– 38.7	– 38.0	180.4	190.2
Other	8.2	11.0	– 27.5	– 25.9	164.0	173.8
Foreign exchange	0	0	– 5.9	– 5.4	**132.8**	**107.8**
	50.0	**29.7**	**– 229.5**	**– 210.6**	**2,187.1**	**1,809.1**

Composition of net revenue (part 3)

	Sales revenue		Treasury result from banking and similar business	
	2022 €m	2021 €m	2022 €m	2021 €m
Fund Services				
Fund processing	224.8	215.7	0	0
Fund distribution	565.0	531.9	0	0
Other	82.0	64.9	1.8	0
	871.8	**812.5**	**1.8**	**0**
Securities Services				
Custody	773.9	703.1	0	– 0.2
Settlement	174.5	193.0	0	0
Net interest income	0	0	260.0	50.8
Other	150.2	151.6	11.8	0.7
	1,098.6	**1,047.7**	**271.8**	**51.3**
Total	**4,788.5**	**4,285.9**	**532.2**	**142.7**
Consolidation of internal revenue	**– 96.2**	**– 67.1**	**0**	**0**
thereof Data & Analytics	– 78.5	– 51.3	0	0
thereof Trading & Clearing	– 5.7	– 5.5	0	0
thereof Fund Services	– 0.5	– 0.4	0	0
thereof Securities Services	– 11.5	– 9.9	0	0
Group	**4,692.3**	**4,218.8**	**532.2**	**142.7**

Composition of net revenue (part 4)

	Other operating income		Volume-related costs		Net revenue	
	2022 €m	2021 €m	2022 €m	2021 €m	2022 €m	2021 €m
Fund Services						
Fund processing	0	0	– 13.3	– 12.5	211.5	203.2
Fund distribution	7.0	0.1	– 482.3	– 454.4	89.7	77.6
Other	0	39.4	– 9.1	– 2.7	74.7	101.6
	7.0	**39.5**	**– 504.7**	**– 469.6**	**375.9**	**382.4**
Securities Services						
Custody	5.9	1.9	– 194.8	– 178.7	585.0	526.1
Settlement	0.1	0.4	– 69.8	– 73.2	104.8	120.2
Net interest income	0	0	0	– 0.8	260.0	50.0
Other	50.9	20.7	– 39.8	– 33.9	173.1	139.1
	56.9	**23.0**	**– 304.4**	**– 286.6**	**1,122.9**	**835.4**
Total	**115.4**	**94.0**	**– 1,098.5**	**– 1,013.1**	**4,337.6**	**3,509.5**
Consolidation of internal revenue	**– 6.7**	**– 8.9**	**102.9**	**76.0**	**0**	**0**
thereof Data & Analytics	0	0	0	0	– 78.5	– 51.3
thereof Trading & Clearing	– 6.7	– 8.9	100.2	73.1	87.8	58.7
thereof Fund Services	0	0	0	0	– 0.5	– 0.4
thereof Securities Services	0	0	2.7	2.9	– 8.8	– 7.0
Group	**108.7**	**85.1**	**– 995.6**	**– 937.1**	**4,337.6**	**3,509.5**

Revenue recognised in the financial year from performance obligations satisfied partly or in full in earlier periods came to €17.7 million (2021: €12.3 million).

Composition of treasury result from banking and similar business

	2022 €m	2021 €m
Interest income from positive interest environment		
Debt financial assets measured at amortised cost	613.8	19.9
Interest expenses from positive interest environment		
Financial liabilities measured at amortised cost	– 295.9	– 33.4
Interest income from negative interest environment		
Debt financial assets measured at amortised cost	449.4	373.6
Interest expenses from negative interest environment		
Financial liabilities measured at amortised cost	– 308.0	– 239.5
Net interest income	**459.3**	**120.6**
Result from fair value valuation of foreign currency derivatives	66.8	20.6
Other currency result	6.1	1.5
Total	**532.2**	**142.7**

Other operating income

Other operating income of €108.7 million (2021: €85.1 million) mainly results from the sale of shares in REGIS-TR in the amount of €48.7 million and from the deconsolidation of Tradegate Exchange GmbH and its subsidiary Börse Berlin AG, which resulted in other operating income of €12.5 million. Other effects resulted from exchange rate differences of €7.8 million (2021: €4.5 million), income from management services of €0.8 million (2021: €1.9 million), income from written-off receivables of €2.9 million (2021: €1.3 million) and rental income from subleases (income from operating leases) of €0.7 million (2021: €0.8 million).

6. Staff costs

Composition of staff costs

	2022 €m	2021 €m
Wages and salaries	1,012.0	827.2
Social security contributions, retirement and other benefits	200.7	174.9
Total	**1,212.7**	**1,002.1**

Wages and salaries comprise costs associated with the efficiency programme of €25.4 million (2021: €36.4 million).

7. Other operating expenses

Composition of other operating expenses

	2022 €m	2021 €m
Costs for IT service providers and other consulting services	206.1	196.6
IT costs	166.3	152.7
Non-recoverable input tax	68.1	59.7
Premises expenses	41.1	37.4
Insurance premiums, contributions and fees	26.1	29.1
Advertising and marketing costs	26.5	15.9
Travel, entertainment and corporate hospitality expenses	18.4	4.3
Cost of exchange rate differences	11.0	4.6
Voluntary social benefits	8.7	5.3
Supervisory Board remuneration	5.1	4.6
Short-term leases	3.0	2.9
Miscellaneous	29.1	36.5
Total	**609.5**	**549.5**

The costs of IT service providers and other consulting services relate mainly to expenses in connection with software development. These costs also include expenses for strategic consultancy and legal advice, as well as for auditing.

Composition of fees paid to the auditor

€m	2022 PwC network	2022 thereof PwC GmbH	2021 PwC network	2021 thereof PwC GmbH
	€m	€m	€m	€m
Statutory audit services	9.2	6.0	6.8	4.1
Other assurance or valuation services	1.3	0.5	0.6	0.2
Tax advisory services	0	0	0.4	0.2
Other services	0.1	0.1	0	0
Total	**10.6**	**6.6**	**7.8**	**4.5**

Fees paid for "statutory audit services" rendered by PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft (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 mainly relate to statutory or contractual audits of internal systems and controls, the voluntary substantive audit of the remuneration report and the issuance of comfort letters. The fees for other services mainly relate to project-related consulting services.

8. 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

	2022 €m	2021 €m
Result of the equity method measurement of associates	6.8	38.6
Result of financial investments measured at fair value through profit or loss	2.1	53.0
Result of derivatives	2.5	– 4.4[1]
Result of hedge accounting	– 1.2	– 1.4
Total	**10.2**	**85.8[1]**

1) Previous year figures adjusted

In addition to the result of the equity valuation from associates, net income from associates also includes any impairment losses. In the reporting year, an impairment loss of €1.0 million was recognized (2021: €0.2 million), which is attributable to the investment of China Europe International Exchange AG.

For changes in financial investments see note 13.

9. 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. This item also includes valuation effects from interest rate derivatives, including interest rate hedges. In addition, this item contains valuation effects from foreign currency derivatives insofar as they are related to treasury activities in the non-banking business.

Composition of financial income

	2022 €m	2021 €m
Interest income from financial assets measured at amortised cost	8.6	5.1
Interest income from financial liabilities measured at amortised cost	2.9	2.2
Interest income from financial assets measured at fair value through profit or loss	0	0.1
Interest income from financial assets measured at fair value through other comprehensive income	0.1	0.1
Fair value gain on interest rate swaps designated as cash flow hedges - reclassification from OCI	4.8	0
Fair value gain on interest rate swaps designated as cash flow hedges - result from ineffectiveness	3.8	0
Fair value gain from foreign currency derivatives	14.4	1.8[1]
Interest income on tax refunds	2.5	24.2
Other interest income and similar income	0.5	1.2
Total	**37.6**	**34.7**[1]

Composition of financial expense

	2022 €m	2021 €m
Interest expense from financial liabilities measured at amortised cost	53.7	39.8
Transaction cost of financial liabilities measured at amortised cost	1.4	2.3
Interest expense from financial assets measured at amortised cost	3.0	1.2
Interest expense from lease liabilities	6.7	5.2
Fair value loss from foreign currency derivatives	9.5	2.5[1]
Interest expense on taxes	15.8	20.8
Expense of the unwinding of the discount on pension provisions	1.8	1.4
Other interest expense	9.3	2.2
Total	**101.2**	**75.4**[1]

1) Previous year's figures adjusted

10. Income tax expense

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 virtually certain 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 tax expense

	2022 €m	2021 €m
Current income tax expense/(-income)	**478.6**	**443.6**
for the current year	513.2	425.5
for previous years	– 34.6	18.1
Deferred income tax expense/(-income)	**64.7**	**– 0.1**
due to temporary differences	– 7.4	– 3.4
due to tax loss and interest carryforwards	14.9	6.3
due to changes in tax legislation and/or tax rates	7.2	– 1.0
for previous years	50.0	– 2.0
Total income tax expense	**543.3**	**443.5**

Allocation of income tax expense to Germany and foreign jurisdictions

	2022 €m	2021 €m
Current income tax expense/(-income)	**478.6**	**443.6**
Germany	276.3	313.4
Foreign jurisdictions	202.3	130.2
Deferred income tax expense/(-income)	**64.7**	**– 0.1**
Germany	62.3	– 3.7
Foreign jurisdictions	2.4	3.6
Total	**543.3**	**443.5**

Tax rates of 27.4 to 31.9 per cent (2021: 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 (2021: 11.6 to 16.1 per cent), corporate tax of 15 per cent (2021: 15 per cent) and the 5.5 per cent solidarity surcharge (2021: 5.5 per cent) on corporate tax.

For the Group companies in Luxembourg tax rates of 24.9 to 27.2 per cent (2021: 24.9 per cent) were used. Tax rates of 9.1 to 34.6 per cent (2021: 10.0 to 34.6 per cent) were applied to the Group companies in the remaining countries; see note 35.

Current income tax expense was reduced by €2.6 million in the reporting year by utilization of previously unrecognised tax loss carryforwards (2021: €1.2 million). Deferred tax income increased by €1.7 million due to previously unrecognised tax losses (2021: nil). As in the previous year, there were no effects resulting from changes of the write-down 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 and loss carryforward:

Composition of deferred taxes

	Deferred tax assets		Deferred tax liabilities	
	31 Dec 2022 €m	31 Dec 2021 €m	31 Dec 2022 €m	31 Dec 2021 €m
Intangible assets	**53.1**	**74.5**	**– 484.8**	**– 449.8**
Internally developed software	4.9	17.2	– 43.2	– 38.7
Other	48.2	57.3	– 441.6	– 411.1
Financial assets	4.9	1.5	– 33.2	– 31.0
Other assets	69.5	34.4	– 19.0	– 19.7
Provisions for pensions and other employee benefits	39.0	81.7	– 16.7	– 25.6
Other provisions	17.3	19.1	– 2.9	– 2.4
Liabilities	26.5	83.1	– 32.5	– 22.5
Tax loss and interest carryforwards	52.4	58.0	0	0
Deferred taxes (before netting)	**262.7**	**352.3**	**– 589.1**	**– 551.0**
thereof recognised in profit and loss	241.9	300.9	– 542.2	– 525.1
thereof recognised in other comprehensive income[1]	20.8	51.4	– 46.9	– 25.9
Deferred taxes set off	– 200.9	– 212.5	200.9	212.5
Total	**61.8**	**139.8**	**– 388.2**	**– 338.5**

1) See note 16 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 line with IAS 1 “Presentation of Financial Statements”.

At the end of the reporting period, unused tax losses for which no deferred tax assets were recognised amounted to €40.5 million (2021: €55.5 million). These unused tax losses are attributable to domestic losses totalling €0.2 million and to foreign tax losses totalling €40.3 million (2021: Germany €14.4 million, foreign tax losses €41.1 million).

In the United States, tax losses may be carried forward for a maximum period of 20 years, provided they were incurred before 1 January 2018. Losses that incurred after 31 December 2017 may be carried forward indefinitely, taking into account the minimum taxation rules. In Singapore, 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 (2021: nil).

Reconciliation from expected to reported income tax expense

	2022 €m	2021 €m
Earnings before tax (EBT)	2,106.5	1,709.3
Expected income tax expense	547.7	444.4
Effects of different tax rates	– 12.1	– 12.8
Effects of non-deductible expenses	21.4	14.0
Effects of tax-exempt income	– 23.9	– 3.4
Tax effects from loss carryforwards	– 3.8	0.3
Effects from changes in tax rates	7.2	– 1.0
Other	– 8.6	– 14.1
Income tax expense arising from current year	**527.9**	**427.4**
Income taxes for previous years	15.4	16.1
Income tax expense	**543.3**	**443.5**

To determine the expected income tax expense, earnings before tax have been multiplied by the composite tax rate of 26 per cent assumed for 2022 (2021: 26 per cent).

