Deutsche Börse Group

Annual report 2023

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Consolidated income statement

for the period 1 January to 31 December 2023

in €m	Note	2023	2022[1]
Sales revenue	4	5,133.2	4,692.3
Treasury result from banking and similar business	4	961.5	532.2
Other operating income	4	39.8	108.7
Total revenue		**6,134.5**	**5,333.2**
Volume-related costs	4	– 1,057.9	– 995.6
Net revenue (total revenue less volume-related costs)		**5,076.6**	**4,337.6**
Staff costs	5	– 1,422.5	– 1,212.7
Other operating expenses	6	– 695.8	– 609.5
Operating costs		**– 2,118.3**	**– 1,822.2**
Result from financial investments	8	– 14.0	10.2
Result of the equity method measurement of associates		1.8	6.8
Other result		– 15.8	3.4
Earnings before interest, tax, depreciation and amortisation (EBITDA)		**2,944.3**	**2,525.6**
Depreciation, amortisation and impairment losses	10, 11	– 418.4	– 355.6
Earnings before interest and tax (EBIT)		**2,525.8**	**2,170.0**

in €m	Note	2023	2022[1]
Earnings before interest and tax (EBIT)		2,525.8	2,170.0
Financial income	8	46.6	32.8
Financial expense	8	– 120.6	– 96.4
Earnings before tax (EBT)		**2,451.8**	**2,106.5**
Income tax expense	9	– 654.9	– 543.3
Net profit for the period		**1,796.8**	**1,563.2**
Net profit for the period attributable to Deutsche Börse AG shareholders		1,724.0	1,494.4
Net profit for the period attributable to non-controlling interests		72.8	68.8
Earnings per share (basic) (€)	22	**9.35**	**8.14**
Earnings per share (diluted) (€)	22	**9.34**	**8.12**

1) Previous year adjusted, see note 3.

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Consolidated statement of comprehensive income

for the period 1 January to 31 December 2023

in €m	Note	2023	2022
Net profit for the period reported in consolidated income statement		**1,796.8**	**1,563.2**
Items that will not be reclassified to profit or loss:			
Changes from defined benefit obligations		– 28.7	132.3
Equity investments measured at fair value through OCI		25.5	– 37.5
Other		0	0.8
Deferred taxes	16	7.8	– 36.9
		4.6	**58.7**
Items that may be reclassified subsequently to profit or loss:			
Exchange rate differences	16	– 53.0	226.7
Other comprehensive income from investments using the equity method		– 0.1	– 0.3
Remeasurement of cash flow hedges		26.8	53.7
Deferred taxes	16	– 7.3	– 30.1
		– 33.5	**250.0**
Other comprehensive income after tax		**– 28.9**	**308.7**
Total comprehensive income		**1,767.9**	**1,871.9**
thereof Deutsche Börse AG shareholders		1,700.7	1,784.6
thereof non-controlling interests		67.3	87.3

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Consolidated balance sheet

as at 31 December 2023

Assets

in €m	Note	31 Dec 2023	31 Dec 2022[1]
NON-CURRENT ASSETS		23,416.7	20,758.4
Intangible assets	10	12,478.6	8,610.0
Software		1,111.7	595.2
Goodwill		8,213.3	5,913.7
Payments on account and assets under development		118.3	158.5
Other intangible assets		3,035.3	1,942.6
Property, plant and equipment	11	605.6	631.2
Land and buildings		426.2	437.0
Fixtures and fittings		49.3	45.3
Computer hardware, operating and office equipment		116.3	132.7
Payments on account and construction in progress		13.8	16.2
Financial assets	12	9,870.4	11,322.8
Financial assets measured at FVOCI			
Strategic investments		222.7	182.8
Financial assets measured at amortised cost	12	1,801.9	1,894.7
Financial assets at FVPL			
Financial instruments held by central counterparties		7,667.6	9,078.4
Other financial assets at FVPL		178.2	166.8
Investment in associates		114.5	111.5
Other non-current assets	13	274.2	21.1
Deferred tax assets	9	73.3	61.8

Assets

in €m	Note	31 Dec 2023	31 Dec 2022[1]
CURRENT ASSETS		214,310.2	248,145.2
Financial assets measured at amortised cost	12		
Trade receivables		1,832.2	2,289.2
Other financial assets at amortised cost		18,046.2	18,670.8
Restricted bank balances		53,669.4	93,538.3
Other cash and bank balances		1,655.1	1,275.6
Financial assets at FVPL	12		
Financial instruments held by central counterparties		137,904.9	129,932.8
Other financial assets at FVPL		31.9	15.8
Income tax assets	9	105.2	79.3
Other current assets	13, 14	1,065.4	2,343.3
Total assets		**237,726.9**	**268,903.5**

1) Previous year adjusted, see note 3.

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Equity and liabilities

in €m	Note	31 Dec 2023	31 Dec 2022[1]
EQUITY	15		
Subscribed capital		190.0	190.0
Share premium		1,501.6	1,370.8
Treasury shares		– 351.0	– 449.6
Revaluation surplus		428.9	416.6
Retained earnings		7,892.0	6,944.0
Shareholders' equity		9,661.5	8,471.8
Non-controlling interests		438.7	589.1
Total equity		10,100.2	9,060.9
NON-CURRENT LIABILITIES		16,206.7	14,183.8
Provisions for pensions and other employee benefits	17, 18	151.5	119.8
Other non-current provisions	18, 19	47.7	14.9
Financial liabilities measured at amortised cost	12	7,484.0	4,535.0
Financial liabilities at FVPL	12		
Financial instruments held by central counterparties		7,667.6	9,078.4
Other financial liabilities at FVPL		51.1	32.9
Other non-current liabilities	13	15.6	14.6
Deferred tax liabilities	9	789.2	388.2

Equity and liabilities

in €m	Note	31 Dec 2023	31 Dec 2022[1]
CURRENT LIABILITIES		211,420.0	245,658.8
Income tax liabilities		439.2	335.4
Current employee liabilities	17, 18	341.3	262.9
Other current provisions	19	123.8	164.3
Financial liabilities at amortised cost	12		
Trade payables		1,514.2	2,039.8
Other financial liabilities at amortised cost		17,177.6	17,482.8
Cash deposits by market participants		53,401.3	93,283.1
Financial liabilities at FVPL	12		
Financial instruments held by central counterparties		137,341.9	129,568.8
Other financial liabilities at FVPL		16.0	119.3
Other current liabilities	13, 20	1,064.8	2,402.3
Total liabilities		227,626.7	259,842.6
Total equity and liabilities		237,726.9	268,903.5

1) Previous year adjusted, see note 3.

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in €m	Note	2023	2022
Net profit for the period		1,796.8	1,563.2
Depreciation, amortisation and impairment losses	10,11	418.4	355.6
Increase/(Decrease) in non-current provisions		7.8	– 9.9
Deferred tax expense/(income)	9	13.0	64.6
Cash flows from derivatives		24.5	67.1
Other non-cash expense/(income)		108.0	104.8
Changes in working capital, net of non-cash items:		113.7	54.0
Decrease/(Increase) in receivables and other assets		484.7	– 1,417.5
(Decrease)/Increase in current liabilities		– 452.8	1,472.9
Increase/(Decrease) in non-current liabilities		81.9	– 1.4
Net (gain)/loss on disposal of non-current assets		0.1	– 57.9
Cash flows from operating activities excluding CCP positions		**2,482.4**	**2,141.6**
Changes in liabilities from CCP positions		2,160.2	432.6
Changes in receivables from CCP positions		– 2,093.6	– 90.5
Cash flows from operating activities	**21**	**2,549.0**	**2,483.6**

in €m	Note	2023	2022
Payments to acquire intangible assets		– 218.4	– 215.6
Payments to acquire property, plant and equipment		– 49.5	– 109.6
Payments to acquire non-current financial instruments		– 318.1	– 850.9
Payments to acquire investments in associates		– 1.4	– 13.5
Payments to acquire subsidiaries, net of cash acquired		– 3,842.2	– 185.5
Effects of the disposal of (shares in) subsidiaries, net of cash disposed		0	27.1
Net decrease in current receivables and securities from banking business with an original term greater than three months		287.2	240.4
Net increase/(decrease) in current liabilities from banking business with an original term greater than three months		86.1	– 343.6
Proceeds from disposals of non-current financial instruments		59.1	44.6
Proceeds from disposals of intangible assets		0.1	0.1
Cash flows from investing activities	**21**	**– 3,997.2**	**– 1,406.5**

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in €m	Note	2023	2022
Proceeds from sale of treasury shares		0	11.9
Proceeds from non-controlling interests		7.4	0
Payments (dividends) to non-controlling interests		– 19.9	– 37.8
Net effects from transactions with equity holders (without loss of control over the subsidiary)		120.7	0
Proceeds of long-term financing		2,968.8	1,079.3
Repayment of long-term financing		– 42.0	0
Repayment of short-term financing		– 126.5	– 2,397.0
Proceeds from short-term financing		129.9	1,056.0
Payments of lease liabilities in accordance with IFRS 16		– 83.6	– 75.9
Dividends paid	16	– 661.5	– 587.6
Cash flows from financing activities	**21**	**2,293.4**	**– 951.1**
Net change in cash and cash equivalents		**845.2**	**126.0**

in €m	Note	2023	2022[1]
Net change in cash and cash equivalents (brought forward)		845.2	126.0
Effect of exchange rate differences		– 1.7	– 37.8
Cash and cash equivalents at beginning of period		2,111.6	2,023.4
Cash and cash equivalents at end of period	**21**	**2,955.2**	**2,111.6**
Interest-similar income received		2,634.2	1,197.6
Dividends received		9.9	24.2
Interest paid		– 1,800.5	– 660.5
Income tax paid		– 576.5	– 365.4

1) Previous year adjusted, see note 3.

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Consolidated statement of changes in equity

for the period 1 January to 31 December 2022

	Attributable to owners of Deutsche Börse AG							
in €m	Subscribed capital	Share premium	Treasury shares	Revaluation surplus	Retained earnings	Shareholders' equity	Non-controlling interests	Total equity
Balance as at 31 December 2021	190.0	1,359.6	– 458.2	– 61.7	6,178.3	7,208.0	534.3	7,742.3
Retrospective adjustment[1]	–	–	–	281.9	– 281.9	–	–	–
Balance as at 1 January 2022	190.0	1,359.6	– 458.2	220.2	5,896.4	7,208.0	534.3	7,742.3
Net profit for the period	–	–	–	–	1,494.4	1,494.4	68.8	1,563.2
Other comprehensive income after tax	–	–	–	193.7	96.5	290.2	18.5	308.7
Total comprehensive income	–	–	–	193.7	1,590.9	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	–	–	19.0	–	19.0
Increase in share-based payments	–	–	–	2.7	–	2.7	–	2.7
Changes due to capital increases/decreases	–	–	–	–	48.3	48.3	28.2	76.5
Changes from business combinations	–	–	–	–	– 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	– 543.3	– 520.8	– 32.5	– 553.3
Balance as at 31 December 2022	190.0	1,370.8	– 449.6	416.6	6,944.0	8,471.8	589.1	9,060.9

1) Previous year adjusted, see Note 3.

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	Attributable to owners of Deutsche Börse AG							
in €m	Subscribed capital	Share premium	Treasury shares	Revaluation surplus	Retained earnings	Shareholders' equity	Non-controlling interests	Total equity
Balance as at 1 January 2023	190.0	1,370.8	– 449.6	416.6	6,944.0	8,471.8	589.1	9,060.9
Profit for the period	–	–	–	–	1,724.0	1,724.0	72.8	1,796.8
Other comprehensive income	–	–	–	– 1.7	– 21.6	– 23.3	– 5.6	– 28.9
Total comprehensive income	–	–	–	– 1.7	1,702.4	1,700.7	67.3	1,767.9
Other adjustments	–	–	–	– 0.3	1.2	0.9	0.2	1.1
Sales under the Group Share Plan	–	11.9	9.3	–	–	21.3	–	21.3
Increase in share-based payments	–	–	–	14.4	– 25.3	– 10.9	0.8	– 10.1
Transactions with non-controlling interests	–	118.8	89.2	–	– 68.8	139.2	– 198.8	– 59.6
Dividends paid	–	–	–	–	– 661.5	– 661.5	– 19.9	– 681.3
Transactions with shareholders	–	130.8	98.6	14.1	– 754.4	– 511.0	– 217.6	– 728.6
Balance as at 31 December 2023	190.0	1,501.6	– 351.0	428.9	7,892.0	9,661.5	438.7	10,100.2

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Basis of preparation

01 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 provide their clients with a broad range of products and services along the value chain of financial market transactions. Their offering ranges from portfolio management software, analytics solutions, the ESG business and index development, via services for trading, clearing and settling orders through to custody services for securities and funds, and liquidity and collateral management services. We also develop and operate the IT systems and platforms that support all these processes. In addition to securities, our platforms are also used to trade derivatives, commodities, foreign exchange and digital assets. Moreover, Deutsche Börse AG has a stock exchange licence and certain subsidiaries of Deutsche Börse AG have a banking licence and offer banking services to customers. Eurex Clearing AG is a central counterparty, a bank and its role is to mitigate performance risks for buyers and sellers. For further details on internal organisation and reporting see the section "Fundamental information about the Group" in the combined management report.

Basis of reporting

The 2023 consolidated financial statements have been prepared in compliance with the International Financial Reporting Standards (IFRS) issued by the International Accounting Standards Board (IASB) and the related interpretations issued by the International Financial Reporting Interpretations Committee (IFRIC), as adopted by the European Union in accordance with Regulation No. 1606/2002 of the European Parliament and of the Council on the application of international accounting standards.

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

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

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

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

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

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

Assets and liabilities 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 applications endorsed by the European Commission were applied by us in the reporting year 2023. They were not applied earlier than required.

Standard/Amendment/Interpretation

		Application date	Effects
IAS 1	Amendments to IAS 1 and IFRS Practice Statement 2 on materiality	1 Jan 2023	See notes
IAS 8	Clarification on how to better distinguish changes in accounting policy from changes in accounting estimate	1 Jan 2023	none
IAS 12	Amendments with respect to deferred tax relating to assets and liabilities arising from a single transaction	1 Jan 2023	See notes
IAS 12	Amendments to the international tax reform – Pillar II model rules	1 Jan 2023	See notes
IFRS 17	Insurance contracts	1 Jan 2023	See notes
IFRS 17, IFRS 9	Initial application of IFRS 17 and IFRS 9 – Comparative information	1 Jan 2023	none

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 Group's financial performance or financial position.

The Amendments to Deferred Tax related to Assets and Liabilities arising from a Single Transaction

The amendment to IAS 12 (Income Taxes) relates to the recognition of deferred taxes in connection with transactions that give rise to equal amounts of taxable and deductible temporary differences on first-time recognition. The amendment makes it clear that the non-recognition of deferred taxes when an asset or liability is recognised for the first time outside a business combination does not apply to these transactions. These amendments, which typically apply to leases from the lessor perspective and to restoration obligations, do not

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have any material impact on the Group's financial performance or financial position.

IAS 12 Pillar II Model Rules

In October 2021, more than 135 countries agreed to introduce a global minimum tax rate for multinational groups with consolidated annual sales of at least €750 million as part of the OECD/G20 Inclusive Framework on Base Erosion and Profit Shifting (BEPS). The reform project known as Pillar II Model Rules pursues the goal of ensuring effective minimum taxation of profits of affected multinational corporations at 15 per cent per jurisdiction. The aim is to limit international tax competition and ensure fair and appropriate taxation.

The Pillar II Model Rules were published by the OECD in December 2021 and on 12 December 2022 the EU member states agreed on a directive for the effective minimum taxation of multinational corporations that has to be transposed into national law by 31 December 2023. The German parliament passed the Minimum Taxation Directive - Transposition Act on 10 December 2023 with effect for financial years starting on or after 01 January 2024; corresponding rules also apply in the great majority of jurisdictions outside the EU that are relevant for us.

Since our subsidiaries and permanent establishments are predominantly domiciled in jurisdictions whose nominal tax rate is above the minimum tax rate of 15 per cent, we do not expect any material tax impact for 2024, the first year of application.

The amendments to IAS 12 provide for a temporary exemption from the obligation to recognise deferred taxes in connection with the introduction of the global minimum tax rate.

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. The revised version of IFRS 17 has no impact on the Group's financial performance or financial position.

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 not usually use any early application options.

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		Application date	Effects
IAS 1	Amendments in classification of liabilities as current or non-current and amendments in the classification of liabilities with covenants	1 Jan 2024	See notes
IAS 7 and IFRS 7	Amendment to supplier finance arrangements disclosure	1 Jan 2024	none
IAS 21	Amendments affecting guideline IAS 21: lack of exchangeability	1 Jan 2025	none
IFRS 16	Amendments in the accounting for lease liabilities in sale and leaseback transactions on seller/lessee	1 Jan 2024	See notes

The amendment to IAS 1 Amendments to the Classification of Liabilities as Current or Non-current and Amendments to the Classification of Liabilities with Covenants

The amendments relate to the classification of liabilities with covenants. The IASB clarified that covenants that have to be met before or on the reporting date may have an effect on classification as current or non-current. Covenants that only have to be met after the reporting date do not affect the classification, however. Rather than being considered as part of the classification, any such covenants should be disclosed in the notes. This is intended to enable users of financial statements to judge whether non-current liabilities could become due within twelve months. These amendments have no material effect on the Group's financial performance or financial position.

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.

02 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.

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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 result from financial investments in the period in which they arise, unless the underlying transactions are hedged. In the case of equity instruments designated at FVOCI, the exchange rate differences are recognised in other comprehensive income.

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 euros at the spot rate and equity items at historical rates. The positions in the consolidated income statement are converted at average exchange rates for the reporting period. Resulting exchange differences are recognised directly in "revaluation surplus". Resulting exchange differences are recognised without effect on profit or loss in the revaluation reserve. When the relevant subsidiary is sold, these exchange rate differences are recognised in the net profit for the period in which the deconsolidation gain or loss is realised.

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

Exchange rates

		Average rate 2023	Average rate 2022	Closing price as at 31 Dec 2023	Closing price as at 31 Dec 2022
Swiss francs	CHF (Fr.)	0.9736	1.0030	0.9306	0.9864
US dollars	USD (US$)	1.0810	1.0524	1.1065	1.0671
Czech koruna	CZK (Kč)	24.0165	24.5458	24.6996	24.1469
Singapore dollar	SGD (S$)	1.4506	1.4491	1.4594	1.4309
British pound	GBP (£)	0.8712	0.8547	0.8683	0.8850
Danish kroner	DKK (dKr.)	7.4493	7.4398	7.4542	7.4364

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 the revaluation reserve and are reclassified from equity to the consolidated income statement when the net investment is sold.

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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 2023 are presented in the list of shareholdings in note 34.

Material acquisitions

Acquisition of SimCorp A/S, Copenhagen, Denmark (SimCorp)

On 22 September 2023 Deutsche Börse announced the final result of the public takeover offer for SimCorp A/S , Copenhagen, Denmark (SimCorp). Including the shares bought directly on the market, Deutsche Börse held more than 90 per cent of all SimCorp shares (not including treasury shares held by SimCorp).

After the successful completion of the public takeover on Friday, 29 September 2023, Deutsche Börse AG exercised its right to acquire all the SimCorp shares from the remaining minority shareholders (Squeeze-out). Since 31 October 2023 Deutsche Börse AG holds 100 per cent of the outstanding shares in SimCorp.

SimCorp and its subsidiaries have been fully consolidated in Deutsche Börse Group since 29 September 2023. The SimCorp business was allocated to the new Investment Management Solutions segment from the fourth quarter of 2023 onwards, where the activities of the previous Data & Analytics segment are also reported.

Initial consolidation of SimCorp in the consolidated financial statements took place using the purchase method. Significant revenue and cost synergies are expected from the transaction, which are reflected in the goodwill resulting from the transaction.

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

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Goodwill resulting from the business combination with SimCorp A/S, Copenhagen, Denmark (SimCorp)

in €m	Preliminary goodwill calculation 29 Sep 2023
Consideration transferred	
Purchase price in cash	3,747.6
Financial liability[1]	139.7
Total consideration	**3,887.3**
Acquired assets and liabilities	
Customer relationships	848.7
Trade names	359.3
Software	423.1
Property, plant and equipment	37.1
Non-current contract assets	185.3
Other non-current assets	18.8
Deferred tax assets	4.0
Current contract assets	86.1
Other current assets	17.1
Trade receivables	79.0
Acquired bank balances	54.8
Deferred tax liabilities	– 390.2
Miscellaneous non-current liabilities	– 49.6
Contract liabilities	– 39.8
Miscellaneous current liabilities	– 82.0
Total assets and liabilities acquired	**1,551.7**
Goodwill (not tax-deductible)	**2,335.6**

1) At the acquisition date of 29 September 2023, there was still a financial liability for the planned squeeze-out, which was completed on the balance sheet date of 31 December 2023.