As at 31 December 2022, the reported income tax rate was 25.8 per cent (2021: 25.9 per cent).

Notes on the consolidated statement of financial position

11. 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 releases 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.

Stock exchange licences and certain brand names have an indefinite useful life. The intention is also to keep them as part of the general company strategy. Their useful lives are therefore assumed to be indefinite.

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 testing is carried out as of 1 October of each 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 CGU, 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 we monitor the respective goodwill. An impairment loss is recognised if the carrying amount of the CGU, 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 value less costs to sell was based on the discounted cash flow method (level 3 input factors). The detailed planning period generally covers a time period of five years; for (groups of) CGUs, which have been allocated an asset with an indefinite useful life, such a 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 based 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 2021	**315.7**	**1,223.1**	**3,957.7**	**141.8**	**1,452.3**	**7,090.6**
Acquisitions from 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	2.3	98.5	0	– 100.8	0	0
Reclassifications	– 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**
Acquisitions through business combinations	7.5	3.2	164.1	1.4	45.6	221.8
Adjustment of previous year Goodwill	0	0	– 3.9	0	0	– 3.9
Disposals from change in scope of consolidation	– 0.3	0	0	0	0	– 0.3
Additions	18.3	106.1	0	95.0	0.1	219.5
Disposals	– 14.7	0	0	0	0	– 14.7
Reclassifications	1.7	32.0	0	– 33.7	0	0
Exchange rate differences	11.1	3.2	157.4	– 0.1	69.6	241.2
Historical cost as at 31 Dec 2022	**440.0**	**1,536.5**	**5,913.7**	**178.2**	**2,300.0**	**10,368.4**
Amortisation and impairment losses as at 1 Jan 2021	**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
Reclass 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**
Amortisation	48.6	73.6	0	0	83.0	205.2
Impairment losses	0	16.2	0	4.2	0	20.4
Disposals from change in scope of consolidation	– 0.3	0	0	0	0	– 0.3
Disposals	– 14.6	0	0	0	0	– 14.6
Reclassifications	3.0	– 3.0	0	0	0	0
Exchange rate differences	1.5	1.1	0	0	3.3	5.9
Amortisation and impairment losses as at 31 Dec 2022	**269.7**	**1,111.6**	**0**	**19.7**	**357.4**	**1,758.4**
Carrying amount as at 31 Dec 2021	184.9	368.3	5,596.0	100.1	1,913.6	8,162.9
Carrying amount as at 31 Dec 2022	**170.3**	**424.9**	**5,913.7**	**158.5**	**1,942.6**	**8,610.0**

Material intangible assets with with finite useful lives

	Carrying amount as of		Remaining amortisation period as at	
	31 Dec 2022 €m	31 Dec 2021 €m	31 Dec 2022 years	31 Dec 2021 years
Customer Relationship ISS	474.3	435.7	20.2	21.2
Customer Relationship Clearstream Funds Centre	234.0	235.8	17.8	18.8
Customer Relationship 360T	159.5	169.6	15.8	16.8

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 software development environment. 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 2022 reporting year came to €274.5 million (2021: €202.8 million), of which €181.8 million were capitalised (2021: €128.7 million).

Impairment testing in 2022 revealed an impairment loss of €20.4 million (2021: €11.8 million). They are shown in the item "Depreciation, amortisation and impairment losses" and relate to the following assets:

- Due to the European Commission's Regulatory Fitness and Performance (REFIT) programme, the business operations of Eurex Securities Transactions Services GmbH (Eurex STS) were discontinued as of 30 June 2022. This lead to write-down of €6.5 million on internally developed software in the first quarter of 2022 (recoverable amount: negative) in the Trading & Clearing segment.

- An impairment loss of €4.2 million (recoverable amount: negative) was recognised in the third quarter of 2022 for SAP BRIM. The Deutsche Börse Group decided to use SAP S/4HANA and not SAP BRIM as originally planned for the external invoicing and reporting.

- Another impairment loss of €0.7 million (recoverable amount: negative) was recognised in the third quarter of 2022 on the first release of iSTUDIO. A new platform will replace the functions of iSTUDIO Release I and Release I will no longer be used as a result.

- Another write-down of €5.5 million (recoverable amount: negative) was recognised in the fourth quarter of 2022 for the Issuer CSD unit in the Securities Services segment. Changes made by the European Central Bank (ECB) to the central connection interface for the Eurosystem Single Market Infrastructure Gateway (ESMIG) and the Central Securities Depositories (CSD) have to be adopted by the T2S system, which means that earlier T2S versions can no longer be used.

- Another write-down of €3.5 million (recoverable amount: negative) was recognised in the fourth quarter of 2022 for the asset One Clearstream Settlement Reporting (1CSR) in the European Custody unit of the Securities Services segment. Strategic decisions and changes to the processes for settlement reporting mean that there is no further use for 1CSR.

An unscheduled quantitative impairment test carried out at the end of the first half of the year, in particular due to an increase in the cost of capital, did not identify any impairment within the meaning of IAS 36.

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	Summe €m
Balance as at 1 Jan 2021	**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**
Acquisitions through business combinations	0	7.0	0	0	0	157.1	0	0	**164.1**
Adjustment of previous year Goodwill	0	0	0	2.2	0	0	0	– 6.1	**– 3.9**
Exchange rate differences	3.7	3.4	3.4	2.9	0.8	26.1	40.1	77.0	**157.5**
Balance as at 31 Dec 2022	**1,382.3**	**130.6**	**248.0**	**67.0**	**1,126.7**	**767.9**	**731.3**	**1,459.8**	**5,913.7**

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 2021	**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**
Acquisitions through business combinations	0	15.2	30.4	0	45.6
Additions	0	0	0	0.1	0.1
Amortisation	0	– 2.1	– 79.4	– 1.5	– 83.0
Exchange rate differences	1.5	11.6	53.2	0	66.3
Reclassifications	0	0	0	0	0
Balance as at 31 Dec 2022	**25.7**	**673.1**	**1,241.3**	**2.6**	**1,942.6**

Key assumptions used for impairment tests in 2022

(Group of) CGUs	Allocated book value €m	Risk-free interest rate %	Market risk premium %	Discount rate %	Perpetuity growth rate %	CAGR[1)] Net revenue %	CAGR[1)] Operating costs %
Goodwill							
ISS	1,580.5	3.5	5.5	9.0	2.3	9.0	5.2
Eurex	1,388.0	1.5	7.3	6.8	1.5	7.1	3.6
Clearstream	1,128.0	1.5	7.3	6.5	1.0	6.6	3.5
Qontigo	791.7	1.5	7.3	8.6	2.0	9.0	8.4
IFS	791.6	1.5	7.3	7.5	2.0	8.6	7.5
360T	253.0	1.5	7.3	6.5	1.5	9.5	7.7
EEX	135.8	1.5	7.3	7.1	1.5	7.8	5.4
Xetra	68.8	1.5	7.3	6.8	1.0	3.1	4.8
Trade names and exchange licences							
STOXX	420.0	1.5	7.3	8.6	2.0	7.9	9.6
ISS Core	137.8	3.5	5.5	9.0	2.3	9.0	5.2
Axioma	73.3	3.5	5.5	8.9	2.0	11.4	6.8
Nodal	32.6	3.5	5.5	7.8	1.5	20.0	10.8
360T Core	19.9	1.5	7.3	6.5	1.5	9.5	8.0
EEX Core	14.9	1.5	7.3	7.1	1.5	6.4	4.7
Kneip	11.9	1.5	7.3	6.8	2.0	21.1	9.3
Crypto Finance/ Digital Assets	2.8	1.5	7.3	15.9	2.0	39.1	10.8
360TGTX	2.0	3.2	5.5	6.9	1.5	9.3	4.7

1) CAGR = compound annual growth rate of detailed planning period including start base for terminal value

Even in case of a reasonably possible change of the parameters, none of the above-mentioned CGUs or groups of CGUs with the exception of CGU ISS and CGU Crypto Finance/Digital Assets, would be impaired.

At CGU ISS, the recoverable amount exceeds the carrying amount in the annual impairment test by €442.2 million. A reduction in the annual growth rate of net revenues to 8.2 percent or an increase of the discount rate by 1.0 percent would result in the recoverable amount being lower to the carrying amount.

At CGU Crypto Finance/Digital Assets, the recoverable amount exceeds the carrying amount in the annual impairment test by €11.0 million. A reduction in the annual growth rate of the net revenue to 38.4 percent would result in the recoverable amount being lower to the carrying amount.

Key assumptions used for impairment tests in 2021

						CAGR[1]	
	Book value €m	Risk-free interest rate %	Market risk premium %	Discount rate %	Perpetuity growth rate %	Net revenue %	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 of detailed planning period including start base for terminal value

12. 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. The 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 include mainly 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 measure 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	Purchased	Total		
	€m	€m	€m	€m	€m	€m	€m
Historical costs as at 1 Jan 2021	**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**
Acquisitions through business combinations	4.9	0	0.2	0.4	0.6	0	**5.5**
Disposals from change in scope of consolidation	0	0	0	– 0.4	– 0.4	0	**– 0.4**
Additions	52.2	5.3	5.5	88.7	94.2	10.2	**161.9**
Disposals	– 2.3	– 2.4	– 0.1	– 23.8	– 23.9	– 0.4	**– 29.0**
Reclassifications	9.1	– 5.4	0	– 2.1	– 2.1	– 1.6	**0**
Exchange rate differences	1.3	0.6	0.3	0.5	0.8	– 0.5	**2.2**
Historical costs as at 31 Dec 2022	**653.3**	**110.4**	**23.4**	**435.9**	**459.3**	**16.2**	**1,239.2**
Depreciation and impairment losses as at 1 Jan 2021	**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**
Impairment losses	0	0	0	0	0	0	**0**
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**
Amortisation	69.6	8.5	4.0	45.9	49.9	0	**128.0**
Impairment losses	0.7	0	0	0	0	0	**0.7**
Disposals from change in scope of consolidation	0	0	0	– 0.4	– 0.4	0	**– 0.4**
Disposals	– 1.0	– 0.9	– 0.1	– 23.3	– 23.4	0	**– 25.3**
Reclassifications	– 2.4	2.4	0	0	0	0	**0**
Exchange rate differences	**– 0.7**	**– 0.2**	**0.3**	**0.2**	**0.5**	**0**	**– 0.4**
Carrying amount as at 31 Dec 2021	**438.0**	**57.0**	**5.8**	**84.4**	**90.1**	**8.5**	**593.7**
Carrying amount as at 31 Dec 2022	**437.0**	**45.3**	**7.5**	**125.2**	**132.7**	**16.2**	**631.2**

The weighted average remaining term of leases is 13.5 years.

The remaining term of the material sublease is of indefinite duration. Both parties can terminate the lease by giving notice of 6 months.

In the financial year 2022, there was an impairment of right-of-use assets for land and buildings in the segment Data & Analytics in the amount of €0.7 million because the buildings will no longer be used for the remaining term.

For details regarding the corresponding lease liabilities, please see note 13.

13. 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 net income from financial investments.

Impairment
For debt instruments carried at amortized cost and at fair value through other comprehensive income or balances on nostro accounts for which the simplified impairment model is not applied, impairment losses for expected credit losses are generally determined using the three-stage impairment model of 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 twelve months 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, at the balance sheet date, there is an absolutely low credit risk for debt instruments measured at amortized cost and at fair value through other comprehensive income or for balances on nostro accounts for which the simplified impairment model is not applied, these remain in Stage 1 even if the default risk increases.

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 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. Subsequent measurement recognises through profit or loss the effect on present value of accrued interest on the financial obligation and all measurement changes in the obligations. 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 25. 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 the reporting year, like in previous year, 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. The cash flow hedge entered that we entered into last year to hedge the interest rate change risk of of a a highly probable securities was terminated in the course of the bond issuance.

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. Ineffectiveness from interest rate hedges is recognised either in the treasury result from banking and similar transactions or in the financial result. 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 serves 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.
- For foreign currency hedging transactions, the reclassified amounts are reported either in treasury income from banking and similar transactions or in net income from financial investments. For interest rate hedges, the amounts are reported in treasury income from banking and similar business or in financial result.

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.

Composition of financial assets measured at fair value through other comprehensive income

	2022 €m	2021 €m
Strategic investments	182.8	224.3
Listed debt instruments	0	4.3
Total	**182.8**	**228.6**

None of these financial assets was pledged as collateral. A listed debt instrument of €3.0 million was derecognised in 2022 in the course of deconsolidating Börse Berlin AG.

Amounts recognised in other comprehensive income

	2022 €m	2021 €m
Gains/(losses) recognised in other comprehensive income		
Strategic investments	– 37.1	49.7
Debt instruments	– 0.3[1]	0.1
Total	**– 37.4**	**49.8**

1) Of which €0 million (2021: <€0.1 million) are attributable to non-controlling interests..

Financial assets and liabilities measured at amortised cost

Composition of financial assets at amortised cost

	31 Dec 2022			31 Dec 2021		
	Non-current €m	Current €m	Total €m	Non-current €m	Current €m	Total €m
Trade Receivables	**0**	**2,289.2**	**2,289.2**	**0**	**969.4**	**969.4**
of which expected losses	0	– 6.3	– 6.3	0	– 8.8	– 8.8
Other financial assets measured at amortised costs	**1,894.7**	**18,876.1**	**20,770.8**	**1,634.7**	**15,799.6**	**17,434.4**
Fixed income securities	1,782.1	522.9	2,305.0	1,528.8	396.1	1,924.9
Reverse repo transactions	0	5,613.9	5,613.9	0	4,274.3	4,274.3
Balances on nostro accounts	0	817.2	817.2	0	1,905.4	1,905.4
Money market lendings	0	10,499.9	10,499.9	0	7,440.3	7,440.3
Customer overdrafts from settlement business	0	131.6	131.6	0	531.6	531.6
Receivables from CCP balances	0	1,076.6	1,076.6	0	1,189.3	1,189.3
Margin calls	0	158.9	158.9	0	6.7	6.7
Other	112.7	55.2	167.9	105.9	55.9	161.8
of which expected losses	– 0.4	– 0.0	– 0.4	– 0.4	– 0.0	– 0.4
Restricted bank balances	**0**	**93,538.3**	**93,538.3**	**0**	**78,542.0**	**78,542.0**
Cash and other bank balances	**0**	**1,275.6**	**1,275.6**	**0**	**1,029.6**	**1,029.6**
Total	1,894.7	115,979.2	117,873.9	1,634.7	96,340.7	97,975.4

Debt securities amounting to €471.8 million expired in 2022 (2021: €218.9 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 rating of at least AA– are accepted as collateral for the reverse repurchase agreements.

Composition of financial liabilities at amortised cost

	31 Dec 2022			31 Dec 2021		
	Non-current €m	Current €m	Total €m	Non-current €m	Current €m	Total €m
Trade payables	**0**	**2,041.3**	**2,041.3**	**0**	**704.4**	**704.4**
Other iabilities at amortised costs	**4,535.0**	**17,671.6**	**22,206.6**	**3,539.9**	**15,914.3**	**19,454.2**
Bonds issued	4,123.4	0	4,123.4	3,037.3	599.4	3,636.7
Deposits from securities settlement business	0	15,710.2	15,710.2	0	12,177.2	12,177.2
Money market borrowings	0	134.8	134.8	0	574.4	574.4
Commercial Papers issued	0	564.5	564.5	0	1,551.8	1,551.8
Liabilities from CCP balances	0	1,021.5	1,021.5	0	733.1	733.1
Leasing liabilities	410.7	70.8	481.5	423.1	63.6	486.7
Bank overdrafts	0	53.2	53.2	0	74.5	74.5
Other	0.9	116.6	117.5	79.5	140.3	219.8
Cash deposits from market participants	**0**	**93,283.1**	**93,283.1**	**0**	**78,292.5**	**78,292.5**
Total	**4,535.0**	**112,996.0**	**117,531.0**	**3,539.9**	**94,911.2**	**98,451.1**

Deutsche Börse AG issued two corporate bonds in the financial year 2022. One of these was a hybrid bond in the amount of €500 million, the proceeds of which will be used to refinance corporate transactions of the past year. The hybrid bond has a maturity of 26.24 years with an optional call date after six years and an annual interest rate of 2.0 per cent. The other corporate bond with a nominal volume of €600 million will serve to refinance a corporate bond maturing in October 2022. This bond has a term of ten years and an annual interest rate of 1.5 per cent.

The financial liabilities recognised on the balance sheet were not secured by liens or similar rights as at 31 December 2022 or as at 31 December 2021.

Cash deposits by market participants

Composition of cash deposits by market participants

	31 Dec 2022 €m	31 Dec 2021 €m
Liabilities from margin payments		
Liabilities from margin payments to Eurex Clearing AG by clearing members	56,127.2	34,444.5
Liabilities from margin payments to European Commodity Clearing AG by clearing members	34,750.0	42,567.5
Liabilities from margin payments to Nodal Clear, LLC by clearing members	2,405.5	1,280.1
Liabilities from margin payments to European Energy Exchange AG by trading members	0.4	0.4
Total	**93,283.1**	**78,292.5**

Financial assets and liabilities measured at fair value through profit or loss

Financial instruments of the central counterparties

Die 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) and certain exchange transactions in equities on Frankfurter Wertpapierbörse (FWB, the Frankfurt Stock Exchange) and certain cash market transactions on the Irish 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, Eurex Bonds, Eurex Repo, the Frankfurt Stock Exchange and the Irish Stock Exchange. 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 house in accordance with the rules set out in the contract specifications.

Composition of financial instruments held by central counterparties

	31 Dec 2022 €m	31 Dec 2021 €m
Repo transactions	109,687.8	82,264.9
Options	29,323.4	30,373.2
Total	**139,011.2**	**112,638.1**
thereof non-current	9,078.4	9,442.4
thereof current	129,932.8	103,195.7

Receivables and liabilities that may be offset against a clearing member are reported on a net basis. Financial liabilities of €364,0 million (31 December 2021: €128.0 million) were eliminated because of intra-Group GC Pooling transactions. There was no elimination of financial assets in fiscal year 2022 (31. December 2020: €200 million).

Other financial assets and liabilities at FVPL

Other financial assets and liabilities measured at fair value through profit or loss

	31 Dec 2022			31 Dec 2021		
	Non-current €m	Current €m	Total €m	Non-current €m	Current €m	Total €m
Derivatives	**0.9**	**14.8**	**15.7**	**10.1**	**102.0**	**112.2**
Forward exchange transactions designated as cash flow hedges	0	5.4	5.4	0	0.2	0.2
Interest rate swaps designated as cash flow hedges	0	0	0	0	11.6	11.6
Foreign currency derivatives not designated as hedges	0	9.3	9.3	0	90.2	90.2
Other derivatives not designated in hedging relationships	0.9	0.1	1.0	10.1	0	10.1
Other financial assets	**165.9**	**1.0**	**167.0**	**146.0**	**14.0**	**160.0**
Strategic investments	94.3	0	94.3	74.6	0	74.6
Fund units and other financial instruments	71.7	1.0	72.7	71.4	0	71.4
Contingent consideration	0	0	0	0	14.0	14.0
Total assets	**166.8**	**15.8**	**182.6**	**156.2**	**116.0**	**272.2**
Derivatives	**26.8**	**119.0**	**145.8**	**6.9**	**4.2**	**11.1**
Forward exchange transactions designated as cash flow hedges	26.8	0	26.8	**6.9**	**2.1**	**9.0**
Foreign currency derivatives not designated as hedges	0	119.0	119.0	0	2.1	2.1
Other financial liabilities	**6.1**	**0.3**	**6.4**	**1.5**	**0.6**	**2.1**
Contingent consideration	6.1	0.3	6.4	1.5	0.6	2.1
Total liabilities	**32.9**	**119.3**	**152.2**	**8.4**	**4.7**	**13.1**

As at 31 December 2022 there were foreign currency derivatives not designated in hedges with a term of less than six months with a nominal amount of € 5,552.3 million (31 December 2021: €3,419.2 million with a term of less than eight months). Thereof €1,554.6 million (31 December 2021: €2,359.1 million) is attributable to derivatives with a positive fair value and thereof €3,997.7 million (31 December 2021: €1,060.1 million) is attributable to derivatives with a negative fair value. These foreign currency derivatives were entered into mainly in order to convert US dollar 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

	2022 €m	2021 €m
Net gain/(loss) from derivatives not designated as hedges	74.5	15.6
Net gain/(loss) from cash flow hedges	– 1.1	– 1.4
Net gain/(loss) from cash flow IRS hedges	3.8	0
Net gain/(loss) from other financial assets measured at fair value through profit or loss	– 4.9	59.1
Distributions from fund units	11.4	0.3
Net gain/(loss) from other financial liabilities measured at fair value through profit or loss	– 4.6	1.4
Total	**79.1**	**75.0**

Cash flow hedges that qualify for hedge accounting

We took out cash flow hedges in US dollars to hedge existing or future transactions. The hedged items covered by hedge accounting consist of internal Group loans and highly probable planned transactions.

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

	2022 €m	2021 €m
Hedging foreign currency risks		
Intra-group monetary foreign currency items	– 6.5	9.9
Planned transaktions	2.4	0
Planned acquisitions	0	– 0.2
Hedging interest rate risks		
Planned refinancings	0	– 11.7

The foreign exchange forwards designated as hedging instruments are for US dollars and are in the same currency as the internal foreign exchange transactions and the highly probable future transactions. The hedging ratio is therefore 1: 1. The foreign exchange hedging transactions in US dollars are due in 2023 and 2024.

Hedging transactions in cash flow hedges

	2022	2021
Currency risk		
Foreign exchange swaps and forward exchange contracts		
CHF		
Nominal amount in CHFm	–	56.3
Carrying amount in €m	–	– 2.3
Hedge rate for hedging instruments	–	1.08
USD		
Nominal amount in million USDm	496.8	340.8
Positive carrying amount in €m	5.4	
Negative carrying amount in €m	– 26.8	– 7.4
Weighted average hedge rate for hedging instruments	1.1	1.16
AUD		
Nominal amount in AUDm	–	16.0
Carrying amount in €m	–	0.2
Hedge rate for hedging instruments	–	1.56
Interest rate risk		
Interest rate swaps		
Nominal amount €m	–	600.0
Carrying amount €m	–	11.6
Weighted average hedge rate for hedging instruments	–	0.1

Interest rate hedging transactions with a notional value of €600.0 million and foreign exchange hedging transactions with a notional value of CHF 56.3 million and AU$ 16.0 million expired in 2022.

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 hedeges interest rate swaps €m	Total €m
Balance as at 1 Jan 2021	**– 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 other comprehensive income	– 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**
Change in fair value of hedging instruments recognised in OCI	0	2.2	– 12.1	51.6	**41.7**
Hedging costs deferred and recognised in other comprehensive income	– 2.0	0	0	0	**– 2.0**
Reclassification to profit or loss	3.6	3.2	12.1	– 4.8	**14.1**
Settlement	0	– 0.2	0	0	**– 0.2**
Balance as at 31 Dec 2022	**2.5**	**5.4**	**0**	**58.4**	**66.3**

The separate amount in the hedging reserve comprises the forward component of forward contracts. The separated costs relate to over-time hedged items in the form of loans to Group companies. The amounts in the reserve for cash flow hedges relating to interest rate swaps are reversed pro rata temporis until April 2032.