The full consolidation of SimCorp resulted in an increase in net revenues of €198.0 million as well as in an increase in profit after tax of €12.3 million. If the company had been consolidated as at 1 January 2023, this would have resulted in an increase in net revenues of €544.1 million as well as in an decrease of profit after tax of €– 69.3 million, including the financing costs.

03 Adjustments

As at 31 December 2023 Deutsche Börse Group made various changes in presentation and reclassifications in the consolidated statement of financial position and the consolidated statement of changes in equity. The published figures as at 31 December 2022 have been adjusted accordingly. These are purely changes in presentation, which had no effect on net income for the period or total comprehensive income.

Adjustments relating to the SAP S/4 HANA transformation

We adjusted the structure of the consolidated statement of financial position when the new Group account structure was drawn up in the course of our SAP S/4 HANA transformation, because it is more transparent and logical to present all benefits to employees in separate balance sheet items, in order to emphasise the importance of these obligations. We also brought the presentation within Group equity into line with the current market standard, in order to make the financial information more comparable. The presentation of certain liabilities from clearing transactions was also sharpened.

Equity

- The currency translation reserve previously reported as part of retained earnings will henceforth be reported as part of the revaluation surplus. This resulted in a reclassification to equity of €–145.5 million as at 1 January 2022 and of €–352.1 million as at 31 December 2022.

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- The cumulative changes from the revaluation of defined benefit obligations are now reported as part of retained earnings and were previously part of the revaluation surplus. This resulted in a reclassification to equity of €–133.2 million as at 1 January 2022 and of €–36.3 million as at 31 December 2022.
- Shares granted as part of stock option programmes and settled in equity instruments were not presented uniformly within equity hitherto. Certain programmes were previously presented within retained earnings and will now be presented on a uniform basis in the revaluation surplus. This resulted in a retrospective reclassification of €–3.2 million as at 1 January 2022 and of €–5.5 million as at 31 December 2022.

Employee benefits

We have introduced a new non-current and current balance sheet item, "Employee benefits" (see note 17) to pool pension obligations, other non-current employee benefits and non-current termination benefits. A reclassification from the previous item "Provisions for pensions and other employee benefits" of €149.0 million was made retrospectively as at 01 January 2022 and of €23.9 million as at 31 December 2022. Obligations from early retirement benefits, share-based payments and variable remuneration were also reclassified from other non-current provisions. This resulted in a retrospective reclassification of €14.8 million as at 01 January 2022 and of €95.9 million as at 31 December 2022. €30.6 million as at 1 January 2022, and €38.0 million as at 31 December 2022 was also reclassified retrospectively from other current liabilities for holiday entitlements, flexitime and overtime credits to the new item "Current employee benefits". €186.9 million as at 1 January 2022 and €224.9 million as at 31 December 2022 was also reclassified retrospectively from other current provisions for share-based payment, bonus and severance payments.

Reclassification of clearing liabilities

Liabilities in connection with the processing of clearing transactions that were settled in cash were previously presented in other current liabilities. This difference was identified in the course of the SAP S/4 HANA migration and they were reclassified to "Other financial liabilities at amortised cost". This resulted in a reclassification of €74.2 million as at 1 January 2022 and of €15.1 million as at 31 December 2022. The consolidated statement of financial position as at 31 December 2022 was restated accordingly.

Reclassifications of financial assets and liabilities under sanctions

In prior years, current financial assets and the corresponding current liabilities to which the Group had no access because of international sanctions were presented in the consolidated statement of financial position. The accounting treatment for these items was revised on the basis of a legal analysis. This reduced the financial assets and financial liabilities in the consolidated statement of financial position by €188.0 million as at 1 January 2022 and by €203.8 million as at 31 December 2022.

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04 Net revenue

Recognition of income and expenses

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

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

Revenue recognition

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

Sales revenue

We report our sales revenue on the basis of our segment structure. Revenue recognition for the segments' main product lines, as broken down and reported by us, are described as follows:

Investment Management Solutions

The Group generates revenue from calculating and marketing indices, which financial market participants use as underlyings for financial instruments or as a benchmark for the performance of investments-. The index offering ranges from blue-chip to benchmark to strategy to sustainability to smart-beta indices. 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.

Software solutions offers its clients risk-analytics and portfolio-construction tools. Customers 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"(Software as a Service). Revenue generated with SaaS Front Office fees is recognised at a specific point in time because all contractual obligations are fulfilled, and the customer obtains control of the asset as soon as the licence key is transferred to the customer. SaaS Middle Office fees are recognised over time, i.e. the contractual term. Fees are also charged for the maintenance and servicing (summarised as "Maintenance") of the software products, which are realised over the contract term. For this purpose, the transaction price for maintenance

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is calculated and allocated according to the "expected cost plus a margin" approach. Additional costs are capitalised for multi-year contracts when initiating a contract.

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. Fees are generally charged in advance, either before the licence starts or periodically over the term of the licence. Proxy voting services are provided at a 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 consideration. Since neither the volume that will be used nor the price of these services can be determined with reasonable certainty when the contract starts, the variable portion of the consideration can only be recognised when the transaction price can be determined. Consideration is generally due 30 days after the invoice date. 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.

SimCorp primarily generates revenues in three categories: revenue from customers that operate and service their SimCorp solution on their own servers (on-premise), revenues from SaaS solutions, and professional services. The on-premise revenues come from licence fees, software updates and support services. The SaaS revenues come from fees for SaaS licences and SaaS services, which comprise services and software updates, operating services, including Platform-as-a-Service/hosting fees, and BPaaS fees (business processes as a service). Generally speaking, licence fees may stem from subscriptions or open-ended licensing agreements. Subscriptions entitle the customer to use the software for a particular period, whereas open-ended software licences give the customer the right to use the software for as long as the contract for software updates and support is in effect. Revenue from licences is recognised as soon as all the contractual obligations have been satisfied, i.e. the licence has been transferred to the customer and the customer has gained control over the software. Revenue for software updates and support is recognised on a linear basis of the term of the contract. SaaS services, which include infrastructure services, operating services, digital portal services, investment accounting services, investment operational services, data management services and regulatory reporting platform services, are recognised over the term of the contract. Fees for professional services result primarily from implementation; revenues are recognised on the basis of work completed for time and service contracts. Fixed fee agreements are recognised on the basis of percentage of completion, unless the customer is obliged to take delivery. Additional costs are capitalised for multi-year contracts when initiating a contract.

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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 mainly comes 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 power, natural gas and emission allowances, as well as freight rates and agricultural products. Revenue is generated primarily from fees that are charged for exchange trading and clearing of commodities 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, i.e. there is no unfulfilled obligation towards the customer.

Cash equities

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 within the meaning of IFRS 15. 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.

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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 the respective 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. As a result of 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.

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Other operating income

Other operating income is income not directly attributable to our typical business model. Other operating income is usually realised when all opportunities 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. In addition, valuation effects, such as income from exchange rate differences from non-banking business, are reported under other operating income.

Volume-related costs

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

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- 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.

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in €m	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022
Investment Management Solutions										
ESG & Index	613.2	616.7	0	0	0.3	0.9	– 47.2	– 41.3	566.3	576.3
Index	230.7	235.1	0	0	0.3	0.9	– 25.4	– 20.4	205.6	215.6
ESG	254.4	250.2	0	0	0	0	– 12.3	– 11.6	242.1	238.6
Other ESG & Index	128.1	131.4	0	0	0	0	– 9.5	– 9.3	118.6	122.1
SimCorp Axioma[1]	330.3	93.4	0	0	0.8	0.6	– 34.2	– 18.6	296.9	75.4
On-premises	126.7	0	0	0	0	0	– 0.1	0	126.6	0
SaaS (incl. Analytics)	157.9	93.4	0	0	0.2	0.6	– 33.9	– 18.6	124.2	75.4
Other Software Solutions	45.7	0	0	0	0.6	0	– 0.2	0	46.1	0
	943.5	710.1	0	0	1.1	1.5	– 81.4	– 59.9	863.2	651.7
Trading & Clearing										
Financial derivatives	1,247.5	1,211.3	136.1	149.6	29.0	18.9	– 148.3	– 145.4	1,264.3	1,234.4
Equities	571.7	607.7	0	0	0.4	0.4	– 101.1	– 99.1	471.0	509.0
Interest rates	375.5	346.9	0	0	52.7	53.0	– 31.1	– 32.0	397.1	367.9
Margin fees	38.2	35.9	136.1	149.6	– 83.2[2]	– 67.8[2]	– 0.1	– 0.1	91.0	117.6
Other	262.1	220.8	0	0	59.1	33.3	– 16.0	– 14.2	305.2	239.9
Commodities	465.5	377.2	117.7	108.7	1.9	1.6	– 20.1	– 12.0	565.0	475.5
Power	250.0	187.7	0	0	0	0	– 8.5	– 4.4	241.5	183.3
Gas	103.9	91.0	0	0	0	0	– 2.2	– 1.8	101.7	89.2
Other	111.6	98.5	117.7	108.7	1.9	1.6	– 9.4	– 5.8	221.8	203.0
Cash equities	350.1	380.8	0.8	0.3	9.9	29.5	– 66.9	– 66.2	293.9	344.4
Trading	155.4	197.5	0.8	0.3	8.3	21.3	– 33.7	– 38.7	130.8	180.4
Other	194.7	183.3	0	0	1.6	8.2	– 33.2	– 27.5	163.1	164.0
Foreign exchange	144.9	138.7	0	0	0.9	0	– 6.2	– 5.9	139.6	132.8
	2,208.0	2,108.0	254.6	258.6	41.7	50.0	– 241.5	– 229.5	2,262.8	2,187.1

1) SimCorp was only included in the consolidated financial statements from 29 September 2023, which means that no comparison is possible.
2) Reallocation of margin fees to the business areas, which are originally included in interest rates and other.

Composition of net revenue (part 2)

	Sales revenue		Treasury result from banking and similar business		Other operating income		Volume-related costs		Net revenue	
in €m	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022
Fund Services										
Fund processing	231.3	224.8	0	0	0	0	– 17.4	– 13.3	213.9	211.5
Fund distribution	580.8	565.0	0.2	0	0.2	7.0	– 495.9	– 482.3	85.3	89.7
Other	96.0	82.0	61.9	1.8	0.3	0	– 17.5	– 9.1	140.7	74.7
	908.1	871.8	62.1	1.8	0.5	7.0	– 530.8	– 504.7	439.9	375.9
Securities Services										
Custody	816.7	773.9	0.2	0	0.7	5.9	– 202.5	– 194.8	615.1	585.0
Settlement	179.6	174.5	0	0	0	0.1	– 65.2	– 69.8	114.4	104.8
Net interest income	0	0	645.4	260.0	0	0	0.1	0	645.5	260.0
Other	166.9	150.2	– 0.8	11.8	1.8	50.9	– 32.2	– 39.8	135.7	173.1
	1,163.2	1,098.6	644.8	271.8	2.5	56.9	– 299.8	– 304.4	1,510.7	1,122.9
Total	5,222.8	4,788.5	961.5	532.2	45.8	115.4	– 1,153.5	– 1,098.5	5,076.6	4,337.6
Consolidation of internal revenue	– 89.6	– 96.2	0	0	– 6.0	– 6.7	95.6	102.9	0	0
thereof Investment Management Solutions	– 70.2	– 78.5	0	0	0	0	1.9	0	– 68.3	– 78.5
thereof Trading & Clearing	– 6.4	– 5.7	0	0	– 6.0	– 6.7	90.6	100.2	78.2	87.8
thereof Fund Services	– 0.3	– 0.5	0	0	0	0	0.2	0	– 0.1	– 0.5
thereof Securities Services	– 12.7	– 11.5	0	0	0	0	2.9	2.7	– 9.8	– 8.8
Group	5,133.2	4,692.3	961.5	532.2	39.8	108.7	– 1,057.9	– 995.6	5,076.6	4,337.6

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Revenue recognised in the financial year from performance obligations fulfilled or partially fulfilled in prior periods amounted to €14.0 million (2022: €17.7 million).

Composition of treasury result from banking and similar business

in €m	2023	2022
Interest income from positive interest environment		
Financial assets measured at amortised cost	2,625.4	613.8
Interest expenses from positive interest environment		
Financial liabilities measured at amortised cost	– 1,698.8	– 295.9
Interest income from negative interest environment		
Financial liabilities measured at amortised cost	4.2	449.4
Interest expenses from negative interest environment		
Financial assets measured at amortised cost	– 11.7	– 308.0
Net interest income	919.1	459.3
Other valuation result	42.4	72.9
Total	961.5	532.2

The significant increase in interest income and interest expenses from financial instruments measured at amortised cost is driven by the changes in the interest rate environment.

Other operating income

Other operating income of €39.8 million (2022: €108.7 million) results mainly from foreign exchange differences of €7.5 million (2022: €7.8 million), income from management services of €1.4 million (2022: €0.8 million), income from written-off receivables of €2.0 million (2022: €2.9 million) and rental income from subleases (income from operating leases) of €1.2 million (2022: €0.7 million).

05 Staff costs

Composition of staff costs

in €m	2023	2022
Wages and salaries	993.1	862.0
Share-based payments	60.1	48.5
Pension costs	55.1	57.8
Other staff costs	141.3	99.4
Social security contributions	172.8	145.0
Total	1,422.5	1,212.7

Wages and salaries include one-off costs for restructuring programmes and severance payments of €55.7 million (2022: €28.0 million).

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06 Other operating expenses

Composition of other operating expenses

in €m	2023	2022
Costs for IT service providers and other consulting services	241.1	206.1
IT costs	196.9	166.3
Non-recoverable input tax	72.0	68.1
Premises expenses	47.9	41.1
Insurance premiums, contributions and fees	31.0	26.1
Advertising and marketing costs	28.3	26.5
Travel, entertainment and corporate hospitality expenses	29.8	18.4
Cost of exchange rate differences	7.2	11.0
Supervisory Board remuneration	5.0	5.1
Short-term leases	2.9	3.0
Miscellaneous	33.7	37.8
Total	**695.8**	**609.5**

The costs of IT service providers and other consulting services mainly relate 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

	2023		2022	
in €m	PwC network	Thereof PwC GmbH	PwC network	Thereof PwC GmbH
Statutory audit services	9.1	5.1	9.2	6.0
Other assurance or valuation services	1.3	0.7	1.3	0.5
Tax advisory services	0	0	0	0
Other services	0.3	0.0	0.1	0.1
Total	**10.7**	**5.8**	**10.6**	**6.6**

The fee for auditing services" from PricewaterhouseCoopers GmbH Wirtschaftsprüfungsgesellschaft (PwC) mainly related to the audit of consolidated and individual financial statements of Deutsche Börse AG, as well as to various audits of financial statements at subsidiaries. Audit-integrated reviews of interim financial statements were performed. Other assurance services mainly relate to business reviews of internal systems and controls required by law or contract, the voluntary review of the remuneration report and the issuance of comfort letters. The fee for other services mostly relates to project-related advisory services for non-regulated subsidiaries.

07 Result from financial investments

Result 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 to the extent that such dividends are not capital repayments.

Composition of result from financial investments

in €m	2023	2022
Result of the equity method measurement of associates	1.8	6.8
Result of financial investments measured at amortised cost	– 1.8	0
Result of financial investments measured at fair value through profit or loss	– 13.8	2.1
Result of derivatives	2.4	2.5
Result of hedge accounting	– 2.7	– 1.2
Total	– 14.0	10.2

For changes in financial investments see note 12.

08 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. Measurement effects from interest rate derivatives, including interest rate hedges, are also shown in this item. The position also includes measurement effects from foreign exchange derivatives to the extent that they relate to treasury activities in the non-banking business.

Composition of financial income

in €m	2023	2022 [1]
Interest income from financial assets measured at amortised cost	25.6	8.6
Interest income from financial liabilities measured at amortised cost	0.9	2.9
Interest income from financial assets measured at fair value through other comprehensive income	0	0.1
Result from hedge accounting	0	3.8
Fair value gain from foreign currency derivatives	3.6	14.4
Interest income on tax refunds	5.3	2.5
Other interest income and similar income	11.2	0.5
Total	46.6	32.8

1) The reclassification of fair value gains recognised in other comprehensive income in connection with interest rate hedges was reported under financial income in the previous year. Such interest rate hedges are concluded to hedge the cash flow risk arising from potential interest rate changes. In order to reflect this economic purpose more accurately, the resulting amount was adjusted retrospectively as at 31 December 2022 by €–4.8 million. This led to a reduction of €–4.8 million in financial income in the consolidated income statement as at 31 December 2022 and a corresponding reduction in financial expenses.

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Composition of financial expense

in €m	2023	2022[1]
Interest expense from financial liabilities measured at amortised cost[2]	79.5	48.9
Transaction cost of financial liabilities measured at amortised cost	7.1	1.4
Interest expense from financial assets measured at amortised cost	0.1	3.0
Interest expense from lease liabilities	8.1	6.7
Fair value loss from foreign currency derivatives	0	9.5
Interest expense on taxes	7.7	15.8
Expense of the unwinding of the discount on pension provisions	2.7	1.8
Other interest expense and non-interest expense	15.5	9.3
Total	120.6	96.4

1) Previous year adjusted, see note 3.
2) This includes €7.8 million (2022: €4.8 million) time value gains from interest rate swaps designated as hedging instruments to hedge cash flow risk from bond issues.

09 Income taxes

Deutsche Börse Group is subject to the tax laws of those countries in which it operates and generates income. If it is probable that the tax authorities will not accept the disclosed amounts or the legal assessments on which the Group's tax declarations are based (uncertain tax positions), tax liabilities are recognised based on the best possible estimate of expected cash outflows. Tax assets are recognised if it is considered almost 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

in €m	2023	2022
Current income tax expense/(-income)	645.4	478.6
for the current year	638.9	513.2
for previous years	6.5	– 34.6
Deferred income tax expense/(-income)	9.5	64.7
due to temporary differences	9.5	– 7.4
due to tax loss and interest carryforwards	15.2	14.9
due to changes in tax legislation and/or tax rates	– 5.7	7.2
for previous years	– 9.5	50.0
Total income tax expense	654.9	543.3

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Allocation of income tax expense to Germany and foreign jurisdictions

in €m	2023	2022
Current income tax expense/(-income)	645.4	478.6
Germany	312.6	276.3
Foreign jurisdictions	332.8	202.3
Deferred income tax expense/(-income)	9.5	64.7
Germany	19.7	62.3
Foreign jurisdictions	– 10.2	2.4
Total income tax expense	654.9	543.3

Tax rates of 27.4 to 31.9 per cent (2022: 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 (2022: 11.6 to 16.1 per cent), corporation tax of 15 per cent (2022: 15 per cent) and the 5.5 per cent solidarity surcharge (2022: 5.5 per cent) on corporation tax.

Tax rates of 24.9 to 27.2 per cent (2022: 24.9 to 27.7 per cent) were used for the Group companies in Luxembourg. Tax rates of 11.8 to 31.4 per cent (2022: 9.1 to 34.6 per cent) were applied to the Group companies in the remaining countries; see Note 34.

Current income tax expense was reduced by €2.6 million in the reporting year by the utilisation of previously unrecognised tax loss carryforwards (2022: €2.6 million). Deferred tax assets of €1.0 million were created by previously unrecognised tax losses (2022: €1.7 million). Changes in loss allowances for deductible temporary differences also gave rise to deferred tax expenses of €0.2 million (2022: nil).

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

Composition of deferred taxes

	Deferred tax assets		Deferred tax liabilities	
in €m	31 Dec 2023	31 Dec 2022	31 Dec2023	31 Dec 2022
Intangible assets	81.8	53.1	– 828.4	– 484.8
Internally developed software	15.1	4.9	– 75.4	– 43.2
Other	66.7	48.2	– 753.0	– 441.6
Financial assets	3.0	4.9	– 93.3	– 33.2
Other assets	72.8	69.5	– 17.1	– 19.0
Provisions for pensions and other employee benefits	44.9	39.0	– 19.3	– 16.7
Other provisions	28.9	17.3	– 6.2	– 2.9
Liabilities	46.6	26.5	– 68.1	– 32.5
Tax loss and interest carryforwards	38.5	52.4	0	0
Deferred taxes (before netting)	316.5	262.7	– 1,032.4	– 589.1
thereof recognised in profit and loss	290.3	241.9	– 980.5	– 542.2
thereof recognised in other comprehensive income[1]	26.2	20.8	– 51.9	– 46.9
Deferred taxes set off	– 243.2	– 200.9	243.2	200.9
Total	73.3	61.8	– 789.2	– 388.2

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

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

At the end of the reporting period, accumulated unused tax losses amounted to €104.6 million (2022: €40.5 million), for which no deferred tax assets were

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recognised. These unused tax losses are attributable to domestic losses totalling €1.5 million and to foreign tax losses totalling €103.1 million (2022: Germany €0.2 million, foreign tax losses €40.3 million).