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 2022 €m	thereof attributable to: Level 1 €m	Level 2 €m	Level 3 €m
ASSETS				
Financial assets measured at fair value through other comprehensive income (FVOCI)				
Strategic investments	182.8	0	0	182.8
Total	**182.8**	**0**	**0**	**182.8**
Financial assets measured at fair value through profit or loss (FVPL)				
Non-current financial instruments held by central counterparties	9,078.4	0	9,078.4	0
Other non-current financial assets	166.9	10.9	0.0	156.0
Current financial instruments held by central counterparties	129,932.8	0	129,932.8	0
Other current financial assets	15.8	0	14.8	1.0
Total	**139,193.9**	**10.9**	**139,026.1**	**157.0**
Total assets	**139,376.7**	**10.9**	**139,026.1**	**339.8**
Financial liabilities measured at fair value through profit or loss (FVPL)				
Non-current financial instruments held by central counterparties	9,078.4	0	9,078.4	0
Other non-current financial liabilities	32.9	0	26.8	6.1
Current financial instruments held by central counterparties	129,568.8	0	129,568.8	0
Other current financial liabilities at FVPL	119.3	0	119.0	0.3
Total liabilities	**138,799.5**	**0**	**138,793.0**	**6.4**

Fair value hierarchy previous year

	Fair value as at 31 Dec 2021 €m	thereof attributable to: Level 1 €m	Level 2 €m	Level 3 €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	0
Total	**228.6**	**4.3**	**0.0**	**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	0.0	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**	**112,740.3**	**377.4**
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	4.7	0	4.2	0.6
Total liabilities	**112,723.2**	**0**	**112,721.2**	**2.1**

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 is 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-Cashflow-Modell	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 2021	**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) recognized 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	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**
Acquisitions from business combinations	0	– 13.0	0	– 13.0
Additions	25.4	10.9	0	36.3
Disposals	– 7.3	– 3.7	0.3	– 10.7
Reclassifications	0	0	0	0
Unrealised capital gains recognised in profit or loss	– 8.1	– 10.2	– 4.7	– 23.0
Other operating income	0	0	0	0
Result from financial investments	– 8.1	– 10.2	– 4.7	– 23.0
Changes recognised in the revaluation surplus	– 37.1	0	0	– 37.1
Unrealised gains/(losses) from currency translation recognised in equity	5.6	0.0	0	5.6
Gains/(losses) recognised in equity	– 0.3	0	0	– 0.3
Balance as at 31 Dec 2022	**277.1**	**62.7**	**– 6.4**	**333.3**

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)	0.4	– 0.3
	Volatility(10% Change)	0.4	– 0.3
Financial liabilities			
Contingent consideration	Expected Value of Equity (10% Change)	9.3	– 11.4

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 €2,157.4 million (31 December 2021: €1,914.7 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 €3,635.3 million (31 December 2021: €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 2022 €m	31 Dec 2021 €m	31 Dec 2022 €m	31 Dec 2021 €m	31 Dec 2022 €m	31 Dec 2021 €m
Financial assets from repo transactions	163,774.7	126,856.4	– 54,086.9	– 44,591.5	109,687.8	82,264.9
Financial liabilities from repo transactions	– 163,410.7	– 126,928.4	54,086.9	44,591.5	– 109,323.8	– 82,336.9
Financial assets from options	96,580.1	108,810.4	– 67,256.7	– 78,437.2	29,323.4	30,373.2
Financial liabilities from options	– 96,580.1	– 108,810.4	67,256.7	78,437.2	– 29,323.4	– 30,373.2

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 the 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 €155,339.1 million as at the reporting date (2021: €109,657.0 million). Collateral totalling €182,104.6 million (2021: €126,842.0 million) was actually deposited.

Composition of collateral held by central counterparties

	31 Dec 2022 €m	31 Dec 2021 €m
Cash collateral (cash deposits)[1,3]	93,067.7	78,250.7
Securities and book-entry securities collateral[2,3]	89,036.9	48,591.2
Total	**182,104.6**	**126,842.0**

1) The amount includes the clearing fund totalling €7,580.5 million (2021: €5,943.5 million).
2) The amount includes the clearing fund totalling €2,481.6 million (2021: €2,995.7 million).
3) The collateral value is determined on the basis of the fair value less a haircut

14. Contract balances

The Group has recognised the following other contract assets and liabilities:

Contract balances

	31 Dec 2022 €m	31 Dec 2021 €m
Contract Costs		
Non-current contract costs	5.7	2.9
Current Contract costs	**8.5**	**1.2**
Total	**14.2**	**4.1**
Contract Liabilities		
Long-term contract liabilities	13.6	15.1
Short-term contract liabilities	172.0	136.3
Total	**185.6**	**151.4**

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 €5.2 million in 2022 (2021: €1.6 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 € 155.6 million included in contract liabilities as at 31 December 2022 (2021: €34.4 million) was recognised as revenue in 2022. The increase in contract liabilities mainly results from changes in the basis of consolidation amounting to €123.9 million resulting from the acquisition of Institutional Shareholder service Inc. 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 2022 for multi-year contracts that are not invoiced on a variable basis as performance obligations are satisfied is €179.8 million (2021: €148.3 million).We anticipate that €58.5 million (2021: €75.5 million) of the transaction price will be recognised as revenue in the next reporting period. The remaining €121.2 million will be recognised in subsequent financial years.

15. Other current assets

Composition of other current assets

	31 Dec 2022 €m	31 Dec 2021 €m
Other receivables from CCP transactions (commodities)	2,133.6	2,477.0
Prepaid expenses	127.9	93.0
Tax receivables (excluding income taxes)	26.1	47.8
Interest receivables on taxes	9.2	15.3
Crypto Assets	7.6	6.3
Miscellaneous	38.9	36.2
Total	**2,343.3**	**2,675.6**

The decrease in other current assets is mainly due to the decrease in other receivables from the CCP business in connection with physical commodity deliveries settled on the spot markets, which were subject to high volatility at year-end 2022. Other current liabilities also decreased correspondingly, see note 21. 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.

16. 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 authorisation 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[1]	19,000,000	18 May 2022	17 May 2027	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 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: The Executive Board is authorised, subject to the approval of the Supervisory Board, to exclude shareholders' pre-emptive rights to bonds with conversion or option rights to shares of 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. of the 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 2022 or 31 December 2021.

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 €m
Balance as at 1 Jan 2021 (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
Fair value measurement	1.3	0	0	0	0	1.3
Changes from share-based payments	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**
Changes from defined benefit obligations	0	0	0	131.6	0.8	132.4
Changes from share-based payments	2.7	0	0	0	0	2.7
Fair value measurement	0	– 37.5	53.7	0	0	16.2
Balance as at 31 Dec 2022 (gross)	**4.0**	**46.5**	**66.3**	**– 52.0**	**– 0.7**	**64.1**
Deferred taxes						
Balance as at 1 Jan 2021	**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**
Reversals	0	– 1.6	– 14.7	– 35.1	– 15.5[1]	– 66.9
Balance as at 31 Dec 2022	**0**	**– 23.9**	**– 18.1**	**15.7**	**– 15.1**	**– 41.4**
Balance as at 1 Jan 2021 (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**
Balance as at 31 Dec 2022 (net)	**4.0**	**22.6**	**48.2**	**– 36.3**	**– 15.8**	**22.7**

1) The amount includes a tax expense of € –15.3 million, which was recognised directly in equity.

Retained earnings

The "retained earnings" item includes exchange rate differences amounting to €357.9 million (2021: €148.4 million[1]).

17. 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 the Handelsgesetzbuch (HGB, the German Commercial Code), report net profit for the period of €875.1 million) (2021: €943.3 million) and equity of €4,229.9 million (2021: €3,919.9 million). In 2021, Deutsche Börse AG distributed €587.8 million (€0 per share) from distributable profit for the previous year.

Proposal on the appropriation of the unappropriated surplus

	31 Dec 2022 €m
Net profit for the period	875.1
Appropriation to other retained earnings in the annual financial statements	– 175.1
Unappropriated surplus	**700.0**
Proposal by the Executive Board:	
Distribution of a regular dividend to the shareholders of €3,60 per share for 183,738,945 no-par value shares carrying dividend rights	661.6
Appropriation to retained earnings	38.4

No-par value shares carrying dividend rights

	31 Dec 2022 Number	31 Dec 2021 Number
Number of shares issued as at 31 December	190,000,000	190,000,000
Number of treasury shares as at the reporting date	– 6,261,055	– 6,381,218
Number of shares outstanding as at 31 December	**183,738,945**	**183,618,782**

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 of the 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 €3.6 per eligible share, an amended resolution for the appropriation of distributable profit will be proposed to the Annual General Meeting.

18. 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 in accordance with IAS 19. 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 plan assets is deducted from the present value of pension obligations, reflecting the asset ceiling rules if there are any excess plan assets. This results in the net defined benefit liability or asset. 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 (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 2022 €m	Total 31 Dec 2021 €m
Present value of defined benefit obligations that are at least partially funded	377.5	59.5	63.7	500.7	663.1
Fair value of plan assets	– 375.7	– 60.2	– 57.9	– 493.8	– 533.1
Funded status	**1.8**	**– 0.7**	**5.8**	**6.9**	**130.0**
Present value of unfunded obligations	4.6	0.5	0	5.1	5.5
Net liability of defined benefit obligations	**6.4**	**– 0.2**	**5.8**	**12.0**	**135.5**
Amount recognised in the balance sheet	**6.4**	**– 0.2**	**5.8**	**12.0**	**135.5**

The defined benefit plans comprise a total of 4,527 beneficiaries (2021: 4,156). 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 2022 €m	Total 31 Dec 2021 €m
Eligible current employees	160.9	7.3	15.1	183.3	353.1
Former employees with vested entitlements	134.0	52.2	46.3	232.5	193.6
Pensioners or surviving dependants	87.2	0.5	2.3	90.0	121.9
	382.1	**60.0**	**63.7**	**505.8**	**668.6**

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 per centage 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	
	2022 €m	2021 €m	2022 €m	2021 €m	2022 €m	2021 €m
Balance as at 1 Jan	**668.6**	**672.2**	**– 533.1**	**– 464.4**	**135.5**	**207.8**
Current service cost	28.0	27.9	0	0	28.0	27.9
Interest expense/(income)	7.5	4.7	– 6.1	– 3.3	1.4	1.4
Past service cost	0	0	0	0	0	0
	35.5	**32.6**	**– 6.1**	**– 3.3**	**29.4**	**29.3**
Remeasurements						
Return on plan assets, excluding amounts already recognised in interest income	0	0	55.1	– 20.2	55.1	– 20.2
Adjustments to demographic assumptions	0	– 2.3	0	0	0	– 2.3
Adjustments to financial assumptions	– 194.0	– 38.0	0	0	– 194.0	– 38.0
Experience adjustments	6.1	– 0.9	0	0	6.1	– 0.9
	– 187.9	**– 41.2**	**55.1**	**– 20.2**	**– 132.8**	**– 61.4**
Effect of exchange rate differences	2.7	2.7	– 2.3	– 1.6	0.4	1.1
Contributions:						
Employers	0	0	– 21.1	– 42.9	– 21.1	– 42.9
Plan participants	2.3	1.4	– 2.3	– 1.4	0	0.0
Benefit payments	– 14.7	– 8.7	14.7	8.7	0.0	0.0
Tax and administration costs	– 0.5	– 0.7	0	1.3	– 0.5	0.6
Reclassification to Held for Sale	0	– 0.6	0.6	0.3	0.6	– 0.3
Changes in the basis of consolidation	– 0.1	11.0	0.5	– 9.8	0.4	1.2
Balance as at 31 Dec	**505.8**	**668.6**	**– 493.8**	**– 533.1**	**12.0**	**135.5**

In 2022 financial year, employees converted a total of €5.8 million (2021: €5.0 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 2022		31 Dec 2021	
	Germany %	Luxembourg %	Germany %	Luxembourg %
Discount rate	3.73	3.73	1.10	1.10
Salary growth	3.00	3.50	3.00	3.30
Pension growth	2.20	n.a.	2.00	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 the 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 to change in the weighted principal assumptions

	Change in actuarial assumption	Effect on defined benefit obligation			
		2022		2021	
		defined benefit obligation €m	Change %	defined benefit obligation €m	Change %
Present value of the obligation		442.1	–	603.1	–
Discount rate	Increase by 1.0 percentage point	393.1	– 11.1	519.2	– 13.9
	Reduction by 1.0 percentage point	502.4	13.6	707.9	17.4
Salary growth	Increase by 0.5 percentage points	448.5	1.4	613.5	1.7
	Reduction by 0.5 percentage points	436.9	– 1.2	593.4	– 1.6
Pension growth	Increase by 0.5 percentage points	449.4	1.7	615.3	2.0
	Reduction by 0.5 percentage points	434.9	– 1.6	591.4	– 1.9
Life expectancy	Increase by one year	451.2	2.1	621.0	3.0
	Reduction by one year	432.3	– 2.2	584.6	– 3.1

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 2022		31 Dec 2021	
	€m	%	€m	%
Bonds	**400.1**	**81.0**	**402.9**	**75.6**
Government bonds	301.0		241.2	
Multilateral development banks	82.4		144.4	
Corporate bonds	16.7		17.3	
Derivatives	**– 0.2**	**– 0.0**	**2.8**	**0.5**
Stock index futures	– 0.1		3.0	
Interest rate futures	– 0.1		– 0.2	
Investment funds	**30.0**	**6.1**	**31.2**	**5.9**
Total listed	**430.0**	**87.1**	**436.9**	**82.0**
Qualifying insurance policies	42.9	8.7	42.8	8.0
Cash	20.9	4.2	53.3	10.0
Total not listed	**63.8**	**12.9**	**96.2**	**18.0**
Total plan assets	**493.8**	**100.0**	**533.1**	**100.0**

As at 31 December 2022 the plan assets did not include any financial instruments of the Group (2021: 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 2022 is 12.7 years (2021: 15.6 years).

Expected maturities of undiscounted pension payments

	Expected pension payments[1]	
	31 Dec 2022 €m	31 Dec 2021 €m
Less than 1 year	14.5	16.7
Between 1 and 2 years	16.3	13.5
Between 2 and 5 years	69.7	57.0
Between 5 and 10 years	173.7	161.6
Total	**274.2**	**248.8**

1) The expected payments in Swiss francs were translated into euros at the relevant closing rate on 31 December.

The expected service cost of defined benefit plans (excluding service cost for deferred compensation) amount to approximately €10.9 million for the 2023 financial year, plus €0.3 million 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 €54.6 million (2021: €43.5 million).

Multi-employer plans

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 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 €10.1 million (2021: €10.3 million). In 2023 we expect to make contributions to multi-employer plans amounting to around €10.0 million.

Composition of other current liabilities

Other long-term employee benefits

	31 Dec 2022 €m	31 Dec 2021 €m
Pensions obligations (IHK)	7.9	7.7
Jubilee	3.9	6.0
Total	**11.8**	**13.7**

The debt from partial retirement contracts is shown in the position other current assets due to the fact that the dedicated plan asset exceeds the liability.

19. Share-based payment

Deutsche Börse Group operates the Group Share Plan (GSP), the Stock Bonus Plan (SBP), 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 2022 Number	Deutsche Börse AG share price at 31 Dec 2022 €	Intrinsic value/ option at 31 Dec 2022 €	Fair value/ option at 31 Dec 2022 €	Settlement obligation €m	Current provision at 31 Dec 2022 €m	Non-current provision at 31 Dec 2022 €m
2018	0	161.40	147.45	147.45	0.0	0.0	0.0
2019	6,130	161.40	161.40	154.94	1.0	1.0	0.0
2020	7,466	161.40	161.40	113.92	0.9	0.0	0.9
2021	9,977	161.40	161.40	74.46	0.7	0.0	0.7
2022	11,303	161.40	161.40	36.50	0.4	0.0	0.4
Total	**34,876**				**3.0**	**1.0**	**2.0**

Average price of the exercised and forfeited share options

Tranche	Average price of the exercised share options €	Average price of the forfeited share options €
2018	147.45	145.23
2019	166.20	130.90
2020	166.20	97.07
2021	n.a.	73.29

The stock options from the 2018 SBP tranche were exercised in the reporting period following the expiration of the waiting period. Shares of the SBP tranches 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 2022 (31 December 2021: €3.0 million). The total expense for SBP stock options in the reporting period amounted to €1.5 million (2021: €1.3 million).

Change in number of SBP shares allocated

	Balance at 31 Dec 2021	Additions/ (disposals) tranche 2018	Additions/ (disposals) tranche 2019	Additions/ (disposals) tranche 2020	Additions/ (disposals) tranche 2021	Additions/ (disposals) tranche 2022	Fully settled cash options	Options forfeited	Balance at 31 Dec 2022
To other senior executives	34,512	0	172	256	447	11,303	-10,447	-1,367	34,876
Total	**34,512**	**0**	**172**	**256**	**447**	**11,303**	**– 10,447**	**– 1,367**	**34,876**

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 2017 tranche 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 tranches 2018 to 2022 is based on the closing auction price of Deutsche Börse shares as at the disbursement date of the cash component of the 2022 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 2017 tranche 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 tranches 2018 to 2022 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 2016 to 2020 were paid out with a relevant payout share price of €141.35 for shares of tranches 2016 to 2017. For shares of tranches 2018 to 2020 the relevant payout share price was € 156.30. 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)

Similar to 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 2017 were paid out with a relevant payout share price of €141.35.

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 2022 Number	Deutsche Börse AG share price as at 31 Dec 2022 €	Intrinsic value/ option as at 31 Dec 2022 €	Fair value/ option as at 31 Dec 2022 €	Settlement obligation €m	Current provision as at 31 Dec 2022 €m	Non-current provision as at 31 Dec 2022 €m
2017	1,847	161.40	161.40	168.05	0.3	0.3	0.0
2018	45,471	161.40	161.40	155.12-161.40	7.3	5.6	1.7
2019	36,408	161.40	161.40	146.25-161.40	5.7	0.6	5.1
2020	30,855	161.40	161.40	143.43-161.40	4.8	0.5	4.3
2021	46,193	161.40	161.40	139.00-161.40	7.1	2.0	5.2
2022	58,835	161.40	161.40	139.00-158.22	8.9	0.0	8.9
Total	**219,609**				**34.1**	**9.0**	**25.2**

Provisions amounting to € 34.1 million were recognised as at 31 December 2022 (31 December 2021: €32.2 million). The total expense for LSI/RSU stock options in the reporting period amounted to €11.3 million(31 December 2021: €9.5 million).

Change in number of LSI and RSU shares allocated

	Balance at 31 Dec 2021	Additions/ (Disposals) Tranche 2017	Additions/ (Disposals) Tranche 2018	Additions/ (Disposals) Tranche 2019	Additions/ (Disposals) Tranche 2020	Additions/ (Disposals) Tranche 2021	Additions/ (Disposal s) Tranche 2022	Fully settled cash options	Balance at 31 Dec 2022
To other senior executives	226,085	1,847	–	–	–945	–1,831	58,835	–64,382	219,609
Total	**226,085**	**1,847**	**–**	**–**	**–945**	**–1,831**	**58,835**	**–64,382**	**219,609**

Performance Share Plan (PSP)

Performance Share Plan (PSP)

The PSP was launched in the 2016 financial year 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 is 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 the overall target achievement. For the 2021 and 2022 tranches 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 is 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 (Xetra closing price) of Deutsche Börse AG's shares 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 2017 were paid out with a relevant payout share price of € 154.75. Settlement is in cash and with the exception of the 2021 and 2022 tranches the transaction is measured and recognised as cash-settled share-based remuneration. Because of its specific contractual conditions the 2021 and 2022 tranches are treated as a settlement with equity instruments.

Evaluation of 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 PSP shares

		Tranche 2022	Tranche 2021	Tranche 2020	Tranche 2019	Tranche 2018	Tranche 2017
Term to		31 Dec 2026	31 Dec 2025	31 Dec 2024	31 Dec 2023	31 Dec.2022	31 Dec 2021
Relative total shareholder return	%	100.00	100.00	115.00	175.00	250.00	235.00
Net profit for the period attributable to Deutsche Börse AG shareholders	%	n.a.	n.a.	145.84	147.06	170.39	142.65-152.89
Growth rate Earnings per Share	%	150.00	150.00	n.a.	n.a.	n.a.	n.a.
ESG-Target Achievement	%	150.00	175.00	n.a.	n.a.	n.a.	n.a.

Valuation of PSP shares

Tranche	**Balance as at 31 Dec 2022** Number	**Deutsche Börse AG share price as at 31 Dec 2022** €	**Intrinsic value/ option as at 31 Dec 2022** €	**Fair value/ option as at 31 Dec 2022** €	**Settlement obligation** €m	**Current provision as at 31 Dec 2022** €m	**Non-current provision as at 31 Dec 2022** €m
2016	5,026	161.40	152.18	152.18	0.8	0.8	0.0
2017	9,396	161.40	124.75 - 154.75	124.75 - 154.75	1.5	1.5	0.0
2018	145,719	161.40	131.60 - 182.30	131.60 - 182.30	26.6	26.6	0.0
2019	87,730	161.40	161.40	137.78	12.7	0.0	12.7
2020	49,755	161.40	161.40	101.74	5.4	0.0	5.4
2021 [1]	49,472	161.40	161.40	54.82	2.7	0.0	0.0
2022 [1]	48,386	161.40	161.40	29.36	1.4	0.0	0.0
Total	**395,484**				**51.1**	**28.9**	**18.1**

1) Due to the treatment of the 2021 ans 2022 tranches as equity-settled, no provisions are recognized for these tranches. The above figures also include the shares of the members of the Board of Management.

Provisions for the PSP amounting to €47.0 million were recognised at the reporting date 31 December 2022 (31 December 2021: €48.0 million). Of the provisions, €22.8 million were attributable to members of the Executive Board (2021: €13.8 million). The total expense for PSP stock options in the reporting period was €17.0 million (2021: €6.0 million). Of that amount, an expense of €13.1 million was attributable to members of the Executive Board (2021: €3.5 million).

Change in number of PSP shares allocated

	Balance at 31 Dec 2021	Additions/ (disposals) Tranche 2017	Additions/ (disposals) Tranche 2018	Additions/ (disposals) Tranche 2019	Additions/ (disposals) Tranche 2020	Additions/ (disposals) Tranche 2021	Additions/ (disposals) Tranche 2022	Fully settled cash options	Balance at 31 Dec 2022
To the Executive Board	308,109	709	11,796	27,471	21,567	1	35,494	- 87,023	318,124
To other senior executives	92,232	305	2,504	6,917	5,368	13	12,892	- 42,871	77,360
Total	**400,341**	**1,014**	**14,300**	**34,388**	**26,935**	**14**	**48,386**	**- 129,894**	**395,484**

1) Active and former Executive Board members.

Granting of PSP-Tranche 2022 for Board Members
At the beginning of fiscal year 2022 PSP-tranche 2022 was granted. The relevant grant share price for tranche 2022 shares was at € 141.35. The performance period of the 2022 PSP-tranche ends on 31 December 2026. 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 2022 €
Dr. Theodor Weimer	1,300,000	141.35	9,198	337,552
Dr. Christoph Böhm	560,000	141.35	3,962	145,420
Dr. Thomas Book	516,667	141.35	3,656	134,146
Heike Eckert	516,667	141.35	3,656	134,146
Dr. Stephan Leithner	560,000	141.35	3,962	145,420
Gregor Pottmeyer	560,000	141.35	3,962	145,420
Total	**4,013,334**			**1,042,104**

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 2022, 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 €6.3 million (2021: €4.8 million) was recognised in staff expense for the GSP.

Other relevant Share Based Payment programs 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 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 to which the payment of the beneficiaries of the MIP is linked. 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 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 MIP 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.

20. 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 2022	**154.1**	**85.4**	**76.9**	**56.2**
Changes in the basis of consolidation	– 0.9	0	0	0
Reclassification	– 5.4	– 0.3	0	– 0.4
Utilisation	– 249.6	– 32.5	– 0.5	– 17.5
Reversal	– 10.0	– 3.3	– 1.8	– 1.2
Additions	301.2	36.4	9.5	7.2
Currency translation	– 1.9	– 0.1	0	0
Interest	0	0	0	– 1.1
Balance as at 31 Dec 2022	**187.5**	**85.6**	**84.1**	**43.2**

Changes in other provisions (part 2)

	Other tax provisions €m	Anticipated Losses €m	Other personnel provisions €m	Miscellaneous €m
Balance as at 1 Jan 2022	**44.6**	**15.4**	**5.2**	**24.7**
Changes in the basis of consolidation	– 0.1	0	1.4	30.5
Reclassification	0.1	0	0	– 8.8
Utilisation	– 4.2	– 5.6	– 3.6	– 45.5
Reversal	– 3.0	– 1.6	– 0.5	– 1.5
Additions	8.3	0.1	2.3	40.5
Currency translation	0.9	0.1	0.1	– 0.2
Interest	0.0	0	0	0
Balance as at 31 Dec 2022	**46.6**	**8.4**	**4.9**	**39.7**

The other non-current and current provisions amount to a total of €500.0 million (31 December 2021: €462.5 million). The non-current provisions of €110.8 million (31 December 2021: €127.2 million) largely have a remaining term of one to five years. Furthermore current provisions exist for €389.2 million (31 December 2021: €335.3 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 19.

21. Other current liabilities

Composition of other current liabilities

	31 Dec 2022 €m	31 Dec 2021 €m
Other liabilities from CCP transactions (commodities)	2,148.6	2,527.6
Contract liability	172.0	136.3
Tax liabilities (excluding income taxes)	54.9	41.9
Vacation entitlements, flexitime and overtime credits	33.7	30.6
Social security liabilities	15.2	13.8
Liabilities to employees	13.7	11.4
Liabilities to supervisory bodies	3.4	3.3
Miscellaneous	13.9	23.7
Total	**2,455.4**	**2,788.6**

The decrease in other current liabilities is mainly due to the decrease in liabilities from the CCP business. These liabilities are not part of financial liabilities as there is no obligation to pay cash and cash equivalents, but an obligation to physically deliver raw materials.