Tax losses may be carried forward for up to 7 years in Switzerland. Tax losses arising before 1 January 2018 may be carried forward in the USA for up to 20 years. Losses incurred after 31 December 2017 may be carried forward indefinitely, taking into account the minimum taxation rules. Losses generated as of 1 January 2017 will only be able to be carried forward in Luxembourg for a maximum period of 17 years. Losses that arose before 1 January 2017 are not affected by this limitation. Tax losses may be carried forward indefinitely in Singapore.

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 (2022: none).

Reconciliation from expected to reported income tax expense

in €m	2023	2022
Earnings before tax (EBT)	2,451.8	2,106.5
Expected income tax expense	637.5	547.7
Effects of different tax rates	– 9.0	– 12.1
Effects of non-deductible expenses	23.8	21.4
Effects of tax-exempt income	– 2.7	– 23.9
Tax effects from loss carryforwards	– 2.5	– 3.8
Changes in valuation allowance for deferred tax assets	10.3	0
Effects from changes in tax rates	– 5.7	7.2
Other	6.2	– 8.6
Income tax expense arising from current year	**657.9**	**527.9**
Income taxes for previous years	– 3.0	15.4
Income tax expense	**654.9**	**543.3**

To determine the expected income tax expense, earnings before tax have been multiplied by the composite tax rate of 26 per cent assumed for 2023 (2022: 26 per cent).

As at 31 December 2023, the reported income tax rate was 26.7 per cent (2022: 25.8 per cent).

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10 Intangible assets

Recognition and measurement

Capitalised development costs are amortised from the date of first use of the software using the straight-line method over the asset's expected useful life. The useful life of internally developed software 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 expected useful life is 3 to 7 years, depending on the individual purchase. 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,customer relationships and order backlog. 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 participants, customer relationships and order backlog, and 2 to 20 years for other miscellaneous intangible assets.

Stock exchange licences and certain trade 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 value in use and fair value less costs of disposal) to determine the amount of any potential impairment.

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

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

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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 time period ends in perpetuity. Individual costs of capital are determined for each (group of) CGU(s), for the purpose of discounting projected cash flows. These capital costs are based on data incorporating beta factors, borrowing costs, as well as the capital structure of the respective peer group. Pricing, trading volumes, assets under custody, market share assumptions or general business development assumptions are based on past experience or market research. Other key assumptions are mainly based on external factors and generally correspond to internal management planning. Significant macroeconomic indicators include, for instance, equity index levels, volatility of equity indices, as well as interest rates, exchange rates, GDP growth, unemployment levels and government debt. When calculating value in use, the projections are adjusted for the effects of future restructurings and performance investments, if appropriate.

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

Intangible assets

in €m	Purchased software	Internally developed software	Goodwill	Payments on account and construction in progress	Other intangible assets	Total
Historical cost as at 1 Jan 2022	**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**
Acquisitions through business combinations	430.2	0	2,345.3	0	1,212.4	3,987.8
Additions	14.9	49.6	0	151.9	2.0	218.4
Disposals	– 79.0	– 111.9	0	– 0.2	0	– 191.1
Reclassifications	43.5	148.1	0	– 191.7	0	– 0.1
Exchange rate differences	– 4.3	– 4.0	– 45.5	– 0.1	– 15.0	– 69.0
Historical cost as at 31 Dec 2023	**845.2**	**1,618.3**	**8,213.3**	**138.1**	**3,499.4**	**14,314.4**
Amortisation and impairment losses as at 1 Jan 2022	**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**	**1,758.3**
Amortisation	58.5	89.9	0	0	90.3	238.7
Impairment losses	7.6	8.7	0	0.2	17.0	33.5
Disposals	– 79.0	– 111.9	0	– 0.2	0	– 191.2
Reclassifications	10.0	– 10.5	0	0.4	0.1	0
Exchange rate differences	– 0.2	– 2.6	0	– 0.2	– 0.6	– 3.5
Amortisation and impairment losses as at 31 Dec 2023	**266.5**	**1,085.3**	**0**	**19.8**	**464.2**	**1,835.9**
Carrying amount as at 31 Dec 2022	170.3	424.9	5,913.7	158.5	1,942.6	8,610.0
Carrying amount as at 31 Dec 2023	**578.7**	**533.0**	**8,213.3**	**118.3**	**3,035.3**	**12,478.6**

Changes in other intangible assets by category

in €m	Exchange licences	Trade names	Member, customer relationships and order backlog	Miscellaneous intangible assets	Total
Balance as at 1 Jan 2022	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
Balance as at 31 Dec 2022	25.7	673.1	1,241.3	2.6	1,942.6
Acquisitions through business combinations	0	359.6	852.8	0	1,212.4
Additions	0	0	0	2.0	2.0
Amortisation	– 0.1	– 2.0	– 87.2	– 0.9	– 90.2
Impairments	0	– 2.9	– 14.1	– 0.1	– 17.1
Exchange rate differences	– 0.6	– 7.2	– 6.9	0.2	– 14.4
Balance as at 31 Dec 2023	25.0	1,020.6	1,985.9	3.8	3,035.3

Material intangible assets with with finite useful lives

	Carrying amount as of		Remaining amortisation period as at	
	31 Dec 2023 €m	31 Dec 2022 €m	31 Dec 2023 years	31 Dec 2022 years
Customer Relationship SimCorp	829.8	n.a.	24.8	n.a.
Customer Relationship ISS	406.2	474.3	19.1	20.2
Customer Relationship Clearstream Funds Centre	234.8	234.0	16.8	17.8
Customer Relationship 360T	149.4	159.5	14.8	15.8

Software, payments on account and software in development

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

Development costs that have to be capitalised include direct labour costs, costs of purchased services and workplace costs, including proportionate overheads that can be directly attributed to the preparation of the respective asset for use, such as costs for the infrastructure of software development.

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Development costs that do not meet the requirements for capitalisation are recognised through profit or loss. Interest expense that cannot be allocated directly to one of the development projects is recognised through profit or loss in the reporting period.

Total development costs in the reporting year 2023 came to €323.9 million (2022: €274.5 million), of which €201.5 million were capitalised (2022: €181.8 million).

Impairment testing in 2023 revealed an impairment loss of €33.5 million (2022: €20.4 million), which is shown in the line item "Depreciation, amortisation and impairment losses" and relates to the following assets:

- An extraordinary impairment test of Crypto Finance AG was performed as at 30 September 2023 because its performance was persistently under plan. This resulted in an impairment loss in the Trading & Clearing segment (recoverable amount: negative) of €24.6 million (customer relations €14.1 million, software €7.6 million and trade name €2.9 million).
- Impairment losses of €8.7 million were also recognised for internally developed software in the Securities Services segment and of €0.2 million in the Fund Services segment (recoverable amount: negative) in the fourth quarter of 2023. The reasons for the impairment were that existing functionalities were no longer used and that significant revenues can no longer be generated.

The change in the internal reporting structure related to the introduction of the new Investment Management Solutions segment (IMS) also caused (groups of) CGU to which goodwill had been allocated to be divided up. Deutsche Börse Group reallocated the corresponding carrying amounts based on the relative fair values. The goodwill, that was allocated to the former group of CGUs Qontigo was partially allocated to the group of CGUs ISS STOXX (80.7 per cent) as well as SimCorp Axioma (19.3 per cent) in the current financial year. The goodwill allocated to the CGU ISS was fully allocated to the group of CGUs ISS STOXX. The following tables show the new allocation of goodwill to the corresponding (group of) CGU and the changes over time:

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Goodwill and other intangible assets from business combinations

Changes in goodwill classified by (groups of) CGUs

in €m	Eurex	EEX	360T	Xetra	Securities Services	Fund Services	Qontigo	ISS	SimCorp Axioma	ISS STOXX	Total
Balance as at 1 Jan 2022	1,378.6	120.2	244.6	61.9	1,125.9	584.7	691.2	1,388.9	0.0	0.0	5,596.0
Acquisitions through business combinations	0.0	7.0	0.0	0.0	0.0	157.1	0.0	0.0	0.0	0.0	164.1
Adjustment of previous year goodwill	0.0	0.0	0.0	2.2	0.0	0.0	0.0	– 6.1	0.0	0.0	– 3.9
Exchange rate differences	3.7	3.4	3.4	2.9	0.8	26.1	40.1	77.0	0.0	0.0	157.4
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	0.0	0.0	5,913.6
Reallocation due to change in reporting structure	0.0	0.0	0.0	0.0	0.0	0.0	– 735.8	– 1,468.8	142.0	2,062.6	0
Acquisitions through business combinations	0.0	5.0	0.0	0.0	0.0	4.7	0.0	0.0	2,335.6	0.0	2,345.3
Exchange rate differences	– 2.4	– 2.2	– 2.1	3.5	– 0.5	32.7	4.5	9.0	– 4.9	– 83.1	– 45.5
Balance as at 31 Dec 2023	1,379.9	133.4	245.9	70.5	1,126.2	805.3	0	0	2,472.7	1,979.4	8,213.3

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Key assumptions used for impairment tests in 2023

(Group of) CGU	Allocated book value €m	Risk-free interest rate %	Market risk premium %	Discount rate %	Long-term growth rate %	CAGR[1] Net revenue %	CAGR[1] Operating costs %
Goodwill							
SimCorp Axioma[2]	2,468.2	2.7/4.4	5.0/6.5	8.7/9.0	2.0	7.8	4.5
ISS Stoxx	2,062.5	2.7/4.4	5.0/6.5	9.4/9.7	2.0/2.3	6.5	5.1
Eurex	1.382,7	2.7	6.5	7.4	1.5	5.7	3.5
Securities Services	1,126.8	2.7	6.5	6.8	1.0	4.6	3.5
Fund Services	780.1	2.7	6.5	7.7	2.0	8.3	5.4
360T	248.4	2.7	6.5	6.9	1.5	5.9	3.9
EEX	135.7	2.7	6.5	7.7	1.5	5.0	4.8
Xetra	68.3	2.7	6.5	7.6	1.0	– 0.1	2.3
Trade names and exchange licenses							
STOXX	420.0	2.8	6.5	9.4	2.0	6.3	1.1
SimCorp	359.5	2.8	6.5	8.7	2.0	8.0	4.2
ISS	120.6	4.9	5.0	10.1	2.3	7.6	5.8
Axioma	65.2	4.9	5.0	9.3	2.0	8.2	0.9
Nodal	29.0	4.9	5.0	8.7	1.5	1.6	3.9
360T Core	19.9	2.8	6.5	6.8	1.5	5.8	4.3
Kneip	15.0	2.8	6.5	7.0	2.0	15.7	1.2
EEX Core	14.2	2.8	6.5	7.8	1.5	3.8	3.8
360TGTX	1.8	4.5	5.0	7.5	1.5	7.7	7.6

1) CAGR = compound annual growth rate in detailed planning period including the rate used to perpetuity
2) The group of CGUs includes CGUs with business activities in different currency areas (euro and USD). As a result, where applicable individual disclosures for the cost of capital parameters for the separate impairment tests included in the group of CGUs, are provided.

Even in case of a reasonably possible change of one of the parameters, under the condition that all the other parameters remain constant, none of the above-mentioned CGUs or groups of CGUs, with the exception of the SimCorp Axioma CGU, would be impaired.

In the annual impairment test the recoverable amount for the CGU SimCorp Axioma exceeded the carrying amount by €330.1 million. A decrease in the average annual growth rate of net revenue to 7.6 per cent or an increase in operating costs to 4.9 per cent or an increase in the discount rate by 0.4 per cent or a reduction in the growth rate in perpetuity by 0.9 percent would result in the recoverable amount being less than the carrying amount.

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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	1,338.0	1.5	7.3	6.8	1.5	7.1	3.6
Securities Services	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
Fund Services	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 in detailed planning period including the rate used to perpetuity

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11 Property, plant and equipment

Measurement of purchased property, plant and equipment

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

Useful life of property, plant and equipment

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

Measurement of right-of-use assets

We lease a large number of different assets. These mainly include buildings and cars. Right-of-use assets are measured at cost. Any accumulated depreciation and impairment amounts are deducted from the cost of right-of-use assets as part of subsequent measurement. This does not apply to short-term leases with a term of not more than 12 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.

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

in €m	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 process	Total
			Right-of-use	Purchased	Total		
Historical costs as at 1 Jan 2022	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
Acquisitions through business combinations	32.0	1.7	0	3.3	3.3	0.3	37.3
Additions	32.5	7.6	4.7	34.0	38.7	4.0	82.8
Disposals	– 8.1	– 10.1	– 3.9	– 63.4	– 67.3	0	– 85.5
Reclassifications	– 4.4	10.0	0	0.9	0.9	– 6.6	0
Exchange rate differences	– 5.8	– 0.5	– 0.3	– 0.7	– 1.0	– 0.1	– 7.4
Historical costs as at 31 Dec 2023	699.5	119.1	23.9	410.0	433.9	13.8	1,266.3
Depreciation and impairment losses as at 1 Jan 2022	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
Depreciation and impairment losses as at 31 Dec 2022	216.3	65.1	15.9	310.6	326.5	0	607.9
Amortisation	69.9	9.2	4.5	54.6	59.1	0	138.2
Impairment losses	0.2	0	0	0	0	0	0.2
Disposals	– 8.1	– 10.1	– 3.9	– 63.4	– 67.3	0	– 85.5
Reclassifications	– 5.5	5.6	0	– 0.2	– 0.2	0	– 0.1
Exchange rate differences	0.5	– 0.1	– 0.1	– 0.6	– 0.7	0	– 0.3
Depreciation and impairment losses as at 31 Dec 2023	273.3	69.7	16.4	301.0	317.4	0	660.4
Carrying amount as at 31 Dec 2022	437.0	45.3	7.5	125.3	132.7	16.2	631.3
Carrying amount as at 31 Dec 2023	426.2	49.4	7.5	109.0	116.4	13.8	605.8

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The weighted average remaining term of leases is 10.4 years. For details regarding the corresponding lease liabilities, please see note 12.

12 Financial instruments

Financial assets

Additions and disposals

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

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

First-time measurement and classification

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

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.

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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 solely of 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 result 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 result from financial investments through profit or loss. On disposal of these debt instruments all the balances in the revaluation surplus are reclassified to result 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 result from financial investments. Distributions from fund interests are also shown in result from financial investments. Interest income from fixed income bonds in this category are shown in the financial result.

Subsequent measurement of equity instruments

As a rule, equity instruments are subsequently measured at fair value through profit or loss (FVPL). For certain equity instruments we used the irrevocable FVOCI option on acquisition, so that gains and losses there are recognised in other comprehensive income. When the item is derecognised the gains and losses are not recycled through profit or loss, but reclassified to retained earnings. Dividends from these financial assets are shown in result from financial investments.

Impairment

As a rule, any impairment for expected credit losses for debt instruments or balances on nostro accounts for which the simplified impairment model does not apply, and which are carried at amortised cost and at fair value through other comprehensive income is determined using the three-stage impairment model in IFRS 9. The losses represent a forward-looking measurement of future losses that are generally subject to estimates.

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- **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. A significant increase in the credit risk is assumed if an asset is downgraded by three levels within the internal rating system.
- **Stage 3**: Credit-impaired financial assets are allocated to Stage 3 and the impairment is based on the full lifetime expected credit losses. This is the case if there are observable data of significant financial difficulties and there is a high risk of default, even if the definition of a default has not yet been met.

If the credit risk for debt instruments at amortised cost and at fair value through profit or loss or for balances on nostro accounts for which the simplified impairment model does not apply, is low in absolute terms as at the reporting date, they remain in Stage 1 even if the default risk has increased.

We have the following two triggers to identify a default event and which cause a transfer to Stage 3 of the model:

- Legal default event: A contracting party of the Group is unable to fulfil its contractual obligations due to its insolvency.
- Contractual default event: A contracting party of the Group is unable or unwilling to fulfil its contractual obligations in a timely manner. The non-fulfilment of the contractual obligation could result in a financial loss for us.

We measure the expected credit losses for trade receivables using a simplified approach, which requires lifetime expected losses to be recognised from initial recognition of a receivable. Due to the high recovery rate for trade receivables with a due date of less than 360 days, a default is assumed for amounts which are overdue for more than 360 days.

A detailed list of expected credit losses is shown in note 24.

Financial liabilities

Additions and disposals

Financial liabilities are recognised when a Group company becomes a party to the financial 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 for the acquisition of non-controlling shares settled in cash or another financial asset are recognised at the present value of the future purchase price. The effect of the present value of accrued interest on the financial obligation and all measurement changes in the obligation is subsequently measured through profit or loss. The equity interest attributable to non-controlling shareholders underlying the transaction is accounted for as if it had already been acquired at the time of the transaction.

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Financial liabilities measured at fair value through profit or loss

Contingent purchase payments recognised by the purchaser of a business combination in accordance with IFRS 3 are not measured at amortised cost. The resulting financial liabilities are recognised at fair value. With a contingent purchase price component the purchaser is obliged to transfer additional assets or shares to the seller if certain conditions are met. Subsequent measurement is at fair value through profit or loss.

We do not make use of the option to designate financial liabilities at fair value through profit or loss upon initial recognition (fair value option).

Our exposure to various risks associated with the financial instruments is discussed in note 24. The maximum exposure to credit risk at the end of the reporting period is the carrying amount of each class of financial assets mentioned above.

Presentation and netting of financial assets and liabilities

Financial assets and liabilities in the statement of financial position are divided into non-current and current. They are presented as non-current if the remaining term is more than twelve months as at the reporting date. They are presented as current assets if the remaining term is less than twelve months.

Financial assets and liabilities are offset and only the net amount is presented in the consolidated balance sheet when a Group company currently has a legally enforceable right to set off the recognised amounts and intends either to settle on a net basis or to realise the asset and settle the liability simultaneously.

Derivative financial instruments and hedge accounting

The derivative financial instruments we use include interest rate swaps, foreign exchange swaps, foreign exchange forwards and foreign exchange options.

Derivatives are initially recognised at fair value on the date a derivative contract is taken out. The Group applies the provisions of IFRS 9 to account for hedges that meet the criteria for hedge accounting. When a hedging transaction takes place the economic relationship between the hedging instrument and the hedged item is documented in accordance with the requirements of IFRS 9.

All other derivative transactions serve mainly to hedge foreign exchange risks in economic hedging relationships. They 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. Depending on the type of transaction, gains and losses from the subsequent measurement are either recognised in the result of treasury activities in banking business and similar business, in result from financial investments or in the financial result.

Cash flow hedges that qualify for hedge accounting

As in the previous year, in the reporting year we used cash flow hedge accounting for hedges of foreign exchange risk on highly likely transactions and to hedge translation effects for monetary items within the Group. The cash flow hedge used the previous year to hedge the interest rate risk of a planned security issue was terminated when the bond issue was completed.

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. Hedging of planned transactions may be ineffective if the timing of the planned transaction differs from the original estimate. Ineffectiveness due to changes in our default risk or that 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 fair value of the hedged item value 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 result from financial investments. The ineffective portion of interest rate hedges is recognised either in the treasury result of banking and similar business 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 serve to hedge a planned transaction, the amount from the hedging instrument that has accumulated in other comprehensive income up to the acquisition date is derecognised from the reserve and treated as part of the acquisition costs.
- For cash flow hedges of existing receivables and liabilities, the amount that has accumulated in the reserve for cash flow hedges is reclassified to profit or loss in the periods in which there are changes in the hedged future cash flows recognised through profit or loss.
- If this amount is a loss, however, and the assumption is that all or part of this loss cannot be recouped in future periods, then this amount is recognised immediately through profit or loss.

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- Reclassified amounts for foreign exchange hedges are either recognised in the result of treasury activities in banking business and similar business or in result from financial investments. For interest rate hedges recognition is either in the treasury result of banking and similar business or in the 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. However, the hedging relationship continues if it was designated as a rolling hedge from the outset. To the extent that the expected transaction is still considered to be highly probable, the expiring positions are replaced by new hedging instruments. 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. The carrying amount as at 31 December 2023 was €222.7 million (2022: €182.8 million).

None of these financial assets was pledged as collateral. There was an increase of €9.3 million in strategic equity investments in 2023 due to new investments.

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Amounts recognised in other comprehensive income

in €m	2023	2022
Gains/(losses) recognised in other comprehensive income		
Strategic investments	25.5	– 37.1
Debt instruments	0	– 0.3
Total	25.5	– 37.4

Financial assets and liabilities measured at amortised cost

Composition of financial assets at amortised cost

	31 Dec 2023			31 Dec 2022[1]		
in €m	Non-current	Current	Total	Non-current	Current	Total
Trade Receivables	0	1,832.2	1,832.2	0	2,289.2	2,289.2
of which expected losses	0	– 8.3	– 8.3	0	– 6.3	– 6.3
Other financial assets measured at amortised costs	1,801.9	18,046.2	19,848.0	1,894.7	18,670.8	20,565.5
Fixed income securities	1,756.0	219.2	1,975.2	1,782.1	522.9	2,305.0
Balances on nostro accounts	0	436.4	436.4	0	613.4	613.4
Money market lendings	0	16,407.1	16,407.1	0	16,272.6	16,272.6
Customer overdrafts from settlement business	0	390.5	390.5	0	130.1	130.1
Receivables from CCP balances	0	341.5	341.5	0	1,076.6	1,076.6
Other	45.8	251.5	297.3	112.7	55.2	167.9
of which expected losses	– 0.4	– 2.3	– 2.7	– 0.4	– 1.5	– 1.9
Restricted bank balances	0	53,669.4	53,669.4	0	93,538.3	93,538.3
Cash and other bank balances	0	1,655.1	1,655.1	0	1,275.6	1,275.6
Total	1,801.9	75,202.8	77,004.7	1,894.7	115,773.9	117,668.6

1) Previous year adjusted, see note 3.