Other disclosures

22. Notes on the consolidated cash flow statement

Composition of other non-cash income

	2022 €m	2021 €m
Subsequent measurement of non-derivative financial instruments	44.3	– 156.4
Reversal of discount and transaction costs from long-term financing	7.5	0.5
Equity method measurement	30.4	– 18.1
Impairment of financial instruments	– 2.5	– 0.4
Subsequent measurement of derivatives	14.7	19.4
Contract liabilities	17.4	– 3.9
Gains on the disposal of subsidiaries and equity investments	– 13.0	– 10.5
Miscellaneous	6.1	5.8
Total	**104.8**	**– 163.6**

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 2022 €m	31 Dec 2021 €m
Restricted bank balances	93,538.3	78,542.0
Other cash and bank balances	1,275.6	1,029.7
Net position of financial instruments held by central counterparties	364.0	– 72.0
Current financial instruments measured at amortised cost	18,876.1	15,799.7
less financial instruments with an original maturity exceeding 3 months	– 2,485.4	– 2,019.0
Current financial liabilities measured at amortised cost	– 17,671.5	– 15,914.3
less financial instruments with an original maturity exceeding 3 months	1,514.2	2,966.5
Current liabilities from cash deposits by market participants	– 93,283.2	– 78,292.5
Cash and cash equivalents	**2,128.2**	**2,040.0**

Changes in liabilities arising from financing activities

	Bonds issued €m	Leasing liabilities €m	Commercial papers €m
Balance as at 1 Jan 2021	**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	0.0	– 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**
Lease payments (IFRS 16)	0	– 75.9	0
Acquisition from business combinations	0	5.1	0
Additions	1,079.3	69.2	1,056.0
Disposals	0	– 18.4	0
Repayments	– 600.0	0	– 1,797.0
Other and exchange rate differences	0	14.8	0
Balance as at 31 Dec 2022	**4,115.4**	**481.5**	**60.0**

23. 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 slight dilutive effect during the reporting year up to the reporting date.

Calculation of earnings per share (basic and diluted)

	2022	2021
Number of shares outstanding at beginning of period	183,618,782	183,521,257
Number of shares outstanding at end of period	183,738,945	183,618,782
Weighted average number of shares outstanding	183,630,715	183,546,106
Number of potentially dilutive ordinary shares	354,805	368,326
Weighted average number of shares used to compute diluted earnings per share	183,985,520	183,914,432
Net profit for the period attributable to Deutsche Börse AG shareholders (€m)	1,494.4	1,209.7
Earnings per share (basic) (€)	8.14	6.59
Earnings per share (diluted) (€)	8.12	6.58

24. Segment reporting

Deutsche Börse Group divides its business into four segments: This structure serves as a basis for the Group's internal management and financial reporting. Detailed information about the segment structure, which are 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.

Segment reporting (part 1)

	Data & Analytics		Trading & Clearing	
	2022	2021	2022	2021
Net revenue (€m)	651.7	482.6	2,187.1	1,809.1
Operating costs (€m)	– 383.2	– 278.7	– 876.3	– 770.7
Result from financial investments	– 7.0	40.1	20.0	45.2
thereof result of the equity method measurement of entities	0	10.5	10.1	28.2
EBITDA (€m)	261.5	244.0	1,330.8	1,083.6
EBITDA margin (%)	40	51	61	60
Depreciation, amortisation and impairment losses (€m)	– 103.7	– 73.1	– 134.6	– 114.0
EBIT (€m)	157.8	170.9	1,196.2	969.6
Capital expenditure[1] (€m)	35.1	25.0	159.1	92.2
Employees (as at 31 December)	3,835	3,352	3,918	3,803

Segment reporting (part 2)

	Fund Services		Securities Services	
	2022	2021	2022	2021
Net revenue (€m)	375.9	382.4	1,122.9	835.4
Operating costs (€m)	– 171.5	– 125.9	– 391.2	– 376.3
Result from financial investments	– 0.6	– 0.6	– 2.2	0.5
thereof result of the equity method measurement of entities	– 0.6	– 0.5	– 2.7	0.4
EBITDA (€m)	203.8	255.9	729.5	459.6
EBITDA margin (%)	54	67	65	55
Depreciation, amortisation and impairment losses (€m)	– 44.0	– 36.9	– 73.3	– 69.7
EBIT (€m)	159.8	219.0	656.2	389.9
Capital expenditure[1] (€m)	38.1	16.4	91.2	72.8
Employees (as at 31 December)	1,162	886	2,163	2,159

Segment reporting (part 3)

	Group	
	2022	2021
Net revenue (€m)	4,337.6	3,509.5
Operating costs (€m)	– 1,822.2	– 1,551.6
Result from financial investments	10.2	85.2
thereof result of the equity method measurement of entities	6.8	38.6
EBITDA (€m)	2,525.6	2,043.1
EBITDA margin (%)	58	58
Depreciation, amortisation and impairment losses (€m)	– 355.6	– 293.7
EBIT (€m)	2,170.0	1,749.4
Capital expenditure[1] (€m)	323.5	206.4
Employees (as at 31 December)	11,078	10,200

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 have an adverse effect on revenue by the same amount on the corresponding partner segment. For an overview of intercompany revenue see note 5. 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 zone, the rest of 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 e.g. 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	
	2022 €m	2021 €m	2022 €m	2021 €m	2022 €m	2021 €m	2022	2021
Euro zone	2,543.2	2,358.5	281.1	177.7	4,396.2	4,199.1	5,702	5,464
Rest of Europe	1,315.0	1,201.0	8.7	4.2	1,367.9	1,339.4	1,984	1,792
America	640.3	472.1	32.8	24.3	3,552.5	3,279.2	1,273	1,209
Asia-Pacific	290.0	254.3	0.9	0.2	36.1	27.7	2,119	1,734
Total of all regions	**4,788.5**	**4,285.9**	**323.5**	**206.4**	**9,352.7**	**8,845.4**	**11,078**	**10,200**
Consolidation of internal net revenue	– 96.2	– 67.1	0	0	0	0	0	0
Group	**4,692.3**	**4,218.8**	**323.5**	**206.4**	**9,352.7**	**8,845.4**	**11,078**	**10,200**

1) Including countries in which more than 10 per cent of sales revenue was generated: UK (2022: €883.3 million, 2021: €807.1 million) and Germany (2022: €1,054.6 million,2021: €1,014.7 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 (2022: €3,701.1 million, 2021: €3,859.2 million), Switzerland (2022: €1,334.6 million, 2021: €1,307.0 million) and United States (2022: €3,552.5 million, 2021: €3,279.2 million).
4) These include intangible assets, property, plant and equipment as well as investments in associates and joint ventures.

25. 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 (please refer to the section "Financial risks" for detailed disclosures). 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 €544.0 million as at 31 December 2022, whereby €430.0 million stems from credit risk and €114.0 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 of financial instruments (part 1)

	Carrying amounts – maximum risk exposure		Collateral	
	31 Dec 2022 €m	31 Dec 2021 €m	31 Dec.2022 €m	31 Dec 2021 €m
Collateralised cash investments				
Reverse repo transactions	6,805.2	5,095.2	7,398.8	5,189.5
Uncollateralised cash investments				
Money market lendings – central banks	57,839.5	41,060.0	0	0
Money market lendings – other counterparties	270.9	388.1	0	0
Balances on nostro accounts and other bank deposits	46,829.0	46,648.2	0	0
Securities	2,305.3[2]	1,934.3[2]	0	0
Fund assets	68.2[3]	66.7[3]	0	0
	107,312.9	**90,097.3**	**0**	**0**
Loans for settling securities transactions				
Technical overdraft facilities	131.6	531.6	k.A.[4]	k.A.[4]
Automated Securities Fails Financing[5]	1,385.2[6]	885.7[6]	1,731.5	1,122.3
	1,516.8	**1,417.3**	**1,731.5**	**1,122.3**
Total	115,634.9	96,609.8	9,130.3	6,311.8

Credit risk of financial instruments (part 2)

	Carrying amounts – maximum risk exposure		Collateral	
	31 Dec 2022 €m	31 Dec 2021 €m	31 Dec 2022 €m	31 Dec 2021 €m
Balance brought forward	115,634.9	96,609.8	9,130.3	6,311.8
Other financial instruments				
Convertible notes	4.5	0	0	0
Other loans	106.7	100.5	106.7	100.5
Other assets	10.8	13.3	0	0
Trade receivables	2,295.7	978.2	0	0
Other receivables[7]	1,285.9	1,244.1	0	0
Other financial assets at fair value	0	14.0	0	0
	3,703.6	**2,350.1**	**106.7**	**100.5**
Financial instruments held by central counterparties	**155,339.1**[8]	**109,657.0**[8]	**182,104.6**[9]	**126,842.0**[9]
Derivatives	**15.7**	**112.1**	**0**	**0**
Total	**274,693.3**	**208,729.0**	**191,341.6**	**133,254.3**

1) Presented in the items "restricted bank balances" and "other cash and bank balances".
2) The amount includes collateral totalling €5.0 million (2021: €5.0 million)
3) The amount includes collateral totalling €8.0 million (2021: €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) This item mainly includes receivables from CCP business, margin calls and interest receivables.
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, whilst 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 and European Commodity Clearing AG mainly in EUR. These units invest the funds received in accordance with the treasury policy, which gives rise to a potential credit risk.

We mitigate such risks by investing short-term funds either – to the extent possible – on a secured basis, e.g. via reverse repurchase agreements, or by depositing them with central banks.

Collateral accepted under revese repo transactions mainly consists of highly liquid financial instruments with a minimum rating of AA– (Standard & Poor's/Fitch) or Aa3 (Moody's) issued or guaranteed by governments or supranational institutions.

Counterparty credit risk is monitored on the basis of an internal rating system. 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”.

The fair value of securities received under reverse repurchase agreements was €7,398.8 million (2021: €5,189.5 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 2022 Clearstream Banking S.A. had pledged securities with a value of €451.3 million (2021: €229.2 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 2022, the same as the previous year.

In addition, Clearstream Banking S.A., Clearstream Banking Frankfurt AG and Eurex Clearing AG used foreign exchange swaps as part of the cash investments.

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 2022 they came to 182.0 Mrd. € € 182.0 billion Of the total, € 7.3.0 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, amounted to €131.6 million as at 31 December 2022 (2021: €531.6 million); see note 12.

In addition, 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. This risk is secured by collateral pledged on borrower account. As at 31 December 2022 the outstanding loans under this programme amounted to €1,385.2 million (2021: €885.8 million). Collateral in connection with these loans amounted to €1,731.5 million (2021: €1,122.3 million).

In 2021 and 2022, no losses from credit transactions occurred in relation to any of the transaction types described.

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 2022 there were no contract assets (2021:nil).

Loss allowances for trade receivables as at 31 December 2022

	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%	0.2%	0.9%	2.1%	98.5%	100%	
Trade receivables	92.7	14.8	8.9	2.8	12.5	3.8	2.4	137.9
Loss allowance	0	0	0	0	0.3	3.6	2.4	6.3

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	0.7	6.1	1.9	8.8

- 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 (2021: nil).

In fiscal year 2022, receivables from the Russian National Settlement Depository (NSD) in the amount of €134.1 million were written off completely (see note 3).

Debt securities

All debt securities measured at amortised cost are considered to have low credit 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 2021	**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**	**7.9**	**9.2**
Increase from business combinations	0	0	– 0.1	– 0.1
Increase in the allowance recognised in profit or loss during the period	0.1	0	0.7	0.8
Decrease in the allowance recognised in profit or loss during the period	– 0.1	– 0.5	– 2.6	– 3.2
Closing loss allowance as at 31 December 2022	**0.4**	**0.3**	**6.0**	**6.7**

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 risk management.

Credit risk concentrations
Our business model and the resulting business relationships mean that credit risk is concentrated in the financial services sector.. Credit limits for counterparties prevent any excessive concentration of credit risks on individual counterparties. Collateral 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 risk management part of the combined management report). 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 CSDs’ authorisation under article 16 CSDR.

The required economic capital (value at risk (VaR) with a 99.9 per cent confidence level) for credit risk is calculated monthly for each day and amounted to €430.0 million as at 31 December 2022 (2021: €488.0 million).

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 2022.

Market price risks

Market price risks 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 price risks. The economic capital required for market price risks (based on the so-called “Value at Risk” (VaR) with a confidence level of 99.9 percent) is determined on a monthly basis. As at 31 December 2022 the economic capital for market price risks was €114.0 million (2021: €176.0 million).

Impairment losses of €1.0 million (2021: €0.2 million) were recognised in profit or loss in the financial year 2022 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, whilst 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.
Deutsche Börse AG issued two fixed-income bonds with a total nominal volume of €1.1 million for refinancing purposes in the financial year. For details of the outstanding bonds issued by Deutsche Börse Group, see the "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 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. 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 action to reduce risk.

In line with our risk strategy, we can use financial instruments to hedge existing or highly probable interest rate exposures. For this purpose, interest rate swaps, as well as swaptions, might be used. Our Treasury policy stipulates that the critical terms of the hedging instruments 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. This hedges the cash flow risk arising from potential interest rate changes. Cash flow hedge accounting was applied for this hedge. The hedges were unwind simultaneously with the refinancing of the bond in March 2022.

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 US$, CHF, £ and CZK. Exchange rate fluctuations may affect the Group's profit margins and the value of assets and liabilities denominated in a currency that is not the functional currency of the relevant Group entity. The respective currency risks arise mainly from operating income and expenses denominated in a currency other than the functional currency, inter alia from that portion of the Clearstream (post-trading) segment's sales revenue and treasury result from banking business that is directly or indirectly in US$. The Clearstream (post-trading) segment generated 15 per cent of its revenue and treasury result from banking business directly or indirectly in US$ (2021: 10 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 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 2022 Clearstream Banking S.A. entered into Foreing exchange forward contracts in order to hedge part of the exposure form the treasury result from banking and similar business in US$. In addition to that, the group uses FX derivative contracts to hedge foreign currency exporsure associated with intercompany cash pooling and loans.

Other market price risks

Market price risks 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.

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 2022	Amount at 31 Dec 2021
			m	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]	€	4,225.0	4,325.0[3]
	Settlement[2]	US$	3,200.0	3,200.0[3]
	Settlement[2]	£	350.0	350.0[3]
Clearstream Banking AG	Settlement	€	200.0	200.0
European Energy Exchange AG	Working capital	€	22.0	22.0
European Commodity Clearing AG	Settlement	€	140.0	110.0
Axioma Inc.	Working capital	US$	32.0	4.9
Quantitative Brokers LLC	Working capital	US$	0	3.0

1) €500.0 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.
3) Previous year adjusted.

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 2022 (2021: 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 (2021: 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 2022 Deutsche Börse AG had issued commercial paper with a nominal volume of €506.0 million (2021: €801.0 million).

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 2022 it had issued commercial paper with a nominal volume of €60.0 million (2021: €750.3 million).

In 2022, Standard & Poor's 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 Standard & Poor's in 2022. S&P also rated Clearstream Banking AG as AA in November 2022. For further details on the rating of Deutsche Börse Group, see the "Financial position" section in the combined management report.

As in the previous year, there were no concentrations of liquidity risk in the reporting period.

Maturity analysis of financial instruments (1)

	Contractual maturity						
31 Dec 2022	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	7.4	34.6	706.5	3,450.3	336.1	4,535.0
thereof lease liabilities	0	0	0	203.9	253.5	– 46.7	410.7
Non-current financial liabilities at fair value through profit or loss	0	0	0	6.1	0	0	6.1
Trade payables	0.1	2,041.2	0.1	0	0	0	2,041.3
Current financial liabilities measured at amortised cost	15,899.0	1,657.1	122.1	0	0	– 6.5	17,671.5
thereof lease liabilities	0	19.1	58.2	0	0	– 6.5	70.8
Current financial liabilities at fair value through profit or loss	0	0.3	0	0	0	0	0.3
Cash deposits by market participants	0	92,606.4	676.7	0	0	0	93,283.1
Total non-derivative financial liabilties (gross)	**15,899.0**	**96,312.3**	**833.4**	**712.6**	**3,450.3**	**329.6**	**117,537.3**
Derivatives and financial instruments held by central counterparties							
Financial liabilites and derivatives held by central counterparties	81,408.6	37,670.2	10,489.9	8,350.5	728.0	0	138,647.2
less financial assets and derivatives held by central counterparties	– 81,772.6	– 37,670.2	– 10,489.9	– 8,350.5	– 728.0	0	– 139,011.2
Cash inflow - derivatives and hedges							
Cash flow hedges	0	0	0	194.0	0		
Fair value hedges	0	0	0	0	0		
Derivatives held for trading	284.0	4,444.8	1,255.9	0	0		
Cash outflow - derivatives and hedges							
Cash flow hedges	0	– 36.5	– 109.6	– 225.9	0		
Fair value hedges	0	0	0	0	0		
Derivatives held for trading	– 285.6	– 4,506.7	– 1,324.2	0	0		
Total derivatives and hedges	**– 365.6**	**– 98.4**	**– 177.9**	**– 31.9**	**0**		

Maturity analysis of financial instruments (2)

31 Dec 2021	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	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	15,914.3[1]
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 non-derivative financial liabilties (gross)	**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 liabilites 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	0	0		
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	0		
Total derivatives and hedges	**71.8**	**44.3**	**– 14.2**	**– 13.4**	**0**		

1) Previous year's figure adjusted

26. 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 20). 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.

The main litigations, all of which are classified as contingent liabilities as of 31 December 2022 and for which consequently no provisions have been recognised, are presented below.

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 in Luxembourg 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. US$1.9 billion were already turned over to a plaintiffs group in a U.S. proceeding ("Peterson I") to which Bank Markazi was also 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 of the relevant assets to the U.S.
- „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. US$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. US$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. US$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. US$5.5 billion (plus interest).
- "Acosta/Beer/Greenbaum/Kirschenbaum" plaintiffs groups: On 28 February 2022, plaintiffs filed new complaints 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.

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 totalling approximately US$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 Banking S.A. has filed an appeal against the decision. In connection with the abovementioned Ofisi and Acosta/Beer/Greenbaum/Kirschenbaum proceedings, Bank Markazi in November 2022 filed further similar declaratory actions in Luxembourg court.

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 abovementioned 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 2022 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 US$13.5 million in payments made for redemption of fund units, which the funds made to investors via the settlement system of Clearstream Banking S.A. The proceeding, which was suspended for several years, is 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. 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 suspects to include current and former employees as well as executive board members of Deutsche Börse Group companies. In 2020 and again in 2022, Deutsche Börse Group became aware of further extensions of the group of suspects. 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.

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.

In addition, as a result of the completion of the tax audits for the years 2006 to 2008, we as a Group are exposed to risks arising from (i) the corrections to the input tax deduction in accordance with the letters of the Federal Ministry of Finance dated 3 May 2021 and 23 June 2022 (concerning the VAT treatment of services provided by stock exchange drivers), (ii) the non-recognition of tax-free income and intra-group financing, and (iii) the non-recognition of provisions for stock option plans. Any resulting tax and interest payments were reflected accordingly in the balance sheet and appeals against respective amended tax assessments have been filed. For the years from 2009 onwards, which have not yet been definitively assessed, we assume that the tax authorities will at least take up the aforementioned facts (i) and (ii) as well.

27. Corporate governance

On 7 December 2022 the Executive and Supervisory Boards issued the latest version of the declaration of compliance in accordance with section 161 of the Aktiengesetz (AktG, the German Stock Corporation Act) and made it permanently available to shareholders on the company's website.

28. 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 2022 financial year. All transactions took place on standard market terms.

Transactions with related parties

	Amount of the transactions: revenue		Amount of the transactions: expenses		Outstanding balances: receivables		Outstanding balances: liabilities	
	2022 €m	2021 €m	2022 €m	2021 €m	31 Dec 2022 €m	31 Dec 2021 €m	31 Dec 2022 €m	31 Dec 2021 €m
Associates	14.3	17.4	– 29.1	– 28.7	1.1	1.9	– 2.8	– 5.0
Total sum of business transactions	**14.3**	**17.4**	**– 29.1**	**– 28.7**	**1.1**	**1.9**	**– 2.8**	**– 5.0**

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 €28.5 million (2021: €18.2 million). During the year under review, expenses of €13.1 million (2021: €3.5 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 €14.5 million as at 31 December 2022 (2021: €17.3 million). Expenses of €2.5 million (2021: €2.6 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 2022 (2021: €6.5 million). The actuarial present value of the pension obligations was €58.4 million as at 31 December 2022 (2021: €79.3 million).

Termination benefits

There were no changes in the composition of the Executive Board of Deutsche Börse AG in the financial year 2022, therefore no expenses were incurred in 2022 (2021: nil).

Supervisory Board

The aggregate remuneration paid to members of the Supervisory Board in the reporting year was €2.6 million (2021: €2.6million).

In financial year 2022 the employee representatives on Deutsche Börse AG's Supervisory Board received remuneration (excluding Supervisory Board remuneration) amounting to €0.8 million (2021: €0.8 million). The total consists of the fixed and variable salary components for those employee representatives.

29. Employees

Employees

	2022	2021
Average number of employees during the year	10,675	9,347
Employed at the reporting date	11,078	10,200
Employees (average annual FTEs)	10,143	8,855

Of the average number of employees during the year, 29 (2021: 29) were managing directors (not including the Executive Board), 650 (2021: 484) were other senior managers and 9,996 (2021: 8,834) were employees.

Including part-time staff there were 10,143 full-time equivalents (FTE) on average during the year (2021: 8,855). Please also refer to the section “Our employees” in the combined management report.

30. 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.

31. Material events after the end of the reporting period

There were no material events to report.

32. Date of approval for publication

Deutsche Börse AG's Executive Board approved the consolidated financial statements for submission to the Supervisory Board on 3 March 2023. The Supervisory Board is responsible for examining the consolidated financial statements and stating whether it endorses them.

33. 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 2022	31 Dec 2021	31 Dec 2022	31 Dec 2021
Attributable to non-controlling interests:				
Non-controlling interest (%)	24.9	24.9	21.6[1]	19.2[1, 2]
Net profit for the period (€m)	30.9	15.9	24.4	18.6[2]
Equity (€m)	182.4	150.4	186.7	160.7[2]
Dividend payments (€m)	5.5	4.0	14.2	14.3[2]
Assets (€m)	42,091.6	47,938.8	1,066.1	1,028.4
Liabilities (€m)	41,359.0	47,335.0	171.0	208.1
Profit/(loss) (€m)	124.0	63.9	113.0	96.6
Other comprehensive income (€m)	6.3	14.7	– 13.6	59.7
Comprehensive income (€m)	130.2	78.6	99.4	156.3
Cashflows (€m)	86.7	81.9	2.3	– 8.7

Material non-controlling interests (2/2)

	ISS Group Rockville, USA		Crypto Finance Group Zug, Switzerland	
	31 Dec 2022	31 Dec 2021	31 Dec 2022	31 Dec 2021
Attributable to non-controlling interests:				
Non-controlling interest (%)	14.1[1]	14.1[1, 2]	32.1[1]	33.3
Net profit for the period (€m)	2.7	2.3[2]	– 5.6	0
Equity (€m)	277.9	259.2[2]	46.2	51.3
Dividend payments (€m)	0	0	0	0
Assets (€m)	2,600.5	2,435.8	155.5	166.8
Liabilities (€m)	628.0	596.5	11.5	12.7
Profit/(loss) (€m)	18.9	16.5	– 17.3	0.1
Other comprehensive income (€m)	1.5	0	– 0.1	0
Comprehensive income (€m)	20.4	16.5	– 17.5	0.1
Cashflows (€m)	– 14.8	– 87.4	– 26.9	42.3

1) The disclosures may differ from those in the list of shareholdings due to differences in accounting methods
2) Previous year's figures adjusted..

34. Disclosures on associates

Non-material associates

	31 Dec 2022 €m	31 Dec 2021 €m
Book value of non-material associates	**111.5**	**88.9**
Profit after tax	7.9[1]	19.3
Other income	– 0.0[1]	– 0.1
Comprehensive income	**7.9[1]**	**19.3**

1) Disclosures are based on preliminary and unaudited figures which may be adjusted subsequently.