Debt securities amounting to €600.1 million expired in 2023 (2022: €471.8 million). The amount of long-term listed debt securities includes collateral with a nominal volume of €2.0 million (2022: €5.0 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 other banks and shown as restricted bank balances. Government and government-guaranteed bonds with an external credit rating of at least AA– are accepted as collateral for the reverse repurchase agreements.

Composition of financial liabilities at amortised cost

	31 Dec 2023			31 Dec 2022[1]		
in €m	Non-current	Current	Total	Non-current	Current	Total
Trade payables	0	1,514.2	1,514.2	0	2,039.8	2,039.8
Other liabilities at amortised costs	7,484.0	17,177.6	24,661.6	4,535.0	17,482.8	22,017.9
Bonds issued	7,096.2	0	7,096.2	4,123.4	0	4,123.4
Commercial Papers issued	0	1,138.3	1,138.3	0	564.5	564.5
Money market borrowings	0	14.7	14.7	0	134.8	134.8
Deposits from securities settlement business	0	15,125.4	15,125.4	0	15,506.3	15,506.3
Liabilities from CCP balances	0	335.8	335.8	0	1,021.5	1,021.5
Lease liabilities	384.3	85.0	469.3	410.7	70.8	481.5
Bank overdrafts	0	5.5	5.5	0	53.2	53.2
Other	3.5	472.9	476.3	0.9	131.7	132.6
Cash deposits from market participants	**0**	**53,401.3**	**53,401.3**	**0**	**93,283.1**	**93,283.1**
Total	**7,484.0**	**72,093.0**	**79,577.0**	**4,535.0**	**112,805.8**	**117,340.8**

1) Previous year adjusted, see note 3.

Deutsche Börse AG issued three corporate bonds to finance the acquisition of SimCorp in 2023, which are shown in the following table:

Issued Bonds

ISIN	Due date	Annual coupon	Notional volumes
		%	€m
DE000A351ZR8A	September 2026	3.88	1,000
DE000A351ZS6A	September 2029	3.75	750
DE000A351ZT4A	September 2033	3.88	1,250

The financial liabilities recognised on the balance sheet were not secured by liens or similar rights as at 31 December 2023 or as at 31 December 2022.

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

Financial instruments of the central counterparties

Eurex Clearing AG, European Commodity Clearing AG and Nodal Clear, LLC all act as central counterparties:

- Eurex Clearing AG guarantees the settlement of all transactions involving futures and options on Eurex Germany. It also guarantees the settlement of all transactions for Eurex Repo (repo trading platform) and certain exchange transactions in equities on Frankfurter Wertpapierbörse (FWB, the Frankfurt Stock Exchange). Eurex Clearing AG also guarantees the settlement of off-order-book trades entered for clearing in the trading systems of the Eurex exchanges, Eurex Bonds, Eurex Repo and the Frankfurt 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.

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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, which the clearing houses determine and publish according to the rules defined in the contract specifications.

Composition of financial instruments held by central counterparties

in €m	31 Dec 2023	31 Dec 2022
Repo transactions	118,074.6	109,687.8
Options	27,498.0	29,323.4
Total	**145,572.5**	**139,011.2**
thereof non-current	7,667.6	9,078.4
thereof current	137,904.9	129,932.8

Receivables and liabilities that may be offset against a clearing member are reported on a net basis. Financial liabilities of €563.0 million were eliminated because of intra-Group GC Pooling transactions (31 December 2022: €364.0 million).

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Other financial assets and liabilities at FVPL

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

	Carrying amount 31.12.2023			Carrying amount 31.12.2022		
in €m	Non-current	Current	Total	Non-current	Current	Total
Derivatives	0.2	17.6	17.8	0.9	14.8	15.7
Derivatives designated as cash flow hedges	0	5.3	5.3	0	5.4	5.4
Derivatives not designated as hedges	0.2	12.3	12.5	0	9.3	9.3
Miscellaneous financial assets	178.0	14.3	192.3	165.9	1.0	167.0
Strategic investments	102.3	1.1	103.4	94.3	0	94.3
Fund units and other financial instruments	75.8	13.2	88.9	71.7	1.0	72.7
Total other financial assets	178.2	31.9	210.1	166.8	15.8	182.6
Derivatives	50.8	15.9	66.6	26.8	119.0	145.8
Derivatives designated as cash flow hedges	0	9.9	9.9	26.8	0	26.8
Derivatives not designated as hedges	50.8	6.0	56.7	0	119.0	119.0
Miscellaneous financial liabilities	0.3	0.1	0.4	6.1	0.3	6.4
Contingent consideration	0.3	0.1	0.4	6.1	0.3	6.4
Total other financial liabilities	51.1	16.0	67.0	32.9	119.3	152.2

The fund interests include collateral of €8.0 million (31 December 2022: €8.0 million). As of 31 December 2023 there were foreign currency derivatives not designated as part of a hedging relationship with a term of less than two months with a nominal volume of €4,006.7 million (31 December 2022 : €5,552.3 million with a term of less than six months). Of the total, €2,596.0 million (31 December 2022: €1,554.6 million) relate to foreign exchange derivatives with a positive fair value and €1,410.7 million (31 December 2022: €3,997.7 million) to derivatives with a negative fair value. These foreign currency derivatives are mainly used to convert payments received in US dollars into euros for liquidity management purposes and also as an alternative to unsecured deposits and loans, to hedge the unsecured counterparty risk and liquidity risk in everyday liquidity management.

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Amounts recognised in profit or loss

in €m	2023	2022
Net gain/(loss) from derivatives not designated as hedges	– 90.0	74.5
Net gain/(loss) from cash flow hedges	– 2.7	– 1.1
Net gain/(loss) from cash flow IRS hedges	0	3.8
Net gain/(loss) from other financial assets measured at fair value through profit or loss	– 4.4	– 4.9
Distributions from fund units	0.6	11.4
Net gain/(loss) from other financial liabilities measured at fair value through profit or loss	– 9.5	– 4.6
Total	– 106.0	79.1

Cash flow hedges that qualify for hedge accounting

We enter into cash flow hedges 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 foreign currency hedging instruments on the financial position and financial performance is as follows:

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. Therefore, the hedge ratio is 1:1. The foreign exchange hedging transactions in US dollars are due in 2024.

Hedging transactions in cash flow hedges

	2023	2022
Foreign exchange derivative in USD		
Positive market value		
Carrying amount in €m	5.3	5.4
Notional amount in USDm	159.0	156.0
Cumulative change in value of hedged items used to determine the ineffectiveness of the hedging relationship in €m	5.3	5,4
Weighted average hedge rate for hedging instruments	1.1	1.0
Negative market value		
Carrying amount in €m	9.9	26.8
Notional amount in USDm	227.0	340.8
Cumulative change in value of hedged items used to determine the ineffectiveness of the hedging relationship in €m	4.3	24.9
Weighted average hedge rate for hedging instruments	1.2	1.2

Interest rate hedges with a nominal volume of €2,000.0 million and foreign exchange hedges with a nominal volume of US$ 113.8 million expired in 2023.

The revaluation surplus for cash shown in other comprehensive income relates to the following hedging instruments:

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Cash flow hedge reserve

in €m	Cost of hedging reserve	Reserve for cash flow hedges foreign currency derivatives	Reserve for cash flow hedges interest rate swaps	Total
Balance as at 1 Jan 2022	**0.9**	**0.2**	**11.6**	**12.6**
Change in fair value of hedging instruments recognised in OCI	0	– 9.9	51.6	41.7
Hedging costs deferred and recognised in other comprehensive income	– 2.0	0	0	– 2.0
Reclassification to profit or loss	3.6	15.3	– 4.8	14.2
Settlement	0	– 0.2	0	– 0.2
Balance as at 31 Dec 2022	**2.5**	**5.4**	**58.4**	**66.3**
Change in fair value of hedging instruments recognised in OCI	0	5.3	36.8	42.1
Hedging costs deferred and recognised in other comprehensive income	– 4.8	0	0	– 4.8
Reclassification to profit or loss	3.3	0	– 7.8	– 4.5
Settlement	– 0.6	– 5.4	0	– 6.0
Balance as at 31 Dec 2023	**0.3**	**5.3**	**87.5**	**93.1**

The separate amount in the cost of hedging reserve comprises the forward component of forward contracts. The separated costs relate to over-time hedged items in the form of 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

in €m	Fair value as at 31 Dec 2023	thereof attributable to: Level 1	Level 2	Level 3
Financial assets measured at fair value through other comprehensive income (FVOCI)				
Strategic investments	222.7	75.2	0	147.5
Financial assets measured at fair value through profit or loss (FVPL)				
Non-current financial instruments held by central counterparties	7,667.6	0	7,667.6	0
Other non-current financial assets	178.2	20.3	0	157.9
Current financial instruments held by central counterparties	137,904.9	0	137,904.9	0
Other current financial assets	31.9	12.0	17.6	2.3
Total assets	**146,005.3**	**107.5**	**145,590.1**	**307.6**
Financial liabilities measured at fair value through profit or loss (FVPL)				
Non-current financial instruments held by central counterparties	7,667.6	0	7,667.6	0
Other non-current financial liabilities	51.1	0	0	51.1
Current financial instruments held by central counterparties	137,341.9	0	137,341.9	0
Other current financial liabilities	16.0	0	15.9	0.1
Total liabilities	**145,076.5**	**0**	**145,025.4**	**51.2**

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Fair value hierarchy previous year

in €m	Fair value as at 31 Dec 2022	thereof attributable to: Level 1	Level 2	Level 3
Financial assets measured at fair value through other comprehensive income (FVOCI)				
Strategic investments	182.8	39.3[1]	0	143.5[1]
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	167.0	12.5[1]	0.0	154.4[1]
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 assets	**139,376.8**	**51.8[1]**	**139,026.1**	**298.9[1]**
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	119.3	0	119.0	0.3
Total liabilities	**138,799.5**	**0**	**138,793.0**	**6.4**

1) Strategic investments (FVOCI) of €39.3 million and non-current financial assets (FVPL) of €1.6 million were measured as at 31 December 2022 on the basis of available market prices and so are classified as Level 1.The disclosures on Level 3 as at 31 December 2022 were adjusted accordingly.

The other non-current and current assets and liabilities included in the Level 2 hierarchy include foreign currency forwards. The basis for measuring the market value of the foreign currency forwards is the forward rate at the reporting date for the remaining term. They are based on observable market prices. The basis for measuring the market value of financial instruments held by central counterparties are market transactions for identical or similar assets on non-active markets and option pricing models based on observable prices.

The following table presents the valuation techniques, including material unobservable inputs, used to determine the fair value of Level 3 financial instruments (FVPL).

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
Derivatives	Internal Black-Merton-Scholes option pricing model	Value of equity Riskfree interest rate Volatility Dividend yield	The estimated fair value would go up (down), if: - the expected value of the equity were lower (higher) - the risk-free interest rate were lower (higher) - the volatility were higher (lower) - dividend yields were higher (lower)
Strategic investments	Adjusted prices for assets on inactive markets	Measurement by means of price adjustments for assets on inactive markets A descriptive sensitivity analysis is not used here for this reason.	n.a.
Interests in institutional investment funds	Net asset value	These investments include private equity funds and alternative investments held by Deutsche Börse Group. They are valued by the fund manager based on net asset value. Net asset value is determined using non-public information from the respective private equity managers. Deutsche Börse Group only has limited insight into the specific inputs used by the fund managers; a descriptive sensitivity analysis is therefore not used here.	n.a.
Contingent purchase price components	Discounted cash flow model	Value of equity	The estimated fair value would go up (down), if the expected value of the equity were higher (lower)

The following table shows the reconciliation from opening to closing balance for the fair value of Level 3 financial instruments.

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Changes in level 3 financial instruments	Assets		Liabilities
in €m	Financial assets measured at fair value through other comprehensive income[1]	Financial assets measured at fair value through profit or loss[1]	Financial liabilities measured at fair value through profit or loss
Balance as at 1 Jan 2022	**139.2**	**153.2**	**1.9**
Additions	1.6	25.1	0
Disposals	– 7.3	– 3.7	0
Unrealised capital losses recognised in profit or loss	0	– 10.1	4.7
Changes recognised in the revaluation surplus	8.6	0	0
Unrealised effects from currency translation recognised in equity	1.6	4.0	0
Gains/(losses) recognised in equity	– 0.3	0	0
Balance as at 31 Dec 2022	**143.5**	**155.4**	**6.4**
Changes from business combinations	4.8	0	0
Additions	9.3	22.7	54.0
Disposals	0	– 0.5	– 15.2
Reclassifications	0.9	– 0.9	0
Realised capital gains/(losses) recognised in profit or loss	0	0	– 0.3
Unrealised capital losses recognised in profit or loss	0	– 16.6	6.2
Changes recognised in the revaluation surplus	– 7.2	0	0
Unrealised effects from currency translation recognised in equity	– 3.8	0	0
Balance as at 31 Dec 2023	**147.5**	**160.2**	**51.2**

1) Strategic investments (FVOCI) of €39.3 million and non-current financial assets (FVPL) of €1.6 million were measured as at 31 December 2022 on the basis of available market prices and so are classified as Level 1.The disclosures on Level 3 as at 31 December 2022 were adjusted accordingly.

The change in financial assets measured at FVOCI is mainly due to the acquisition of strategic investments in the amount of €9.3 million and positive valuation effects in the amount of €7.2 million, which were recognised in the revaluation surplus with no effect on profit or loss. In addition to the acquisition of fund shares in the amount of €4.7 million and convertible bonds in the amount of €14.2 million measured at FVPL, negative valuation effects in the amount of €16.6 million resulted. The increase in other non-current liabilities measured at FVPL is mainly due to the first time recognition of derivatives that were not in the money on the balance sheet date.

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 Level 3 financial instruments would change as follows when using these inputs:

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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	Fair value change Decrease €m
Financial liabilities			
Derivatives	Expected value of equity (10% change)	– 14.5	21.3
	Volatility(10% change)	12.0	– 11.0

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 us include debt instruments with a fair value of €1,891.2 million (31 December 2022: €2,157.4 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 us have a fair value of €6,953.4 million (31 December 2022: €3,635.3 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	
in €m	31 Dec 2023	31 Dec 2022	31 Dec 2023	31 Dec 2022	31 Dec 2023	31 Dec 2022
Financial assets from repo transactions	251,971.3	163,774.7	– 133,896.7	– 54,086.9	118,074.6	109,687.8
Financial liabilities from repo transactions	– 251,408.3	– 163,410.7	133,896.7	54,086.9	– 117,511.6	– 109,323.8
Financial assets from options	84,622.7	96,580.1	– 57,124.7	– 67,256.7	27,498.0	29,323.4
Financial liabilities from options	– 84,622.7	– 96,580.1	57,124.7	67,256.7	– 27,498.0	– 29,323.4

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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 "Risk report" section 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 €100,990.9 million as at the reporting date (2022: €155,339.1 million), collateral totalling €122,728.5 million (2022: €182,104.6 million) was actually deposited.

Composition of collateral held by central counterparties

in €m	31 Dec 2023	31 Dec 2022
Cash collateral (cash deposits)[1,3]	53,318.6	93,067.7
Securities and book-entry securities collateral[2,3]	69,409.9	89,036.9
Total	122,728.5	182,104.6

1) The amount includes the clearing fund totalling €6,292.8 million (2022: €7,580.5 million),
2) The amount includes the clearing fund totalling €2,709.7 million (2022: €2,481.6 million),
3) The collateral value is determined on the basis of the fair value less a haircut

13 Contract balances

The Group has recognised the following assets and liabilities from contracts with customers:

Contract balances

	31.12.2023			31.12.2022		
in €m	non-current	current	Total	non-current	current	Total
Contract costs	10.5	11.0	21.5	5.7	8.5	14.2
Contract assets	259.6	87.8	347.4	0	0	0
Contract liabilities	11.9	203.0	214.8	13.6	172.0	185.6

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 €7.9 million in 2023 (2022: €5.2 million) and is shown in the consolidated income statement under depreciation, amortisation and impairment

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losses. Contract costs are presented in the consolidated statement of financial position in the items "Other non-current assets" and "Other current assets".

Contract assets represent a legal right to consideration for software that has already been transferred to customers under subscription agreements with future payments. The increase is due to the SimCorp acquisition. Contract assets are presented in the consolidated statement of financial position in the items "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 €177.8 million included in contract liabilities as at 31 December 2022 was recognised as revenue in the financial year 2023. The increase in contract liabilities is mainly due to changes in the basis of consolidation of €39.8 million from the SimCorp acquisition. Contract liabilities are presented in the consolidated statement of financial position in the items "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 2023 for multi-year contracts that are not invoiced on a variable basis as performance obligations are satisfied is €1,080.2 million (2022: €179.8 million), We anticipate that €322.4 million (2022: €58.5 million) of the transaction price will be recognised as revenue in the next reporting period. The remaining €757.8 million will be recognised in subsequent financial years. The significant increase is mainly due to changes in the basis of consolidation from the SimCorp acquisition.

14 Other current assets

Composition of other current assets

in €m	31 Dec 2023	31 Dec 2022
Other receivables from CCP transactions (commodities)	721.5	2,133.6
Prepaid expenses	126.9	127.9
Contractual assets	87.8	0
Tax receivables (excluding income taxes)	60.6	26.1
Interest receivables on taxes	40.2	9.2
Contract costs	11.0	8.5
Crypto assets	7.9	7.6
Miscellaneous	9.7	30.4
Total	1,065.4	2,343.3

The decline in other current assets results almost exclusively from the decline in receivables from the CCP business in connection with physical commodity deliveries on the spot markets, which were subject to high volatility at year-end 2022. Other current liabilities also fell correspondingly, see note 20. These receivables do not belong to the financial assets, as the claims do not include receipts of cash or cash equivalents but are claims to physical deliveries of commodities.

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15 Equity

Changes in equity are presented in the consolidated statement of changes in equity. As at 31 December 2023 the number of no-par value registered shares of Deutsche Börse AG in issue was 190,000,000 (31 December 2022: 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 contingent 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

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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 2023 or 31 December 2022.

In November 2023, Deutsche Börse AG announced a share buyback program for 2024 based on the authorisation granted by the Annual General Meeting on 8 May 2019. In the period up to 3 May 2024 at the latest, up to 14,000,000 shares in the company are to be repurchased at a total cost of up to €300 million (excluding incidental acquisition costs).

The development of treasury shares is shown in the following overview:

Development of treasury shares

in numbers of shares	2023
Treasury shares, beginning of the fiscal year	6,261,055
Issuance under share-based payments and employee share programs	– 129,872
Own shares as consideration	– 1,243,643
Treasury shares, end of fiscal year	**4,887,540**

As part of the acquisition of non-controlling interests, 1,243,643 own shares were used as consideration. In addition, 129,872 own shares were sold to employees as part of the employee participation programme (Group Share Plan, GSP), see note 18.

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Revaluation surplus

Revaluation surplus

in €m	Share-based payments	Equity investments measured at FVOCI	Cash flow hedges	Defined benefit obligations	Other	Total
Balance as at 1 Jan 2022 (gross)	**3.2**	**83.9**	**12.6**	**145.5**	**0**	**245.2**
Changes from defined benefit obligations	5.2	0	0	0	0	5.2
Fair value measurement	0	– 37.4	53.7	0	0	16.3
Changes from share-based payments	0	0	0	206.7	0	206.7
Balance as at 31 Dec 2022 (gross)	**8.3**	**46.5**	**66.3**	**352.2**	**0**	**473.4**
Changes from defined benefit obligations	14.4	0	0	0	0	14.4
Changes from share-based payments	0	25.5	26.8	0	0	52.4
	0	0	0	– 47.9	0	– 47.9
	0	0	0	0	– 0.1	– 0.1
Balance as at 31 Dec 2023 (gross)	**22.7**	**72.1**	**93.1**	**304.3**	**– 0.1**	**492.2**
Deferred taxes						
Balance as at 1 Jan 2022	0	– 24.4	0.0	0	0	– 24.4
Reversals	0	– 14.6	– 18.1	0	0	– 32.7
Balance as at 31 Dec 2022	0	– 39.0	– 18.1	0	0	– 57.1
Additions	0	1.1	– 7.3	0	0	– 6.2
Balance as at 31 Dec 2023	**0**	**– 37.9**	**– 25.4**	**0**	**0**	**– 63.3**
Balance as at 1 Jan 2022 (net)	3.2	59.5	12.6	145.5	0	220.8
Balance as at 31 Dec 2022 (net)	8.3	7.5	48.2	352.2	0	416.3
Balance as at 31 Dec 2023 (net)	22.7	34.2	67.8	304.3	– 0.1	428.9

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Retained earnings

The “Retained earnings” item includes changes from defined benefit obligations after deferred taxes in the amount of €–58.7 million (2022: €–36.3 million).