35. List of shareholdings

Deutsche Börse AG's equity interests in subsidiaries, associates and joint ventures as at 31 December 2022 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 2022 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 London Ltd. (dormant)	London, United Kingdom	(100.00)
Clearstream Fund Centre Holding S.A.	Luxembourg, Luxembourg	(100.00)
Clearstream Fund Centre SA	Luxembourg, Luxembourg	(100.00)
Clearstream Australia Limited	Sydney, Australia	(100.00)
Clearstream Australia Nominees Pty Ltd. (dormant)	Sydney, Australia	(100.00)
Clearstream Global Securities Services Limited	Cork, Ireleand	(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)
Crypto Finance AG	Zug, Switzerland	67.91
CF NEWCO (Singapore PTE. Ltd.)	Singapore, Singapore	(67.91)
Crypto Finance (Deutschland) GmbH	Frankfurt am Main, Deutschland	(67.91)
Crypto Finance (Asset Management) AG	Zug, Switzerland	(67.91)
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 Digital Exchange GmbH	Frankfurt/Main, Germany	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

Consolidated subsidiaries (part 2)

Company	Domicile	Equity interest as at 31 Dec 2022 direct/(indirect) %
Eurex Services GmbH	Frankfurt/Main, Germany	100.00
European Energy Exchange AG	Leipzig, Germany	75.05
EEX Asia Pte. Limited	Singapore, Singapore	(75.05)
EEX Australia Pty Ltd.	Sydney, Australia	(75.05)
Lacima Group Pty Ltd.	Sydney, Australia	(75.05)
Lacima Group (US), Inc.	Denver, USA	(75.05)
LG UK Pty Limited	London, United Kingdom	(75.05)
Lacima Workbench 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)
POWER EXCHANGE CENTRAL EUROPE POLAND	Warsaw, Poland	(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. (dormant)	Sydney, Australia	(81.20)
Financial Standard Pty Ltd. (dormant)	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, Inc.	Rockville, 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)
Institutional Shareholder Services Europe S.A.	Brussels, Belgium	(81.20)
Institutional Shareholder Services France S.A.S	Paris, France	(81.20)

Consolidated subsidiaries (part 3)

Company	Domicile	Equity interest as at 31 Dec 2022 direct/(indirect) %
Institutional Shareholder Services Switzerland AG	Zurich, Switzerland	(81.20)
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)
Insitutional Shareholder Services UK Limited	London, United Kingdom	(81.20)
Securities Class Action Services, LLC	Rockville, USA	(81.20)
KNEIP Communication S.A.	Luxembourg, Luxembourg	100.00
KNEIP Communication S.A. (CH)	Lausanne, Switzerland	(100.00)
KNEIP Asia Ltd.	Hong Kong, Hong Kong	(100.00)
KNEIP Communication GmbH	Frankfurt/Main, Germany	(100.00)
Fundlook S.à r.l.	Luxembourg, Luxembourg	(100.00)
Dataglide Ltd.	London, United Kingdom	(100.00)
Qontigo GmbH	Frankfurt/Main, Germany	78.44
Axioma Inc.	New York, USA	(78.44)
Axioma (CH) GmbH	Geneva, Switzerland	(78.44)
Axioma (HK) Ltd.	Hong Kong, Hong Kong	(78.44)
Axioma (UK) Ltd.	London, United Kongdom	(78.44)
Axioma Argentina S.A.U.	Buenos Aires, Argentina	(78.44)
Axioma Asia Pte. Ltd.	Singapore, Singapore	(78.44)
Axioma Deutschland GmbH	Frankfurt/Main, Germany	(78.44)
Axioma Japan G.K.	Tokyo, Japan	(78.44)
Axioma Ltd.	Sydney, Australia	(78.44)
Axioma S.A.S.U.	Paris, France	(78.44)
Qontigo Inc. (dormant)	Wilmington, USA	(78.44)
Qontigo Index GmbH	Frankfurt/Main, Germany	(78.44)
Stoxx Ltd.	Zug, Switzerland	(78.44)
INDEX PROXXY Ltd.	London, United Kingdom	(78.44)
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)
360 Trading Networks UK Limited	London, United Kongdom	(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)

Associates

Company	Domicile	Equity interest as at 31 Dec 2022 direct/(indirect) %
360X AG	Frankfurt/Main, Germany	48.30
ADEX SKUPINA holding družba d.o.o	Ljubljana, Slovenia	(12.76)
BrainTrade Gesellschaft für Börsensysteme mbH	Frankfurt/Main, Germany	(28.58)
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.	Givatayim, Israel	(30.02)
Forge Europe GmbH	Berlin, Deutschland	40.00
FundsDLT	Luxembourg, Luxembourg	17.91
GlobalDairyTrade Holdings Ltd.	Auckland, New Zealand	(25.01)
HQLAx S.à r.l.	Luxembourg, Luxembourg	31.40
Origin Primary Limited	London, United Kingdom	20.00
R5FX Ltd	London, United Kingdom	15.65
SPARK Commodities Ltd.	Singapore, Singapore	(18.76)
Tradegate AG Wertpapierhandelsbank	Berlin, Germany	19.99
Tradegate Exchange GmbH	Berlin, Germany	42.84

Frankfurt/Main, 3 March 2023
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, 3 March 2023
Deutsche Börse AG

Theodor Weimer

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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 31 December 2022, 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 1 January to 31 December 2022, 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, including the non-financial statement to comply with §§ [Articles] 289b to 289e HGB [Handelsgesetzbuch: German Commercial Code] and with §§ 315b to 315c HGB included in several sections of the group management report for the financial year from 1 January to 31 December 2022. In accordance with the German legal requirements, we have not audited the content of the statement on corporate governance pursuant to § 289f HGB and § 315d HGB.

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. [paragraph] 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 31 December 2022, and of its financial performance for the financial year from 1 January to 31 December 2022,
- the accompanying group management report (excluding the non-financial statement) 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; we do not express an audit opinion on the statement on corporate governance referred to above and
- the non-financial statement included in several sections of the group management report is prepared, in all material respects, in accordance with the applicable German legal and European requirements as well as with the specifying criteria disclosed by the Group's executive directors.

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, on the group management report and on the non-financial statement included in 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 1 January to 31 December 2022. 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 The Company's consolidated financial statements include goodwill and other intangible assets. Intangible assets totaling € 7,856.3 million (93 percent of consolidated equity) are reported under the balance sheet item Intangible assets. The 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 or on an ad hoc basis to identify any need for impairment. As part of the impairment test, the carrying amount of the respective cash-generating units (including their carrying amount for the goodwill test) is compared with the recoverable amount. The recoverable amount is generally determined on the basis of fair value less costs to sell. As a rule, the measurement is based on the present value of future cash flows of the respective cash-generating units or groups of cash-generating units. The present values are determined using discounted cash flow models. The starting point is the Group's approved medium-term plan, which is extrapolated using assumptions about long-term growth rates. Expectations about future market developments and assumptions about the development of macroeconomic factors are also taken into account. Discounting is performed using the weighted average cost of capital of the respective cash-generating units. As a result of the impairment test no need for impairment was identified.

The result of this valuation is highly dependent on the assessment of the legal representatives with regard to the future cash flows of the respective cash-generating units, the discount rate used, the growth rate and other assumptions, and is therefore subject to considerable uncertainty. Against this background and due to the complexity of the valuation, this matter was of particular importance in the context of our audit.

② As part of our audit, we first traced the methodological procedure for performing the impairment test. In a risk-oriented selection and with the involvement of our valuation specialists, we compared the future cash flows used in the calculation with the Group's approved medium-term plan for the respective cash-generating units to assess the appropriateness of these plans, in particular an analysis of the key planning assumptions, a comparison of the plans with analysts' estimates, and plan-actual and plan-plan analyses. In addition, we assessed the appropriate consideration of the costs of corporate functions and the appropriateness of the growth assumptions after the forecast period as well as the assumed weighted average cost of capital. The Company's valuation was additionally assessed by comparing the implied multiples with market multiples. In order to account for the existing forecast uncertainties, we replicated the sensitivity analyses prepared by the Company, as well as performed our own sensitivity analyses for the cash-generating units with low excess coverage (carrying amount compared to recoverable amount). We determined that the carrying amounts of the cash-generating units (for goodwill including their allocated carrying amounts) are covered by the discounted future cash flows, taking into account the available information.

The valuation methods, parameters and assumptions applied by the legal representatives are overall in line with our expectations and are also within the range of bandwidths that are acceptable in our view.

③ The Company's disclosures on the impairment test for goodwill and other intangible assets are included in section „11. Intangible assets“ of the notes to the consolidated financial statements.

❷ Assessment of certain legal risks

① Deutsche Börse Group companies are exposed to certain legal risks. These certain legal risks include litigation by Clearstream Banking S.A., Luxembourg, in connection with the Central Bank of Iran, in which Clearstream Banking S.A. is exposed to claims for restitution and damages against the Central Bank of Iran in the amount of USD 4.9 billion (plus interest) and claims by other groups of plaintiffs, an action by the insolvency administrator over the assets of Air Berlin PLC i.I. against Clearstream Banking AG for payment of approximately € 498 million, and an investigation relating to securities transactions by market participants over the dividend record date (cum ex transactions). The assessment of whether and, if so, in what amount it is necessary to recognize a provision to cover the risk is subject to a high degree of uncertainty. Deutsche Börse Group recognizes provisions if a present obligation arises from a past event that is likely to result in an outflow of resources and the amount can be reliably estimated. In the consolidated financial statements as at 31 December 2022, no provisions were recognized for the above-mentioned legal risks, as the legal representatives do not consider an outflow of resources to be probable.

From our point of view, the legal risks mentioned above are of particular importance for our audit due to their legal complexity, the considerable uncertainties regarding their further development and their potential impact on the net assets, financial position and results of operations.

② As part of our audit, we have inspected the underlying documents relating to the We have taken into account the legal disputes and proceedings mentioned above and have followed Deutsche Börse Group‘s legal assessments. With the knowledge that there is an increased risk of misstatements in the financial statements in the event of uncertainty and that the decisions of the legal representatives have a direct impact on the Group‘s results, we assessed the assessments of the legal representatives with the assistance of our own specialists. In addition, we held regular discussions with the legal departments of the companies in order to understand current developments and the reasons that led to the corresponding assessments of the outcome of the proceedings. The development of the specific legal risks, including the assessments of the legal representatives with regard to the possible outcomes of the proceedings, was made available to us in written form by the legal departments. In addition, as of the balance sheet date, we obtained external legal confirmations and assessed legal opinions from external lawyers. The assessments made by the legal representatives regarding the aforementioned matters and their presentation in the consolidated financial statements are sufficiently substantiated and documented.

③ The Company‘s disclosures on the material legal risks are presented in the section „Financial Commitments and Other Risks“ of the notes to the consolidated financial statements.

Other Information

The executive directors are responsible for the other information. The other information comprises the statement on corporate governance pursuant to § 289f HGB and § 315d HGB as an unaudited part of the group management report.

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, on the group management report and on the non-financial statement included in 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 (i.e., fraudulent financial reporting and misappropriation of assets) 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 executive directors are also responsible for the preparation of the non-financial statement included in the group management report in accordance with the applicable German legal and European requirements as well as with the specifying criteria disclosed by the Group's executive directors. Furthermore, the executive directors are responsible for such arrangements and measures (systems) as they have considered necessary to enable the preparation of a non-financial statement that is free from material misstatement, whether due to fraud (i.e., fraudulent reporting in the non-financial statement) or error.

The applicable requirements contain wording and terms that are subject to considerable interpretation uncertainties and for which authoritative comprehensive interpretations have not yet been published. Accordingly, the executive directors have disclosed their interpretations of such wording and terms in section „About this report“ of the non-financial statement. The executive directors are responsible for the defensibility of these interpretations. As such wording and terms may be interpreted differently by regulators or courts, the legal conformity of these interpretations is uncertain.

The supervisory board is responsible for overseeing the Group's financial reporting process for the preparation of the consolidated financial statements, of the group management report as well as of the non-financial statement included in 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, and whether the non-financial statement has been prepared, in all material respects, in accordance with the applicable German legal and European requirements and with the specifying criteria disclosed by the Company's executive directors, as well as to issue an auditor's report that includes our audit opinions on the consolidated financial statements, on the group management report and on the non-financial statement.

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 perform 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 and of the non-financial statement included in 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.

- Evaluate the suitability of the criteria presented by the executive directors in the non-financial statement as a whole. As explained in the description of the responsibilities of the executive directors, the executive directors have interpreted the wording and terms contained in the relevant regulations; the legal conformity of these interpretations is subject to inherent uncertainties mentioned in this description. Those inherent uncertainties in the interpretation apply to our audit accordingly.

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, actions taken to eliminate threats or safeguards applied.

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-2022-12-31-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 1 January to 31 December 2022 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 (06.2022)) 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 18 May 2022. We were engaged by the supervisory board on 19 July 2022. 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 filed in the company register – 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 7, 2023
PricewaterhouseCoopers GmbH
Wirtschaftsprüfungsgesellschaft

sgd. Marc Billeb	sgd. Dr. Michael Rönnberg
Wirtschaftsprüfer	Wirtschaftsprüfer
(German Public Auditor)	(German Public Auditor)