Intra-Group reorganisations within Deutsche Börse Group, which included the sale of the investment in ISS HoldCo Inc. to ISS STOXX GmbH with the simultaneous participation of a non-Group investor and the contribution of the investment in Axioma Inc. to SimCorp A/S, resulted in an effect recognised directly in equity of €– 68.8 million in retained earnings as a result of transactions with equity holders, as well as changes in non-controlling interests of €– 198.8 million.

16 Shareholders' equity and appropriation of net income of Deutsche Börse AG

The annual financial statements of the parent company Deutsche Börse AG, prepared as at 31 December 2023 in accordance with the provisions of the Handelsgesetzbuch (HGB, the German Commercial Code), report net profit for the period of €2,118.4 million (2022: €875.1 million) and equity of €5,918.8 million (2022: €4,229.9 million). In 2023, Deutsche Börse AG distributed €661.5 million (€3.60 per share) from distributable profit for the previous year.

Proposal on the appropriation of the unappropriated surplus

in €m	31 Dec 2023	31.12.2022
Net profit for the period	2,118.4	875.1
Appropriation to other retained earnings in the annual financial statements	– 1,058.4	– 175.1
Unappropriated surplus	**1,060.0**	**700.0**
Proposal by the Executive Board:		
Distribution of a regular dividend to the shareholders of €3.80 per share for 185,112,460 no-par value shares carrying dividend rights	703.4	661.5
Appropriation to retained earnings	356.6	38.5

No-par value shares carrying dividend rights

Number	31 Dec 2023	31 Dec 2022
Number of shares issued as at 31 December	190,000,000	190,000,000
Number of treasury shares as at the reporting date	– 4,887,540	– 6,261,055
Number of shares outstanding as at 31 December	**185,112,460**	**183,738,945**

The proposal on the appropriation of distributable profit reflects treasury shares held directly or indirectly by the company that do not carry dividend rights under section 71b Aktiengesetz (AktG, the German Stock Corporation Act). The number of shares carrying dividend rights can change until the Annual General Meeting through the repurchase or sale of further treasury shares. In this case, with a dividend of €3.80 per eligible share, an amended resolution for the appropriation of distributable profit will be proposed to the Annual General Meeting.

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17 Employee benefits

Employee benefits consist of:

- Provisions for pensions,
- provisions for all current and non-current employee benefits and
- provisions for termination benefits

Composition of employee benefits

	31 Dec 2023			31 Dec 2022		
in €m	Non-current	Current	Total	Non-current	Current	Total
Provisions for pensions	48.1	0	48.1	12.0	0	12.0
Provisions for employee benefits	76.8	324.7	401.5	70.0	258.6	328.6
Share based payment	54.9	41.2	96.1	47.4	38.3	85.7
Bonuses	12.0	217.2	229.1	10.7	176.9	187.6
Vacation entitlements, flextime and overtime	0	54.4	54.4	0	38.0	38.0
Other personnel provisions	9.9	11.9	21.9	11.9	5.4	17.3
Provisions on the occasion of termination of employment	26.6	16.6	43.1	37.8	4.3	42.1
Early retirement agreements	26.6	0	26.6	37.8	0	37.8
Severance agreements	0	16.6	16.6	0	4.3	4.3
Total benefits to employees	**151.5**	**341.3**	**492.8**	**119.8**	**262.9**	**382.7**

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The individual categories of provisions changed as follows in the financial year 2023:

Changes in provisions

in €m	Bonuses	Share-based payments	Holiday entitlements, flexitime and overtime	Other personnel provisions	Early retirement and severance
Balance as at 1 Jan 2023	**187.6**	**85.7**	**38.0**	**17.3**	**42.1**
Changes in the basis of consolidation	14.4	4.2	10.4	3.5	4.3
Reclassification	– 6.6	– 0.2	– 0.9	– 3.8	1.0
Utilisation	– 185.2	– 35.5	– 50.8	– 21.2	– 42.8
Reversal	– 17.8	– 1.6	– 31.1	– 2.2	– 1.5
Additions	228.6	43.5	87.0	28.2	39.0
Interest	0	0	0	0.3	0.9
Currency translation	8.1	0	1.8	– 0.2	0.1
Balance as at 31 Dec 2023	**229.1**	**96.1**	**54.4**	**21.9**	**43.1**

Provisions for pensions

Defined benefit pension plans

Provisions for pensions and similar obligations are measured using the projected unit credit method on the basis of actuarial reports. Calculating the present value requires certain actuarial assumptions (e.g. discount rate, staff turnover rate, salary and pension trends) to be made. The current service cost and the net interest expense or income for the subsequent period are calculated on the basis of these assumptions.

The fair value of the plan assets is deducted from the present value of the pension obligations, if necessary taking into account the regulations on the upper limit of the value of plan assets in excess of the obligation (so-called asset ceiling), so that the net pension obligation or the asset value from the defined benefit plans results. Net interest expense for the financial year is calculated by applying the discount rate determined at the beginning of the financial year to the net defined benefit liability determined as at that date.

The relevant discount rate is determined by reference to the return on long-term corporate bonds with a rating of at least AA (Moody's Investors Service, S&P Global Ratings, Fitch Ratings and DBRS) on the basis of the information provided by Bloomberg, and a maturity that corresponds approximately to the maturity of the pension obligations. Moreover, the bonds must be denominated in the same currency as the underlying pension obligation. Measurement of the pension obligations in euros is based on a discount rate which is determined according to the adjusted "GlobalRate:Link" methodology from the advisory company Willis Towers Watson, updated in line with the current market trend.

The actuarial gains or losses and the difference between the expected and the actual return or loss on plan assets are recognised in other comprehensive income in the revaluation surplus. They result from changes in expectations with regard to life expectancy, pension trends, salary trends and the discount rate.

Other long-term benefits for employees and members of executive boards (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.

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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. The Group uses external trust solutions to cover some of its pension obligations.

Net liability of defined benefit obligations

in €m	Germany	Luxembourg	Other	Total 31 Dec 2023	Total 31 Dec 2022
Present value of defined benefit obligations that are at least partially funded	421.0	72.4	86.8	580.2	500.7
Fair value of plan assets	– 396.3	– 67.3	– 75.7	– 539.3	– 493.8
Funded status	**24.7**	**5.1**	**11.1**	**40.9**	**6.9**
Present value of unfunded obligations	7.2	0	0	7.2	5.1
Net liability of defined benefit obligations	**31.9**	**5.1**	**11.1**	**48.1**	**12.0**
Amount recognised in the balance sheet	**31.9**	**5.1**	**11.1**	**48.1**	**12.0**

The defined benefit plans comprise a total of 4,907 beneficiaries (2022: 4,527). 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

in €m	Germany	Luxembourg	Other	Total 31 Dec 2023	Total 31 Dec 2022
Eligible current employees	173.8	62.8	80.8	317.4	183.3
Former employees with vested entitlements	157.9	9.1	2.3	169.3	232.5
Pensioners or surviving dependants	96.5	0.5	3.7	100.7	90.0
	428.2	**72.4**	**86.8**	**587.4**	**505.8**

Essentially, the retirement benefits encompass the following retirement benefit plans:

Executive boards of Group companies (Germany and Luxembourg)

Individual commitment plans exist for executive board members of certain Group companies; they are based on the plan for executives described in the second paragraph below, i.e. in each calendar year the company provides an annual contribution to a capital component calculated in accordance with actuarial principles. The benefit assets equal the total of the acquired capital components of the individual years and are converted into a lifelong pension once the benefits fall due. In addition, retirement benefit agreements are in place with members of the executive boards of Group companies, under which they are entitled to pension benefits upon reaching the age of 63 and following reappointment. When the term of office began, the replacement rate was 30 per cent of individual pensionable income. It rose by 5 percentage points with each reappointment, up to a maximum of 50 per cent of pensionable income.

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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) organized 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.

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Changes in net defined benefit obligations

	Present value of obligations		Fair value of planassets		Total	
in €m	2023	2022	2023	2022	2023	2022
Balance as at 1 Jan	505.8	668.6	– 493.8	– 533.1	12.0	135.5
Current service cost	21.4	28.0	0	0	21.4	28.0
Interest expense/(income)	18.1	7.5	– 17.8	– 6.1	0.3	1.4
Past service cost	1.3	0	0	0	1.3	0
	40.8	35.5	– 17.8	– 6.1	23.0	29.4
Remeasurements						
Return on plan assets, excluding amounts already recognised in interest income	0	0	– 10.7	55.1	– 10.7	55.1
Adjustments to demographic assumptions	0	0	0	0	0	0
Adjustments to financial assumptions	36.9	– 194.0	0	0	36.9	– 194.0
Experience adjustments	2.4	6.1	0	0	2.4	6.1
	39.3	– 187.9	– 10.7	55.1	28.6	– 132.8
Effect of exchange rate differences	5.3	2.7	– 4.8	– 2.3	0.5	0.4
Contributions:						
Employers	0.5	0	– 17.8	– 21.1	– 17.3	– 21.1
Plan participants	2.5	2.3	– 2.6	– 2.3	– 0.1	0
Benefit payments	– 16.4	– 14.7	16.4	14.7	0	0.0
Tax and administration costs	– 0.7	– 0.5	0.7	0	0	– 0.5
Reclassification to Held for Sale	0	0	0	0.6	0	0.6
Changes in the basis of consolidation	10.2	– 0.1	– 8.9	0.5	1.3	0.4
Balance as at 31 Dec	587.4	505.8	– 539.3	– 493.8	48.1	12.0

For Germany, there is a past service cost of around €1.0 million resulting from the new entitlements to the termination pension provided for members of the Executive Board.

In the 2023 financial year, employees converted a total of €6.6 million (2022: €5.8 million) of their variable remuneration into deferred compensation benefits.

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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 2023		31 Dec 2022	
in %	Germany	Luxembourg	Germany	Luxembourg
Discount rate	3.18	3.18	3.73	3.73
Salary growth	3.00	3.50	3.00	3.50
Pension growth	2.20	0	2.20	0
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 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.

Owing to the current very high inflation rates, pension adjustments in the next two to three years will significantly exceed the assumed (long-term) pension trend. This cumulative inflation (adjustment backlog) was taken into account in the corresponding commitments through the one-off increase in pensions.

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.

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Sensitivity of defined benefit obligation to change in the weighted principal assumptions

	Change in actuarial assumption	Effect on defined benefit obligation			
		2023		2022	
in €m		Defined benefit obligation in €m	Change in %	Defined benefit obligation in €m	Change in %
Discount rate	Increase by 1.0 percentage point	445.1	– 11.1%	393.1	– 11.1%
	Reduction by 1.0 percentage point	568.9	13.6%	502.4	13.6%
Salary growth	Increase by 0.5 percentage points	508.3	1.5%	448.5	1.4%
	Reduction by 0.5 percentage points	494.2	– 1.3%	436.9	– 1.2%
Pension growth	Increase by 0.5 percentage points	509.1	1.7%	449.4	1.7%
	Reduction by 0.5 percentage points	492.8	– 1.6%	434.9	– 1.6%
Life expectancy	Increase by one year	511.8	2.2%	451.2	2.1%
	Reduction by one year	489.1	– 2.3%	432.3	– 2.2%

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.

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Composition of plan assets

in €m	31 Dec 2023		31 Dec 2022	
Bonds	420.5	78.0 %	400.1	81.0 %
Government bonds	319.0		301.0	
Multilateral development banks	92.8		82.4	
Corporate bonds	8.7		16.7	
Derivatives	6.9	1.3 %	– 0.2	– 0.0 %
Stock index futures	3.7		– 0.1	
Interest rate futures	3.2		– 0.1	
Investment funds	31.0	5.7 %	30.0	6.1 %
Total listed	458.4	85.0 %	430.0	87.1 %
Qualifying insurance policies	49.0	9.1 %	42.9	8.7 %
Cash	31.9	5.9 %	20.9	4.2 %
Total not listed	80.9	15.0 %	63.8	12.9 %
Total plan assets	539.3	100.0 %	493.8	100.0 %

As at 31 December 2023 the plan assets did not include any financial instruments of the Group (2022: 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 amount of the net obligation is also influenced in particular by changes in the discount rates. 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

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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 2023 is 12.6 years (2022: 12.7 years).

Expected maturities of undiscounted pension payments

	Expected pension payments[1]	
in €m	31 Dec 2023	31 Dec 2022
Less than 1 year	18.6	14.5
Between 1 and 2 years	21.4	16.3
Between 2 and 5 years	83.7	69.7
Between 5 and 10 years	219.3	173.7
Total	343.0	274.2

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

The expected service costs for defined benefit plans (excluding service cost for deferred compensation) for the financial year 2023 amount to approximately €13.3 million plus €1.2 million for the net interest expense.Defined contribution pension plans and multi-employer plans

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 €61.3 million (2022: €54.6 million).

Multi-employer plans

Several Deutsche Börse Group companies are member institutions of BVV Versicherungsverein des Bankgewerbes a.G., a pension insurance provider with its registered office in Berlin. Employees and employers make regular contributions, which are used to provide guaranteed pension plans, and a potential surplus. The contributions to be made are derived from contribution rates applied to active employees' monthly gross salaries, taking into account specific financial thresholds. Member institutions have a subsidiary liability for the fulfilment of BVV's agreed pension benefits. However, we consider the risk that this liability will be invoked as remote. Given that BVV membership is governed by several Works Council Agreements, membership termination is subject to certain conditions. The notice period for termination is defined in the articles of association of the BVV pension scheme. The employer retains a subsidiary liability for the pension entitlements of every individual employee that have vested as at the termination date. 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

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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. The Deutsche Börse Group is not liable for commitments by other members of BVV.

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 such designated multi-employer plans amounted to €10.3 million (2022: €10.1 million). In 2024 we expect to make contributions to multi-employer plans amounting to around €10.3 million.

18 Share-based payment

Share-based payments for employees, managers and Executive Board members comprise cash-settled remuneration plans and remuneration plans settled with equity instruments. The main remuneration plans at Deutsche Börse Group are described below.

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 Deutsche Börse Group established an additional tranche of the SBP for senior executives who are not risk takers. In order to participate in the SBP, beneficiaries 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 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 SBP shares

Tranche	Balance at 31 Dec 2023 Number	Deutsche Börse AG share price at 31 Dec 2023 €	Intrinsic value/ option at 31 Dec 2023 €	Fair value/ option at 31 Dec 2023 €	Settlement obligation €m	Current provision at 31 Dec 2023 €m	Non-current provision at 31 Dec 2023 €m
2019	0	186.50	165.95	165.95	0.0	0.0	0.0
2020	6,908	186.50	186.50	179.04	1.2	1.2	0.0
2021	9,458	186.50	186.50	131.70	1.3	0.0	1.3
2022	10,943	186.50	186.50	86.12	0.9	0.0	0.9
2023[1]	11,880	186.50	186.50	42.23	0.5	0.0	0.5
Total	**39,189**				**3.9**	**1.2**	**2.7**

1) Since the subscription rights for the 2023 tranche are only awarded in financial year 2024, the number disclosed as at the reporting date may change in financial year 2024.

Average price of the exercised and forfeited share options

Tranche	Average price of the exercised share options €	Average price of the forfeited share options €
2019	165.95	102.93
2020	174.89	112.83
2021	167.50	59.93
2022	155.20	n.a.

The stock options from the 2019 SBP tranche were exercised in the reporting period following the expiration of the waiting period. Shares of the SBP tranches 2020 to 2022 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 €3.9 million were recognised at the reporting date of 31 December 2023 (31 December 2022: €3.0 million). The total expense for SBP stock options in the reporting period amounted to €2.0 million (2022: €1.5 million).

Change in number of SBP shares allocated

	Balance at 31 Dec 2022	Additions/ (disposals) tranche 2019	Additions/ (disposals) tranche 2020	Additions/ (disposals) tranche 2021	Additions/ (disposals) tranche 2022	Additions/ (disposals) tranche 2023	Fully settled cash options	Options forfeited	Balance at 31 Dec 2023
To other senior executives	34,876	172	75	73	– 331	11,880	–6,614	–942	39,189
Total	34,876	172	75	73	– 331	11,880	– 6,614	– 942	39,189

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 2018-2023 tranches is based on the closing auction price of Deutsche Börse shares as at the disbursement date of the cash component of the respective tranche (cash bonus) in the following year 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 2018-2023 tranches 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 from the tranches 2017-2021 were disbursed with a disbursement price of €168.05 for the shares in the tranche 2017. The disbursement price for the tranches 2018-2021 was €166.35. The difference in payout share prices is caused by the nature of the specific terms and conditions for the respective tranches.

Restricted Stock Units (RSU)

Like the LSI plan, the RSU plan applies to risk takers within Deutsche Börse Group. RSU shares are settled in cash; Deutsche Börse Group thus measures the RSU shares as cash-settled share-based payment transactions. The options are measured using an option pricing model (fair value measurement). Any right to payment of a stock bonus only vests after the expiration of the one-year service period on which the plan is based, taking a three-year retention period and a one-year waiting period into account. No RSU shares were paid out in the reporting year.

Measurement 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 2023 Number	Deutsche Börse AG share price as at 31 Dec 2023 €	Intrinsic value/ option as at 31 Dec 2023 €	Fair value/ option as at 31 Dec 2023 €	Settlement obligation €m	Current provision as at 31 Dec 2023 €m	Non-current provision as at 31 Dec 2023 €m
2018	39,764	186.50	186.50	182.93-186.50	7.3	1.0	6.3
2019	32,408	186.50	186.50	172.57-186.50	5.9	0.8	5.1
2020	27,902	186.50	186.50	169.23-186.50	5.0	0.6	4.4
2021	34,062	186.50	186.50	165.97-186.50	6.0	0.7	5.4
2022	56,662	186.50	186.50	162.79-186.50	10.0	2.9	7.1
2023	54,654	186.50	186.50	162.79-186.50	9.5	0.0	9.5
Total	**245,452**				**43.6**	**5.9**	**37.7**

Provisions amounting to €43.6 million were recognised as at 31 December 2023 (31 December 2022: €34.1 million). The total expense for LSI/RSU stock options in the reporting period amounted to €13.9 million (31 December 2022: €11.3 million).

Change in number of LSI and RSU shares allocated

	Balance at 31 Dec 2022	Additions/ (Disposals) Tranche 2018	Additions/ (Disposals) Tranche 2019	Additions/ (Disposals) Tranche 2020	Additions/ (Disposals) Tranche 2021	Additions/ (Disposals) Tranche 2022	Additions/ Tranche 2023	Fully settled cash options	Balance at 31 Dec 2023
To other senior executives	219,609	–	–	–	–	– 2,173	54,654	– 26,638	245,452
Total	**219,609**	**–**	**–**	**–**	**–**	**– 2,173**	**54,654**	**– 26,638**	**245,452**

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Performance Share Plan (PSP)

The PSP was launched in financial year 2016 for members of the Executive Board of Deutsche Börse AG as well as selected senior executives and employees of Deutsche Börse AG and of participating subsidiaries. The number of phantom PSP shares to be allocated is calculated based on the number of shares granted and the increase of net profit for the period attributable to Deutsche Börse AG shareholders, as well as on the relative performance of the total shareholder return (TSR) on Deutsche Börse AG's shares compared with the total shareholder return of the STOXX Europe 600 Financials Index constituents. The shares are subject to a performance period of five years. The subsequent payment of the stock bonus will be settled in cash.

The 100 per cent stock bonus target was calculated in euros for each Executive Board member. The 100 per cent stock bonus target for selected executives and employees of Deutsche Börse AG and participating subsidiaries is defined by the responsible decision-making bodies. Based on the PSP 100 per cent stock bonus target, the corresponding number of phantom shares for each beneficiary was calculated by dividing the stock bonus target by the average share price (Xetra closing price) of Deutsche Börse AG's shares in the last calendar month preceding the performance period. Any right to payment of a PSP stock bonus vested only at the end of a five-year performance period.

The final number of Performance Shares was calculated by multiplying the original number of Performance Shares with the level of overall target achievement. The PSP level of overall target achievement was based on two performance factors during the performance period: firstly, on the relative performance of the total shareholder return (TSR) on Deutsche Börse AG's shares compared with the total shareholder return of the STOXX Europe 600 Financials Index as the peer group; and secondly, on the increase of Deutsche Börse AG's net profit for the period attributable to shareholders of the parent company. The two performance factors contribute 50 per cent each to calculate overall target achievement. For the 2021 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 are calculated by reference to performance against four equally weighted ESG targets.

The payout amount is calculated by multiplying the final number of performance shares with the average share price of Deutsche Börse AG's shares (Xetra closing price) in the last calendar month preceding the performance period, plus the total of dividend payments made during the performance period based on the final number of performance shares. In the reporting year shares from the 2018 PSP tranche were disbursed at a price of €182.30. Until the 2021 tranche, servicing and treatment will be in accordance with the cash settlement rules. Settlement is in cash and with the exception of the 2021-2023 tranches the transaction is measured and recognised as cash-settled share-based remuneration. Because of their specific contractual conditions the 2021-2023 tranches are treated as a settlement with equity instruments.

Measurement 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.

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Valuation parameters for PSP shares

		Tranche 2023	Tranche 2022	Tranche 2021	Tranche 2020	Tranche 2019	Tranche 2018	Tranche 2017
Term to		31 Dec 2027	31 Dec 2026	31 Dec 2025	31 Dec 2024	31 Dec 2023	31 Dec 2022	31 Dec 2021
Relative total shareholder return	%	100.0	100.0	100.0	100.0	155.0	250.0	235.0
Net profit for the period attributable to Deutsche Börse AG shareholders	%	n.a.	n.a.	n.a.	157.36-162.71	170.39	170.39	142.65-152.89
Growth rate Earnings per Share	%	150.0	150.0	150.0	n.a.	n.a.	n.a.	n.a.
ESG-Target Achievement	%	150.0	150.0	175.0	n.a.	n.a.	n.a.	n.a.

Valuation of PSP shares

Tranche	Balance as at 31 Dec 2023 Number	Deutsche Börse AG share price as at 31 Dec 2023 €	Intrinsic value/ option as at 31 Dec 2023 €	Fair value/ option as at 31 Dec 2023 €	Settlement obligation €m	Current provision as at 31 Dec 2023 €m	Non-current provision as at 31 Dec 2023 €m
2017	4,698	186.50	154.75	154.75	0.7	0.7	0.0
2018	35,867	186.50	182.30	182.30	6.5	6.5	0.0
2019	88,637	186.50	196.26	196.26	17.4	17.4	0.0
2020	49,503	186.50	186.50	159.00	8.1	0.0	8.1
2021[1]	48,362	186.50	186.50	82.23	4.0	0.0	0.0
2022[1]	47,365	186.50	186.50	58.72	2.8	0.0	0.0
2023[1]	41,313	186.50	186.50	32.56	1.4	0.0	0.0
Total	**315,745**				**40.8**	**24.7**	**8.1**

1) Since the 2021-2023 tranches are treated as being equity-settled, no provisions have been recognised for them. The above figures also include the shares of the members of the Executive Board.

Provisions for the PSP amounting to €32.7 million were recognised at the reporting date of 31 December 2023 (31 December 2022: €47.0 million). Of these provisions, €27.7 million were attributable to members of the Executive Board (2022: €22.8 million). The total expense for PSP options in the reporting period amounted to €11.3 million (2022: €17.0 million). Of that amount, an expense of €8.3 million was attributable to members of the Executive Board (2022: €13.1 million).

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Change in number of PSP shares allocated

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To the Executive Board[1]	318,124	–	724	234	–	3	31,346	– 94,043	256,388
To other senior executives	77,360	–	183	– 486	– 1,110	– 1,024	9,967	– 25,533	59,357
Total	395,484	–	907	– 252	– 1,110	– 1,021	41,313	– 119,576	315,745

1) Active and former members of the Executive Board

Granting of PSP-tranche 2023 for Executive Board members

The PSP tranche 2023 was awarded at the beginning of the 2023 financial year. The relevant allocation price for the PSP tranche 2023 was €168.05. The performance period for the PSP tranche 2023 ends on 31 December 2027. The individual target amounts, the allocation price, the number of phantom performance shares awarded and the fair value as at 31 December 2023 are shown for the individual Executive Board members below:

Granted PSP-tranche 2023 for Board members

Board member	Investment Target €	Grant share price €	Granted Performance Shares Number	Fair value/ option as at 31 Dec 2023 €
Theodor Weimer	1,365,000	168.05	8,123	330,614
Christoph Böhm	588,000	168.05	3,499	142,417
Thomas Book	542,334	168.05	3,228	131,380
Heike Eckert	542,334	168.05	3,228	131,380
Stephan Leithner	588,000	168.05	3,499	142,417
Gregor Pottmeyer	588,000	168.05	3,499	142,417
Total	4,213,668			1,020,625

Group Share Plan (GSP)

Employees of Deutsche Börse Group who are not members of the Executive Board or managing directors of Deutsche Börse Group companies 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 2023, 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, expenses totalling €7.4 million (2022: €6.3 million) were recognised in staff costs for the GSP.

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Other material remuneration programmes in the context of acquisitions

Qontigo Management Incentive Programme (MIP)

An employee incentive programme was set up in the course of the acquisition for the senior management of the former Qontigo sub-group (index and analytics business of the Deutsche Börse Group). It grants a long-term remuneration component in the form of virtual shares in the former Qontigo sub-group. These are generally accounted for as sharebased payments. The remuneration payable to the beneficiaries is intended to reflect the economic development of the former Qontigo sub-group. 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. It began when the transaction was completed. Due to a potential payout with cash by Group Deutsche Börse, the MIP is accounted for under the principles of a cash-settlement.

Valuation

The value of the virtual shares is determined using a Monte Carlo simulation on the respective balance sheet date, which appropriately reflects the contract-specific conditions. The underlying simulations depend on the underlying from which the payment is linked to the beneficiaries of the MIP. The enterprise value of the former 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 former 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 Incentive Programme (EIP)

An employee incentive programme has been set up for selected managers at ISS, which enables 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 EIP contains a time-based and a performance-based component. The programme will be settled in the first quarter 2024 with shares in Deutsche Börse AG and is accounted for according to the rules for equity settlement.

Valuation

The value of the virtual shares was calculated at the date of allocation to the beneficiaries, using a Black-Scholes model with contract-specific inputs. The main valuation parameters included 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.

ISS STOXX Employee Incentive Programme

An employee incentive programme with market-standards conditions was set up for the senior management of the ISS STOXX sub-group. It grants a long-term remuneration component in the form of virtual shares and a virtual dividend right for the ISS STOXX sub-group. The programme enables the beneficiaries to participate in long-term valuation increases, so the accounting principles for share-based remuneration apply.

The vesting period is three years, and under certain circumstances can be exercised early. Grants to the programme beneficiaries were made in late 2023 and early 2024. Since the main contractual conditions were agreed with the beneficiaries in 2023 and the employees had already started their work, Deutsche Börse Group started recognising the corresponding expenses in Q3 2023.

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Deutsche Börse Group has a unilateral option to settle the virtual shares with equity, so they are accounted for in accordance with the rules for equity settlement. The virtual dividend right is settled in cash, so this component is accounted for in accordance with the rules on cash settlement.

Valuation

The value of the virtual shares is calculated at the date of 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 STOXX, as well as the expected term. A pro rata addition of expenses over the vesting period is conducted in accordance with the criteria for a non-forfeiture of the programme. The value of the virtual dividend right is measured at each reporting date using current market parameters.

SimCorp Employee Incentive Programme

Employee incentive programmes with market-standards conditions were set up for the senior management and employees of SimCorp, which are settled in cash. They pay a long-term remuneration component in the form of restricted stock units (RSU) with contingent claims during the vesting period. The programme enables the beneficiaries to participate in long-term valuation increases, so the accounting principles for share-based remuneration apply.

The vesting period is five years from the award date. The first allocations were made to the beneficiaries before Deutsche Börse Group acquired control of SimCorp.

Deutsche Börse Group has the option of changing and/or adjusting the terms of the incentive programme in agreement with the Executive Board of SimCorp on condition that any such changes and/or adjustments do not reduce the overall value of the restricted stock units.

Valuation

The value of the restricted stock units was adjusted on the basis of the transaction price reflecting the value of SimCorp at the time of the takeover by Deutsche Börse Group. In line with the vesting criteria, the value of the award is recognised as an expense over the vesting period.

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19 Changes in other provisions

Other provisions

The individual categories of provisions changed as follows in the financial year 2023:

Changes in other provisions

€m	Interest on taxes	Restructuring plan	Other tax provision	Anticipated losses	Miscellaneous
Balance as at 1 Jan 2023	84.5	5.7	46.3	8.3	34.4
Changes in the basis of consolidation	0	0	0	1.2	2.3
Reclassification	1.9	– 1.0	0	0	0
Utilisation	– 61.5	0.1	– 21.9	– 1.3	2.0
Reversal	– 10.1	0	– 1.3	– 0.7	– 15.1
Additions	17.0	8.8	10.7	11.1	51.4
Currency translation	0	0	0	0	– 1.3
Interest	0	0	0	0	0
Balance as at 31 Dec 2023	31.8	13.6	33.8	18.6	73.7

Provisions are recognised when we have a present obligation as a result of a past event, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation. The amount of the provision corresponds to the best possible estimate of the outflow of resources required to fulfil the obligation as at the balance sheet date.

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.

20 Other current liabilities

Composition of other current liabilities

in €m	31 Dec 2023	31 Dec 2022
Other liabilities from CCP transactions (commodities)	721.5	2,133.5
Contract liability	202.9	172.0
Tax liabilities (excluding income taxes)	69.9	54.9
Prepaid income	22.4	6.0
Liabilities to employees	20.0	13.7
Social security liabilities	7.4	15.2
Liabilities to supervisory bodies	3.2	3.4
Miscellaneous	17.5	3.6
Total	1,064.8	2,402.3

The decline in other current liabilities results primarily from the decline in liabilities from CCP business. These liabilities are not part of the financial liabilities because the obligation does not consist of payment of cash but in physical delivery of commodities.

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Composition of other non-cash income

in €m	2023	2022
Subsequent measurement of non-derivative financial instruments	200.2	55.4
Subsequent measurement of derivatives	– 14.0	14.7
Equity method measurement	7.5	30.4
Gains on the disposal of subsidiaries and equity investments	0	– 13.0
Contract assets and liabilities	– 85.7	17.4
Total	**108.0**	**104.8**

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

in €m	31 Dec 2023	31 Dec 2022[1]
Restricted bank balances	53,669.4	93,538.3
Other cash and bank balances	1,655.1	1,275.6
Net position of financial instruments held by central counterparties	563.0	364.0
Current financial instruments measured at amortised cost	18,046.2	18,874.6
less financial instruments with an original maturity exceeding 3 months	– 1,657.7	– 2,485.4
Current financial liabilities measured at amortised cost	– 17,177.6	– 17,686.6
less financial instruments with an original maturity exceeding 3 months	1,258.0	1,514.2
Current liabilities from cash deposits by market participants	– 53,401.3	– 93,283.2
Cash and cash equivalents	**2,955.2**	**2,111.6**

1) Previous year adjusted, see note 3.

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Changes in liabilities arising from financing activities

in €m	Bonds issued	Leasing liabilities	Commercial papers
Balance as at 1 Jan 2022	**3,636.7**	**486.7**	**801.0**
Cash flow from financing activities	479.3	– 75.9	– 741.0
Acquisition from business combinations	0	5.1	0
Additions from leases	0	69.2	0
Disposals from leases	0	– 18.4	0
Other and exchange rate differences	7.5	14.8	0
Balance as at 31 Dec 2022	**4,123.4**	**481.5**	**60.0**
Cash flow from financing activities	2,968.8	– 83.6	3.4
Acquisition from business combinations	0	34.9	0
Additions from leases	0	37.2	0
Disposals from leases	0	– 3.9	0
Other and exchange rate differences	3.9	3.3	1.5
Balance as at 31 Dec 2023	7,096.2	469.3	64.9

22 Earnings per share

Under IAS 33, earnings per share are calculated by dividing the net profit for the period attributable to Deutsche Börse AG shareholders (net income) by the weighted average number of shares outstanding.

In order to determine diluted earnings per share, potentially dilutive ordinary shares that may be acquired under the share-based payment programmes are added to the average number of shares.

In order to determine diluted earnings per share, all subscription rights for which a cash settlement has not been determined are assumed to be settled with equity instruments – regardless of actual accounting in accordance with IFRS 2.

All tranches of the Long-Term Sustainability Instrument (LSI) for which a choice between settlement in cash or equity instruments exists were settled in the year 2021. 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 employee incentive programmes at Institutional Shareholder Services Inc. as well as SimCorp A/S there are ongoing option rights, which had a small dilutive effect.

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Calculation of earnings per share (basic and diluted)

	2023	2022
Number of shares outstanding at beginning of period	183,738,945	183,618,782
Number of shares outstanding at end of period	185,112,460	183,738,945
Weighted average number of shares outstanding	184,298,877	183,630,715
Number of potentially dilutive ordinary shares	290,191	354,805
Weighted average number of shares used to compute diluted earnings per share	184,589,068	183,985,520
Net profit for the period attributable to Deutsche Börse AG shareholders (€m)	1,724.0	1,494.4
Earnings per share (basic) (€)	9.35	8.14
Earnings per share (diluted) (€)	9.34	8.12

Segment reporting

	Investment Management Solutions		Trading & Clearing		Fund Services		Securities Services		Group	
	2023	2022	2023	2022	2023	2022	2023	2022	2023	2022
Net revenue (€m)	863.2	651.7	2,262.8	2,187.1	439.9	375.9	1,510.7	1,122.9	5,076.6	4,337.6
Operating costs (€m)	– 581.1	– 383.2	– 914.6	– 876.3	– 209.8	– 171.5	– 412.8	– 391.2	– 2,118.3	– 1,822.2
Result from financial investments	– 6.1	– 7.0	1.2	20.0	– 3.4	– 0.6	– 5.7	– 2.2	– 14.0	10.2
thereof result of the equity method measurement of entities	0	0	14.8	10.1	– 4.6	– 0.6	– 6.6	– 2.7	3.6	6.8
EBITDA (€m)	276.0	261.5	1,349.4	1,330.8	226.7	203.8	1,092.2	729.5	2,944.3	2,525.6
EBITDA margin (%)	32	40	60	61	52	54	72	65	58	58
Depreciation, amortization and impairment losses (€m)	– 128.4	– 103.7	– 165.8	– 134.6	– 45.8	– 44.0	– 78.5	– 73.3	– 418.5	– 355.6
EBIT (€m)	147.6	157.8	1,183.6	1,196.2	180.9	159.8	1,013.7	656.2	2,525.8	2,170.0
Capital expenditure[1] (€m)	44.4	35.1	115.6	159.1	34.4	38.1	69.5	91.2	263.9	323.5
Employees (as at 31 December)	6,628	3,835	4,171	3,918	1,369	1,162	2,334	2,163	14,502	11,078

1) Excluding investments from business combinations

23 Segment reporting

Deutsche Börse divides its business into four segments: This structure is used for the internal Group controlling and forms the basis for the financial reporting. Detailed disclosures on the segment structure, which form part of these consolidated financial statements, can be found under the heading "Business operations and Group structure" in the section "Deutsche Börse: Fundamental information about the Group" in the combined management report.

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The net revenue includes revenue generated through external parties as well as through intercompany transactions. The effect of intercompany revenue is eliminated (in net revenue) at Group level, however, as the revenue generated within the Group by a segment has the same revenue-reducing effect in the respective segment. For an overview of intercompany revenue see note 4. Services between segments are offset on the basis of measured amounts or fixed prices.

Our business model – and that of all our segments – is focused on an internationally operating participant base and pricing does not differ depending on the customer's location. From a price, margin and risk perspective, this means it does not matter whether sales revenue is generated from German or international participants.

The risks and returns from the activities of the subsidiaries operating within the economic environment of the European Monetary Union (EMU) do not differ significantly from each other on the basis of the factors to be considered in identifying information on geographical regions under IFRS 8. We have therefore identified the following regions: Euro area, other Europe, America and Asia-Pacific.

Sales revenue is allocated to the individual regions according to the customer's domicile, while investments and non-current assets are allocated according to the company's domicile and employees according to their location.

As described above, the analysis of sales is based on the direct customer's billing address. This means 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	
in €m	2023	2022	2023	2022	2023	2022	2023	2022
Euro zone	2,715.6	2,543.2	211.7	281.1	4,478.8	4,396.2	6,655	5,702
Rest of Europe	1,466.9	1,315.0	25.2	8.7	5,376.9	1,367.9	3,514	1,984
America	719.7	640.3	27.0	32.8	3,307.3	3,552.5	1,552	1,273
Asia-Pacific	320.6	290.0	0	0.9	35.7	36.1	2,781	2,119
Total of all regions	**5,222.8**	**4,788.5**	**263.9**	**323.5**	**13,198.7**	**9,352.7**	**14,502**	**11,078**
Consolidation of internal net revenue	– 89.6	– 96.2	0	0	0	0	0	0
Group	**5,133.2**	**4,692.3**	**263.9**	**323.5**	**13,198.7**	**9,352.7**	**14,502**	**11,078**

1) Including countries in which more than 10 per cent of sales revenue was generated: Germany (2023: €1,084.0 million; 2022: €1,054.6 million), United Kingdom (2023: €916.2 million; 2022: €883.3 million) and United States (2023: €654.0 million; 2022: €582.3 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: Denmark (2023: €3,989.7 million; 2022: €0.2 million), Germany (2023: €3,787.9 million; 2022: €3,701.1 million), United States (2023: €3,306.0 million; 2022: €3,552.5 million) and Switzerland (2023: €1,357.6 million; 2022: €1,334.6 million).
4) These include intangible assets, property, plant and equipment as well as investments in associates and joint ventures.

24 Financial risk management

Detailed qualitative disclosures on financial instruments in line with IFRS 7.33, which form part of these consolidated financial statements, such as the type and extent of the risks arising from the financial instruments, as well as the objectives, strategies and processes of managing the risks, can be found under the headings "Risk management approach", "Organisational structure and reporting lines for risk management" and "Centrally coordinated risk management process" in the "Risk report" section of the combined management report.

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 by reference to the economic capital concept (for detailed disclosures, see the section "Financial risk"). 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 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 €600.0 million as at 31 December 2023.

We evaluate our risk position continuously. In the view of the Executive Board, no threat to the continued existence of the Group can be identified at this time.

Credit risk

Credit risks at DBG arise from trade receivables and contract assets, fixed income securities held at amortised cost, receivables from money market business, including reverse repos, overdraft facilities from the securities settlement business, receivables from the CCP business, cash and other bank balances. Further credit risks exist for fund interests and convertible bonds at fair value through profit or loss, for financial instruments of the central counterparties and derivative financial investments. Fundamentally and unless otherwise stated, the maximum risk exposure is the carrying amount shown in the consolidated statement of financial position.

Cash investments

Clearstream receives cash deposits from its customers in various currencies, whereby 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 either – to the extent possible – by investing short-term funds on a secured basis, e.g. via reverse repurchase agreements, or by depositing them with central banks.

Eligible collateral for reverse repurchase agreements 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 investment grade ratings within the framework of defined counterparty credit limits. An investment grade rating in this context means an internal rating of at least D, which corresponds to an external Fitch rating of at least BBB.

The carrying amount of reverse repurchase agreements as at 31 December 2023 was €9,424.2 million (2022: €6,805.2 million) and is shown in the items "Restricted bank balances" and "Financial assets measured at amortised cost". The fair value of securities received as collateral under reverse repurchase agreements was €9,614.5 million (2022: €7,144.9 million).

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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.

Neither Clearstream Banking S.A nor Eurex Clearing AG had pledged securities to central banks as at 31 December 2023 (2022: Clearstream Banking S.A €451.3 million and Eurex Clearing AG €0.0 million).

In addition, Clearstream Banking S.A., Clearstream Banking Frankfurt AG and Eurex Clearing AG used forex swaps in the context of their cash investments.

Loans for settling securities transactions

Clearstream grants customers intraday technical overdraft facilities to maximise settlement efficiency. Lending takes place on a secured basis and the individual borrowing participants must provide full collateral for their credit limits in line with the EU regulation. These credit limits can be revoked at the discretion of the Clearstream sub-group. As at 31 December 2023 they came to a total of €175.3 billion. €7.1 billion of the total is unsecured and only relates to credit lines granted in special exceptional cases to selected central banks and multilateral development banks, partly on the basis of the borrower's credit rating and partly on a zero-risk weighting according to Regulation (EU) No. 575/2013 (CRR) and after approval by the Executive Board of the Clearstream sub-group.

Actual outstandings at the end of each business day generally represent a small fraction of the facilities and amounted to €392.7 million as at 31 December 2023 (2022: €131.6 million). 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.

In addition, Clearstream guarantees the risks arising from the Automated Securities Fails Financing programme that it offers its clients, in which Clearstream Banking S.A. acts as an intermediary between the lender and the borrower. This risk is covered by pledged collateral on the borrower's account. As at 31 December 2023 the outstanding guarantees under this programme amounted to €521.7 million (2022: €1,385.2 million). The securities pledged in connection with these loans amounted to €550.7 million (2022: €1,731.5 million).

Trade receivables

The maximum credit risk for the item trade receivables is €1,840.5 million as at 31 December 2023 (2022: €2,295.7 million). 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.

Loss allowances for trade receivables as at 31 December 2023

in €m	Not more than 30 days past due	Not more than 60 days past due	Not more than 90 days past due	Not more than 120 days past due	Not more than 360 days past due	More than 360 days past due	Insolvent	Total
Expected loss rate	0%	0%	0.4%	0.4%	2.3%	99.8%	100%	
Trade receivables	97.2	22.6	7.9	4.7	13.7	5.3	2.7	154.0
Loss allowance	0	0	0	0	0.3	5.3	2.7	8.3

Loss allowances for trade receivables as at 31 December 2022

in €m	Not more than 30 days past due	Not more than 60 days past due	Not more than 90 days past due	Not more than 120 days past due	Not more than 360 days past due	More than 360 days past due	Insolvent	Total
Expected loss rate	0.0%	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

Trade receivables are written off when there is no reasonable expectation of recovery. The following criteria are used for the assessment of derecognition:

- Insolvency proceedings are not started for want of assets.
- Insolvency proceedings have not resulted in any payment for a period of three years, and there is no indication that any amount will be received going forward.

In the reporting year, as in the previous year there were no significant write-offs due to customer defaults (2022: nil).

Contract assets

The maximum credit risk for the item contract assets was €375.5 million as at 31 December 2023 (2022: nil). Impairments of €3.0 million were recognised on contract assets as at 31 December 2023. No contract assets were recognised as at 31 December 2022. Contract assets relate to rights to consideration from customers for software licences under subscription agreements with future payments, if this right depends on future performance by us. Contract assets from contracts with customers are measured at amortised cost less expected credit losses. Contract assets come within the scope of the IFRS 9 impairment testing rules. The simplified approach is used and the expected credit loss over the entire term is estimated.

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Debt securities

The maximum credit risk for the item debt securities was €1,975.7 million as at 31 December 2023 (2022: €2,305.3 million). All debt securities are considered to have low default risk and the loss allowance recognised during the period was therefore limited to twelve months' expected losses. The Group considers listed bonds to have a low credit risk if they have an investment grade credit rating from an external rating agency.

Development of the loss allowance

Development of the loss allowance

	Debt securities	Trade receivables	Trade receivables	Loans from the securities settlement business[1]	
in €m	Stage 1	Stage 1/2	Stage 3	Stage 3	Total
Closing loss allowance as at 1 January 2022	**0.4**	**0.8**	**7.9**	**1.7**	**10.8**
Increase from business combinations	0	0	– 0.1	0	– 0.1
Increase in the allowance recognised in profit or loss during the period	0.1	0	0.7	0	0.8
Decrease in the allowance recognised in profit or loss during the period	– 0.1	– 0.5	– 2.6	– 0.2	– 3.4
Closing loss allowance as at 31 December 2022	**0.4**	**0.3**	**6.0**	**1.5**	**8.2**
Increase from business combinations	0	0.4	0	0	0.4
Increase in the allowance recognised in profit or loss during the period	0.1	0.1	3.3	0.8	4.3
Decrease in the allowance recognised in profit or loss during the period	– 0.0	– 0.1	– 1.7	0	– 1.8
Closing loss allowance as at 31 December 2023	**0.4**	**0.8**	**7.6**	**2.3**	**11.0**

1) Loss allowances for loans from the securities settlement business were reported as part of trade payables in previous years. This resulted in a reclassification to the item "Other financial assets measured at amortised cost" in the amount of € 1.5 million.

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Financial instruments of the central counterparties

The maximum credit risk for financial instruments of the central counterparties as at 31 December 2023 was €100,991.0 million (2022: €155,339.2 million) and is based on the net value of all margin requirements for transactions closed on the reporting date and collateral for the default fund. This amount represents the risk-based view of Eurex Clearing AG and European Commodity Clearing AG, while the carrying amount of the "financial instruments held by central counterparties" item in the balance sheet shows the gross amount of the open trades according to IAS 32. 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. The amount of collateral deposited for the financial instruments of the central counterparties was €122,728.0 million as at 31 December 2023 (2022: €182,104.6 million). This amount represents the collateral value of cash and securities collateral deposited for margins, covering the net value of all margin and default fund requirements

Additional security mechanisms of the Group's central counterparties are described in detail in the section "Risk report".

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. Concentrations of collateral 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 the disclosures on capital management under the heading "Regulatory capital requirements and regulatory capital ratios" in the Risk management section 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 CSD recognised in under article 16 CSDR.

The required economic capital (based on the so-called "Value at Risk" (VaR) with a confidence level of 99.9 per cent) for credit risk is calculated monthly for each day and amounted to €457.0 million as at 31 December 2023 (2022: €430.0 million).

We also apply additional methods in order to detect credit concentration risks. We analyse the impact of a default by our two largest counterparties with unsecured commitments 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 commitments 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 2023.

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Market risk

Market risk arises from changes in interest rates, foreign-exchange rates and other market prices. Deutsche Börse Group is generally only affected to a limited extent by market risk.

The economic capital required for market price risks (based on the Value at Risk (VaR) with a confidence level of 99.9 per cent) is calculated at the end of each month. As of 31 December 2023 the economic capital for market price risks was €143.0 million (2022: €114.0 million).

In the 2023 financial year, no impairment losses (2022: €1.0 million) were recognised in profit or loss for entities accounted for using the equity method that are not included in the VaR for market risk.

Interest rate risk

Changes in market interest rates may affect Deutsche Börse Group's net income for the period attributable to Deutsche Börse AG shareholders. This risk arises whenever interest terms of financial assets and liabilities are different.

Interest-rate-sensitive assets include the Group's money market and investment portfolios, while interest rate sensitive liabilities mainly consist of short-term debt instruments. Interest rate risk from long-term liabilities of Deutsche Börse AG is mitigated through issuance of fixed-coupon bonds.

In line with our risk strategy, we may 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 requires the critical parameters of the hedging instruments to match the hedged items.

Deutsche Börse Group issued three fixed rate bonds with a total nominal value of €3 billion in 2023 in connection with the takeover of SimCorp. To hedge the long-term financing against unexpected interest rate increases, three forward starting deal contingent interest rate swaps with a nominal value of €2 billion were taken out in May 2023. These swaps were dissolved when the fixed interest bonds were issued in September 2023. Cash flow hedge accounting was applied to this hedging. Details of Deutsche Börse Group's outstanding bonds can be found in the "Financial position" section of 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 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 recognised interest rate.

Group entities may furthermore invest their own capital and part of customer cash balances in high-quality liquid bonds.

The risk from interest-bearing assets and liabilities is monitored every business day and systematically limited. The system consists of a combined limit metric (CLM) that covers both liquidity and interest rate risk. The interest rate risk limits determine the acceptable maximum loss caused by a hypothetical adverse yield curve shift.

In this way, the cash flow risk arising from potential interest rate changes was hedged. Cash flow hedge accounting was applied to this hedging.

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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 the present value of future operating cash flows from foreign-exchange movements. Translation risk comprises effects from the valuation to 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 asset and liabilities in foreign currencies.

We operate internationally and are, to a limited extent, exposed to foreign-exchange risk, primarily in US$, Fr., £ and Kč. Exchange rate fluctuations may affect our profit margins and the value of assets and liabilities denominated in a currency that is not the functional currency of the relevant Group entity. The respective currency risks arise mainly from operating income and expenses denominated in a currency other than the functional currency, partly from that portion of the Clearstream segment's sales revenue and net interest income from treasury activities in banking and similar business that is directly or indirectly in US$.

Currency mismatches are avoided to the maximum extent possible. All types of foreign exchange risk are measured regularly and monitored at Group level. Limits are set for the cash flow and currency translation risks that affect our gains 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.

Clearstream Banking S.A. entered into foreign-exchange forwards in 2023 to hedge part of the risk from the result of treasury activities in banking and similar business in US$. In addition, the Group uses foreign exchange derivatives to hedge foreign exchange risks in connection with internal cash pooling and loans.

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Other market risks

Market risk also arises from investments in bonds, investments in funds and 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 predefined 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 us, 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. Financing arrangements required for unexpected events may also result in a liquidity risk. Most of our cash investments are short-term to ensure that liquidity is available, should such a financing need arise. Both Eurex Clearing AG and Clearstream can invest stable customer credit balances in secured money market products (for up to one year for Eurex Clearing and six months for Clearstream) or in investment grade securities with a remaining term to maturity of less than five years for Eurex Clearing and Clearstream, subject to strict monitoring of mismatching 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. In terms of the maturities of the cash spreads received from customers and its corresponding investments, Eurex Clearing is almost perfectly matched.

The companies of Deutsche Börse Group have the following credit lines at their disposal, which were not recognised as of the balance sheet date.

Contractually agreed credit lines

Company	Purpose of credit line	Currency	Amount at 31 Dec 2023 m	Amount at 31 Dec 2022 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]	€	4,375.0	4,225.0
	Settlement[2]	US$	2,950.0	3,200.0
	Settlement[2]	£	0	350.0
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	140.0
Axioma Inc.	Working capital	US$	1.9	1.7
SimCorp A/S	Settlement	DKK	266.3	0.0

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.

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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. As at 31 December 2023 this guarantee came to US$ 3.0 billion (2022: 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 (2022: US$3.0 billion).

A commercial paper programme offers Deutsche Börse AG and subsidiaries an opportunity for flexible, short-term financing, involving a total facility of €3.5 billion in various currencies. We had issued commercial paper with a nominal volume of €1,142.1 million as at 31 December (2022: €566.0 million)

In 2023, after the successful acquisition of SimCorp, Standard & Poor's downgraded Deutsche Börse AG's long-term issuer credit rating to AA–. Deutsche Börse AG's commercial paper programme also had the highest short-term rating of A-1+. The AA rating of Clearstream Banking S.A. was confirmed with a stable outlook by the rating agencies Fitch and S&P Global Ratings (S&P) in 2023. S&P also rated Clearstream Banking AG as AA in November 2023. For further details on the rating of Deutsche Börse Group, see section "Financial position" section in the combined management report.

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Maturity analysis of financial instruments (1)

€m	Contractual maturity						
	Sight	Not more than 3 months	More than 3 months but not more than 1 year	More than 1 year but not more than 5 years	Over 5 years	Reconciliation to carrying amount	Carrying amount
31 Dec 2023							
Non-derivative financial liabilities							
Non-current financial liabilities measured at amortised cost	0	7.4	149.9	3,667.1	5,048.8	– 1,389.1	7,484.0
thereof lease liabilities	0	0	0	186.2	198.1	0	384.3
Non-current financial liabilities at fair value through profit or loss	0	0	0	0.3	0	0	0.3
Trade payables	2.4	1,511.3	0.4	0.0	0	0	1,514.2
Current financial liabilities measured at amortised cost	15,335.3	1,587.1	248.7	7.3	0.0	– 0.9	17,177.6
thereof lease liabilities	0	21.8	63.2	0	0	0	85.0
Current financial liabilities at fair value through profit or loss	0	0	0.1	0	0	0	0.1
Cash deposits by market participants	15,605.7	37,190.9	604.7	0	0	0	53,401.3
Total non-derivative financial liabilities (gross)	**30,943.4**	**40,296.7**	**1,003.8**	**3,674.7**	**5,048.8**	**– 1,390.1**	**79,577.4**
Derivatives and financial instruments held by central counterparties							
Financial instruments and derivatives held by central counterparties	47,582.0	70,925.7	18,834.2	7,078.3	589.3	0	145,009.5
less financial assets and derivatives held by central counterparties	– 48,145.0	– 70,925.7	– 18,834.2	– 7,078.3	– 589.3	0	– 145,572.5
Cash inflow – derivatives and hedges							
Cash flow hedges	0	35.9	313.1	0	0		
Fair value hedges	0	0	0	0	0		
Derivatives held for trading	1,168.6	2,835.0	0	0	0		
Cash outflow – derivatives and hedges							
Cash flow hedges	0	– 37.2	– 304.7	0	0		
Fair value hedges	0	0	0	0	0		
Derivatives held for trading	– 1,168.3	– 2,843.7	0	0	0		
Total	**– 562.7**	**– 10.1**	**8.3**	**0**	**0**		

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Maturity analysis of financial instruments (2)

€m	Contractual maturity						
	Sight	Not more than 3 months	More than 3 months but not more than 1 year	More than 1 year but not more than 5 years	Over 5 years	Reconciliation to carrying amount	Carrying amount
31 Dec 2022[1]							
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	2,039.7	0.1	0	0	0	2,039.8
Current financial liabilities measured at amortised cost	15,710.3	1,657.1	122.1	0	0	– 6.5	17,482.8
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 liabilities (gross)	**15,710.3**	**96,310.8**	**833.4**	**712.6**	**3,450.3**	**329.6**	**117,347.1**
Derivatives and financial instruments held by central counterparties							
Financial instruments 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**		

1) Previous year adjusted, see note 3.

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25 Financial liabilities and other risks

Legal risks

The companies of Deutsche Börse Group are exposed to litigation. Such litigation may result in payments by entities in the Group. If it is more likely than not that an outflow of resources will occur, a provision will be recognised based on an estimate of the most probable amount necessary to settle the obligation if such amount is reasonably estimable. The management of the entity affected must assess whether the possible obligation results from a past event, as well as evaluate the probability of a cash outflow and estimate its amount.

We recognise provisions for possible losses only if there is a present obligation arising from a past event that is likely to result in an outflow of resources and if the Group can reliably estimate the amount of the obligation (see also note 19). Contingent liabilities may result from present obligations and from possible obligations arising from events in the past. In order to identify the litigation for which the possibility of a loss is more than unlikely, as well as how the possible loss is estimated, Deutsche Börse Group considers a large number of factors, including the nature of the claim and the facts on which it is based, the jurisdiction and course of the individual proceedings, the experience of the Group, prior settlement talks (to the extent that they have already taken place) as well as expert opinions and evaluations of legal advisers.

Losses also may 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 shown for contingent liabilities.

The main legal disputes that have been classified as contingent liabilities as at 31 December 2023 and for which consequently no provisions have been recognised as at 31 December 2023 are described 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. judgements 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 these 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. judgement in 2013, assets in an amount of approx. USD 1.9 billion were already turned over to a plaintiffs group in a U.S. proceeding ("Peterson I") to which Bank Markazi also was a party. Currently, the following proceedings that were initiated by the mentioned plaintiffs groups and that primarily target assets attributed to Bank Markazi are ongoing:

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- "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. The proceedings since then had advanced to the U.S. Supreme Court but were then remanded to the district court. On 22 March 2023, the district court awarded judgement to the plaintiffs for turnover of approximately USD 1.7 billion that are attributed to Bank Markazi and held in custody at Clearstream Banking S.A. in Luxembourg in a client account. Clearstream Banking S.A. appealed against the decision.
- "Havlish" plaintiffs group: On 14 October 2016, plaintiffs filed a complaint in the U.S. against Clearstream Banking S.A. and other parties. Besides the request for turnover of certain assets that Clearstream Banking S.A. holds as a custodian in Luxembourg, the complaint also asserted direct damage claims against Clearstream Banking S.A. and other defendants in the amount of up to approx. USD 6.6 billion (plus punitive damages and interest). On 12 October 2020, an amended complaint was filed in this case, which added further plaintiffs and which in turn asserted additional damages of approx. USD 3.3 billion (plus punitive damages and interest) against Clearstream Banking S.A. and the other defendants.
- "Levin" plaintiffs group: On 26 December 2018, plaintiffs filed a complaint in the U.S. against Clearstream Banking S.A. and other parties. Besides the request for turnover of certain assets that Clearstream Banking S.A. holds as a custodian in Luxembourg, the complaint also asserted direct damage claims against Clearstream Banking S.A. and other defendants in the amount of up to approx. USD 29 million (plus punitive damages and interest). The plaintiffs withdrew their complaint effective as of 24 April 2023.
- "Heiser" plaintiffs group: On 4 December 2019, plaintiffs from a previous case filed a new complaint in the U.S. against Clearstream Banking S.A. targeting turnover of certain assets that Clearstream Banking S.A. holds as a custodian in Luxembourg.
- "Ofisi" plaintiffs group: On 26 August 2020, plaintiffs filed a complaint in the U.S. against Clearstream Banking S.A. and other parties. Besides the request for turnover of certain assets that Clearstream Banking S.A. holds as a custodian in Luxembourg, the complaint also asserts direct damage claims against Clearstream Banking S.A. and other defendants in the amount of up to approx. USD 8.7 billion (plus punitive damages and interest).
- On 24 November 2020, plaintiffs from the abovementioned Havlish case also sued Clearstream Banking S.A. and other parties in Luxembourg. The complaint, among others, asserts direct damage claims against Clearstream Banking S.A. and other defendants in the amount of up to approx. USD 5.5 billion (plus interest).
- "Acosta/Beer/Greenbaum/Kirschenbaum" plaintiffs group: 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 USD 4.9 billion (plus interest), which the complaint alleges are held on accounts of Banca UBAE S.p.A. and Bank Markazi with Clearstream Banking S.A. Alternatively, Bank Markazi seeks damages in the same amount.

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In another proceeding, on 30 April 2021, a Luxembourg first instance court at the request of Bank Markazi issued a declaratory judgement against Clearstream Banking S.A. in connection with, amongst others, the abovementioned Peterson II proceedings 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 per violation. Clearstream Banking S.A. has filed an appeal against the decision.

On 15 June 2018, Banca UBAE S.p.A. filed a complaint against Clearstream Banking S.A. in Luxembourg court. This complaint is a recourse action related to the 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 of Clearstream Banking S.A. 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 2023 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 proceedings, which were suspended for several years, are ongoing.

A buyer of an MBB Clean Energy AG (MBB) bond, which is held in custody by Clearstream Banking AG and was listed on the Frankfurt Stock Exchange, filed a lawsuit at a Dutch court concerning claims for damages in the amount of €33 million against Clearstream Banking AG, Deutsche Börse AG and other parties. The lawsuit was dismissed at first instance in October 2020; the plaintiff filed an appeal against the judgement.

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 in the course of the insolvency proceedings concerning the assets of Air Berlin PLC.

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As informed by the competent court on 28 March 2023, the lawsuit served on Clearstream Banking AG on 24 January 2022 naming Clearstream Banking AG and two other parties as jointly and severally liable defendants for damages in the amount of around €216 million (plus interest) and for a declaration of the defendants' liability for future damages, was withdrawn by the plaintiff.

In the context of sanctions imposed on Russia, Clearstream Banking S.A. has frozen assets of customers in Luxembourg in accordance with applicable law. A number of lawsuits have been brought against Clearstream Banking S.A. in Russian courts targeting turnover or restitution of frozen assets. The total value claimed from Clearstream Banking S.A. in these proceedings amounts to approximately €74 million. It cannot be ruled out that further lawsuits concerning frozen assets may be filed, which could also include recourses against assets held by Clearstream Banking S.A. in Russia or elsewhere.

The Executive board is not currently aware of any significant change in the Group's risk situation.

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 U.S. 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.

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Following the completion of the tax inspections for the years 2006 to 2008 we see the Group exposed to risks resulting from (i) corrections to input VAT deductions in accordance with the letters from the Federal Ministry of Finance of 3 May 2021 and 23 June 2022 (concerning the VAT treatment of services by exchange operators), (ii) the disallowance of tax-free income and intra-Group funding and (iii) the disallowance of provisions for stock option programmes. Full provision has been made in the balance sheet for any tax and interest back-payments that may result and the corresponding appeals have been lodged. We assume that the tax authorities will at least query the points (i) and (ii) mentioned above for the years from 2009 onwards for which the tax assessments are not yet definitive.

26 Corporate governance

On 7 December 2023 the Executive and Supervisory Boards issued the latest version of the declaration of compliance in accordance with section 161 of the Aktiengesetz (AktG, German Stock Corporation Act) and made it permanently available to shareholders on the company's website.

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27 Related party disclosures

Related parties as defined by IAS 24 are members of the executive bodies of Deutsche Börse AG and their close family members, as well as the companies classified as associates of Deutsche Börse AG, investors and investees and companies that are controlled or significantly influenced by members of the executive bodies.

Business relationships with related parties

The following table shows transactions entered into within the scope of business relationships with non-consolidated companies of Deutsche Börse AG during the 2023 financial year. All transactions took place on standard market terms.

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Transactions with related parties

	Amount of the transactions: revenue		Amount of the transactions: expenses		Outstanding balances: receivables		Outstanding balances: liabilities	
in €m	2023	2022	2023	2022	31 Dec 2023	31 Dec 2022	31 Dec 2023	31 Dec 2022
Associates	14.8	14.3	28.0	29.1	1.4	1.1	0.1	2.8
Total sum of business transactions	14.8	14.3	28.0	29.1	1.4	1.1	0.1	2.8

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 €30.2 million (2022: €28.5 million). During the year under review, expenses of €8.3 million (2022: €13.1 million) were recognised in connection with share-based payments to Executive Board members.

The actuarial present value of the pension obligations to Executive Board members was €17.9 million as at 31 December 2023 (2022: €14.5 million). Expenses of €2.0 million (2022: €2.5 million) were recognised as additions to pension provisions.

Former members of the Executive Board or their surviving dependents

The remuneration paid to former members of the Executive Board or their surviving dependents amounted to €3.2 million in 2023 (2022: €6.5 million). The actuarial present value of the pension was €62.8 million as at 31 December 2023 (2022: €58.4 million).

Termination benefits

There were no changes in the composition of the Executive Board of Deutsche Börse AG in 2023, so no expenses were incurred (2022: zero).

Supervisory Board

The aggregate remuneration paid to members of the Supervisory Board in the reporting year was €2.7 million (2022: €2.6 million).

In financial year 2023 the employee representatives on Deutsche Börse AG's Supervisory Board received remuneration (excluding Supervisory Board remuneration) amounting to €0.9 million (2022: €0.8 million). The total consists

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of the fixed and variable salary components and pension expenses for those employee representatives.

28 Employees

Employees

	2023	2022
Average number of employees during the year	12,187	10,675
Employed at the reporting date	14,502	11,078
Employees (average annual FTEs)	11,656	10,143

Of the average number of employees during the year, 30 (2022: 29) were managing directors (not including the Executive Board), 731 (2022: 650) were other senior managers and 11,425 (2022: 9,996) were employees.

Including part-time staff there were 11,656 full-time equivalents (FTE) on average during the year (2022: 10,143). Please also refer to the section "Employees" in the combined management report.

29 Decision-making bodies

The members of the company's decision-making bodies are listed in the chapters "The Executive Board" and "The Supervisory Board" of this annual report.

30 Events after the end of the reporting period

There were no significant events after the end of the reporting period.

31 Date of approval for publication

Deutsche Börse AG's Executive Board approved the consolidated financial statements for submission to the Supervisory Board on 5 March 2024. The Supervisory Board is responsible for examining the consolidated financial statements and stating whether it endorses them.

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32 Disclosures on material non-controlling interests

Material non-controlling interests

	European Energy Exchange Group Leipzig, Germany		ISS STOXX Group Eschborn, Germany	
	31 Dec 2023	31 Dec 2022	31 Dec 2023	31 Dec 2022
Attributable to non-controlling interests:				.
Non-controlling interest (%)	24.9	24.9	19.7	n.a.
Net profit for the period (€m)	55.6	30.9	21.5	n.a.
Equity (€m)	233.1	182.4	1,987.9	n.a.
Dividend payments (€m)	5.5	5.5	0	n.a.
Assets (€m)	18,597.0	42,091.6	3,538.5	n.a.
Liabilities (€m)	17,660.7	41,359.0	926.2	n.a.
Profit/(loss) (€m)	223.5	124.0	109.0	n.a.
Other comprehensive income (€m)	7.1	6.3	– 105.3	n.a.
Comprehensive income (€m)	230.6	130.3	3.7	n.a.
Cashflows (€m)	93.1	86.7	30.3	n.a.

33 Disclosures on associates

Non-material associates

in €m	31 Dec 2023	31 Dec 2022
Book value of non-material associates	114.5	111.5
Profit after tax	3.7[1]	7.9[1]
Comprehensive income	3.7	7.9

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

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

34 List of shareholdings

Deutsche Börse AG's equity interests in subsidiaries, associates and joint ventures as at 31 December 2023 included in the consolidated financial statements are presented in the following tables. There were no joint ventures as at the reporting date.

Consolidated subsidiaries

Company	Domicile	Equity interest as at 31 Dec 2023 direct/(indirect) %
360 Treasury Systems AG	Frankfurt am 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, Great Britain	(100.00)
360T Asia Pacific Pte. Ltd.	Singapore, Singapore	(100.00)
360TGTX Inc.	New York, USA	(100.00)
Finbird GmbH	Frankfurt am Main, Germany	(100.00)
ThreeSixty Trading Networks (India) Pte. Ltd.	Mumbai, India	(100.00)
CF Asset Holding AG	Baar, Switzerland	100.00
Clearstream Fund Centre AG	Zurich, Switzerland	100.00
Clearstream Fund Centre (Hong Kong) Limited	Hong Kong, Hong Kong	(100.00)
Clearstream Fund Centre Holding S.A.	Luxembourg, Luxembourg	(100.00)
Clearstream Fund Centre S.A.	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, Ireland	(100.00)
Clearstream International S.A.	Luxembourg, Luxembourg	(100.00)
LuxCSD S.A.	Luxembourg, Luxembourg	(100.00)
Clearstream Nominees Limited	London, Great Britain	(100.00)
Clearstream Operations Prague s.r.o.	Prague, Czech Republic	(100.00)
Clearstream Services S.A.	Luxembourg, Luxembourg	(100.00)
Clearstream Holding AG	Frankfurt am Main, Germany	100.00

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Clearstream Banking AG	Frankfurt am Main, Germany	(100.00)
Clearstream Banking S.A.	Luxembourg, Luxembourg	(100.00)
Clearstream London Ltd.	London, Great Britain	(100.00)
Crypto Finance AG	Zurich, Switzerland	91.94
Crypto Finance (Deutschland) GmbH	Frankfurt am Main, Germany	(91.94)
Crypto Finance (Asset Management) AG	Zurich, Switzerland	(91.94)
DB1 Ventures GmbH	Frankfurt am 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, Great Britain	(72.60)
Quantitative Brokers Australia Pty Ltd.	Sydney, Australia	(72.60)
Quantitative Brokers Singapore Pte Ltd. (dormant)	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 am Main, Germany	100.00
Deutsche Börse Photography Foundation gGmbH	Frankfurt am Main, Germany	100.00
Deutsche Börse Services s.r.o.	Prague, Czech Republic	100.00
Eurex Frankfurt AG	Frankfurt am Main, Germany	100.00
Eurex Clearing AG	Frankfurt am Main, Germany	(100.00)
Eurex Repo GmbH	Frankfurt am Main, Germany	(100.00)
Eurex Securities Transactions Services GmbH (dormant)	Frankfurt am Main, Germany	(100.00)
Eurex Global Derivatives AG	Zug, Switzerland	100.00
Eurex Services GmbH	Frankfurt am Main, Germany	100.00
European Energy Exchange AG	Leipzig, Germany	75.05
EEX Asia Pte. Limited	Singapore, Singapore	(75.05)

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EEX Australia Pty Ltd.	Sydney, Australia	(75.05)
Lacima Group Pty Ltd.	Sydney, Australia	(75.05)
Lacima Group (US), Inc.	Delaware, USA	(75.05)
LG UK PTY LTD	Sydney, Australia	(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, Great Britain	(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	Berne, Switzerland	(38.27)
UAB GET Baltic	Vilnius, Lithuania	(49.53)
Power Exchange Central Europe a.s.	Prague, Czech Republic	(50.03)
Power Exchange Central Europe Poland sp.z.o.o.	Warsaw, Poland	(50.03)
FundsDLT S.A.	Belvaux, Luxembourg	100.00
ISS STOXX GmbH	Eschborn, Germany	80.31
ISS HoldCo Inc.	Rockville, USA	(80.31)
Institutional Shareholder Services Inc.	Rockville, USA	(80.31)
Asset International, Inc.	Rockville, USA	(80.31)
Asset International Australia Pty Ltd.	Melbourne, Australia	(80.31)
Rainmaker Information Pty Limited	Sydney, Australia	(80.31)
Data Management & Integrity Systems Pty Ltd. (dormant)	Sydney, Australia	(80.31)
Financial Standard Pty Ltd. (dormant)	Sydney, Australia	(80.31)

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Asset International Deutschland GmbH	Haar, Germany	(80.31)
FWW Fundservices GmbH	Haar, Germany	(80.31)
FWW Media GmbH	Haar, Germany	(80.31)
Intelligent Financial Systems Limited	London, Great Britain	(80.31)
Discovery Data, Inc.	Rockville, USA	(80.31)
Institutional Shareholder Services (Australia) Pty. Ltd.	Sydney, Australia	(80.31)
Institutional Shareholder Services (Hong Kong) Limited	Hong Kong, Hong Kong	(80.31)
Institutional Shareholder Services Canada Inc.	Toronto, Canada	(80.31)
Institutional Shareholder Services Europe S.A.	Brussels, Belgium	(80.31)
Institutional Shareholder Services France S.A.S.	Paris, France	(80.31)
Institutional Shareholder Services Switzerland AG	Zug, Switzerland	(80.31)
Institutional Shareholder Services Germany AG	Munich, Germany	(80.31)
Institutional Shareholder Services India Private Limited	Mumbai, India	(80.31)
Institutional Shareholder Services K.K.	Tokyo, Japan	(80.31)
Institutional Shareholder Services Philippines Inc.	Manila, Philippines	(80.31)
Institutional Shareholder Services (Singapore) Private Limited	Singapore, Singapore	(80.31)
ISS Corporate Solutions, Inc.	Rockville, USA	(80.31)
ISS Europe Limited	London, Great Britain	(80.31)
ISS-Ethix AB	Stockholm, Sweden	(80.31)
Institutional Shareholder Services UK Limited	London, Great Britain	(80.31)
Securities Class Action Services, LLC	Rockville, USA	(80.31)
ISS STOXX Index GmbH	Eschborn, Germany	(80.31)
Stoxx Ltd.	Zug, Switzerland	(80.31)
INDEX PROXXY Ltd.	London, Great Britain	(80.31)
KNEIP Communication S.A.	Luxembourg, Luxembourg	100.00
KNEIP Asia Ltd.	Hong Kong, Hong Kong	(100.00)
KNEIP Communication GmbH	Frankfurt am Main, Germany	(100.00)
Fundlook S.à.r.l.	Luxembourg, Luxembourg	(100.00)
Dataglide Ltd.	London, Great Britain	(100.00)

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SimCorp A/S	Copenhagen, Denmark	100.00
Axioma Inc.	New York, USA	(100.00)
Axioma (CH) GmbH	Vernier, Switzerland	(100.00)
Axioma (HK) Ltd	Hong Kong, Hong Kong	(100.00)
Axioma (UK) Ltd	London, Great Britain	(100.00)
Axioma Argentina S.A.U.	Buenos Aires, Argentina	(100.00)
Axioma Asia Pte. Ltd	Singapore, Singapore	(100.00)
Axioma Deutschland GmbH	Frankfurt am Main, Germany	(100.00)
Axioma Japan G.K.	Tokyo, Japan	(100.00)
Axioma Ltd.	Sydney, Australia	(100.00)
Axioma S.A.S.U	Paris, France	(100.00)
Qontigo Inc. (dormant)	Wilmington, USA	(100.00)
SimCorp sp z.o.o.	Warsaw, Poland	(100.00)
SimCorp Japan KK	Tokyo, Japan	(100.00)
SimCorp France S.A.S.	Paris, France	(100.00)
SimCorp Schweiz AG	Zurich, Switzerland	(100.00)
SimCorp Norge AS	Oslo, Norway	(100.00)
SimCorp Iberia S.L. (Spain)	Barcelona, Spain	(100.00)
SimCorp Ukraine LLC	Kyiv, Ukraine	(100.00)
SimCorp Österreich GmbH	Vienna, Austria	(100.00)
SimCorp Luxembourg S.à.r.l.	Luxembourg, Luxembourg	(100.00)
SimCorp Gain Switzerland GmbH	Zurich, Switzerland	(100.00)
SimCorp Gain Austria GmbH	Vienna, Austria	(100.00)
SimCorp Ltd. (UK)	London, Great Britain	(100.00)
SimCorp Canada Inc.	Toronto, Canada	(100.00)
SimCorp GmbH (Germany)	Bad Homburg, Germany	(100.00)
SimCorp Hong Kong Ltd.	Hong Kong, Hong Kong	(100.00)
SimCorp Italiana S.r.l	Milan, Italy	(100.00)
SimCorp Philippines Inc.	Manila, Philippines	(100.00)

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SimCorp Advanced for Information Technology	Riyadh, Saudi Arabia	(100.00)
SCIM SDN. BHD.	Kuala Lumpur, Malaysia	(100.00)
SimCorp Singapore Pte. Ltd.	Singapore, Singapore	(100.00)
SimCorp USA Inc.	New York, USA	(100.00)
SimCorp Sverige AB	Stockholm, Sweden	(100.00)
SimCorp India LLP	Noida, India	(100.00)
SimCorp Coric Ltd. (UK)	London,Great Britain	(100.00)
SimCorp Coric Inc.	Boston, USA	(100.00)
SimCorp Asia Pty. Ltd.	Sydney, Australia	(100.00)
SimCorp Benelux SA/NV	Brussels Belgium	(100.00)

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Associates

Company	Domicile	Equity interest as at 31 Dec 2023 direct/(indirect) %
360X AG	Frankfurt am Main, Germany	48.30
ADEX SKUPINA holding družba d.o.o.	Ljubljana, Slovenia	(12.76)
Artega Investment Administration Pty Limited	Sydney, Australia	(18.55)
BrainTrade Gesellschaft für Börsensysteme mbH	Frankfurt am Main, Germany	(28.57)
China Europe International Exchange AG	Frankfurt am Main, Germany	(40.00)
Deutsche Börse Commodities GmbH	Frankfurt am Main, Germany	16.20
Dyalog Ltd	Hampshire, Great Britain	(22.98)
East Med. Energy Exchange Ltd.	Giv'atajim, Israel	(30.02)
Forge Europe GmbH	Berlin, Germany	40.00
GlobalDairyTrade Holdings Ltd.	Auckland, New Zealand	(25.01)
HQLAx S.à r.l.	Luxembourg, Luxembourg	30.49
N5 ENERGIA E SERVICOS DE TECNOLOGIA LTDA.	Sao Paulo, Brazil	(37.52)
Opus Nebula Limited	Berkhamsted, Great Britain	(23.18)
Origin Primary Limited	London, Great Britain	20.00
q-bility GmbH	Berlin, Germany	(15.01)
R5FX Ltd	London, Great Britain	15.65
SEEPEX a.d.	Belgrade, Serbia	(12.76)
SPARK Commodities Ltd.	Singapore, Singapore	(18.76)
Tradegate AG Wertpapierhandelsbank	Berlin, Germany	19.99
Tradegate Exchange GmbH	Berlin, Germany	42.84

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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, 5. March 2024

Deutsche Börse Aktiengesellschaft

The Executive Board

Theodor Weimer | Christoph Böhm | Thomas Book

Heike Eckert | Stephan Leithner | Gregor Pottmeyer

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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 2023, 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 2023, and notes to the consolidated financial statements, including material accounting policy information. 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 section „Nichtfinanzielle Erklärung“ for the financial year from 1 January to 31 December 2023. 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 2023, and of its financial performance for the financial year from 1 January to 31 December 2023,

- 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 section “Nichtfinanzielle Erklärung“ 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.

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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 2023. 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 Accounting for the acquisition of SimCorp A/S

❸ 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 Goodwill and other intangible assets with definite and indefinite useful lives totalling € 11,248.6 million (116.4 % of Group equity) are reported under the balance sheet item „Intangible assets" in the company's consolidated financial statements. The other intangible assets relate in particular to stock exchange licences, brand names and customer relationships. Goodwill and other intangible assets with an indefinite useful life are tested for impairment once a year or on an ad hoc basis, while other intangible assets with a definite useful life are tested for impairment on an ad hoc basis by the company in order to identify any need for impairment. As part of the impairment test, the carrying amount of the respective (groups of) cash-generating units (including their

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carrying amount for the goodwill test) is compared with the recoverable amount. The recoverable amount is generally determined on the basis of the fair value less costs to sell. The measurement is generally 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 Group's approved medium-term planning forms the starting point, 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 carried out using the weighted average cost of capital of the respective (groups of) cash-generating units.

As a result of the impairment test, an impairment requirement totalling € 24.6 million was identified.

The result of this valuation is highly dependent on the estimates of the executive directors with regard to the future cash flows of the respective (groups of) 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 significance in the context of our audit.

② As part of our audit, we first analysed the methodology used to perform the impairment test. In a risk-oriented selection, with the involvement of our valuation specialists, we compared the future cash flows used in the calculation with the Group's approved medium-term planning and additional planning documents for the respective (groups of) cash-generating units in order to assess the appropriateness of these plans, in particular by analysing the key planning assumptions, comparing the plans with analyst estimates and, in certain cases, performing plan-actual and plan-plan analyses. In addition, we assessed the appropriate consideration of the costs of Group functions - where taken into account in the models - and the appropriateness of the growth assumptions after the forecast period and the assumed weighted average cost of capital. In addition, we assessed the company's valuation by comparing the implied multiples with market multiples. In order to take account of the existing forecast uncertainties, we reviewed the sensitivity analyses prepared by the company. Where there was a need for impairment as at the balance sheet date, we verified the appropriate recognition of the impairment losses.

The valuation methods, parameters and assumptions applied by the legal representatives are in line with our expectations and are also within what we consider to be reasonable ranges.

③ The company's disclosures on the impairment test for goodwill and other intangible assets are contained in section „10 Intangible assets" of the notes to the consolidated financial statements.

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❷ Accounting for the acquisition of SimCorp A/S

① Deutsche Börse Aktiengesellschaft acquired the majority of shares in the software service provider SimCorp A/S, Copenhagen, Denmark, („SimCorp“) by way of a public takeover bid with effect from 29 September 2023. Following further share purchases and the implementation of a squeeze-out under stock corporation law, the company held 100% of the shares in SimCorp as at the balance sheet date.

The acquisition was recognised as a business combination in accordance with IFRS 3 using the acquisition method. As part of the purchase price allocation, the identifiable assets and assumed liabilities of the acquired company were recognised at fair value. The purchase price allocation had not yet been finalised as at the reporting date, as it was not yet possible to conclusively determine the tax items and intangible assets in particular. The comparison of the consideration transferred with the acquired assets and liabilities resulted in provisional goodwill of € 2,335.6 million.

Due to the estimation uncertainties in the measurement of the assets and liabilities as well as the identified intangible assets as part of the purchase price allocation and the overall material impact of the business combination on the Group‘s net assets, financial position and results of operations, this matter was of particular significance in the context of our audit.

② As part of our audit of the acquisition of SimCorp, we first inspected and analysed the contractual agreements and reconciled the purchase price determined as consideration for the acquired business operations with the evidence provided to us. Based on this, we assessed the company‘s approach to measuring the identifiable assets and liabilities at their fair values at the acquisition date. Among other things, we analysed the models underlying the valuations as well as the valuation parameters and assumptions applied with the assistance of valuation specialists.

Furthermore, we analysed the adjustment of the groups of cash-generating units at whose level goodwill is monitored, which was carried out as part of the SimCorp acquisition. In addition, we assessed the disclosures required by IFRS 3.

Overall, we were able to satisfy ourselves that the accounting treatment of the business combination was appropriate, that the estimates and assumptions made by the executive directors were reasonable and adequately substantiated and that the relevant disclosures in the notes were made in accordance with IFRS 3.

③ The company‘s disclosures on the acquisition are contained in section „02 Consolidation principles“ of the notes to the consolidated financial statements.

❸ Assessment of certain legal risks

① Deutsche Börse Aktiengesellschaft and its affiliated companies are exposed to certain legal risks. These certain legal risks include legal disputes of 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, a claim by the insolvency administrator of Air Berlin PLC i.L. against Clearstream Banking AG for payment of around €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, to what extent a provision is required to cover the risk is characterised by a high degree of uncertainty. Deutsche Börse Group

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recognises provisions when 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. No provisions were recognised for the above-mentioned legal risks in the consolidated financial statements as at 31 December 2023, as the executive directors do not consider an outflow of funds to be probable.

In our view, the above-mentioned legal risks are of particular significance 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 inspected the underlying documents relating to the above-mentioned legal disputes and proceedings and analysed the legal assessments of Deutsche Börse Group. With the knowledge that there is an increased risk of misstatements in the financial reporting in the event of uncertainties and that the decisions of the executive directors have a direct impact on the Group's results, we evaluated the executive directors' judgements with the assistance of 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 writing by the legal departments. In addition, we obtained external lawyers' confirmations as at the balance sheet date and analysed legal opinions from external lawyers.

The estimates made by the legal representatives regarding the aforementioned matters and their presentation in the consolidated financial statements are adequately substantiated and documented.

③ The company's disclosures on the material legal risks are presented in the section „25 Financial commitments and other risks" in 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.

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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.

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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.

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- 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.

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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 "deutscheboerseag-2023-12-31-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 2023 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: Requirements for Quality Management in the Audit Firm (IDW QMS 1 (09.2022)).

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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 rendering 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.

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Further Information pursuant to Article 10 of the EU Audit Regulation

We were elected as group auditor by the annual general meeting on 16 May 2023. We were engaged by the supervisory board on 14 September 2023. 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, 6 March 2024

PricewaterhouseCoopers GmbH
Wirtschaftsprüfungsgesellschaft

Marc Billeb
Certified Public Auditor

Dr Michael Rönnberg
Certified Public Auditor

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Publications service
The annual report 2023 is both available in German and English.

The annual report 2023 of Deutsche Börse Group is available as pdf on the internet: www.deutsche-boerse.com/annual _ report

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