Pursuant to Chapter 38 of the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited, the Securities and Futures Commission regulates Hong Kong Exchanges and Clearing Limited (HKEX) in relation to the listing of its shares on The Stock Exchange of Hong Kong Limited. The Securities and Futures Commission takes no responsibility for the contents of this document, makes no representation as to its accuracy or completeness, and expressly disclaims any liability whatsoever for any loss howsoever arising from or in reliance upon the whole or any part of the contents of this document.

The financial information relating to the years ended 31 December 2023 and 2022 included in this document does not constitute the statutory annual consolidated financial statements of HKEX for those years but is derived from those financial statements. Further information relating to these statutory financial statements required to be disclosed in accordance with section 436 of the Companies Ordinance is as follows:

HKEX has delivered the financial statements for the year ended 31 December 2022 to the Registrar of Companies as required by section 662(3) of, and Part 3 of Schedule 6 to, the Companies Ordinance and will deliver the financial statements for the year ended 31 December 2023 in due course.

HKEX's auditor has reported on the consolidated financial statements for both years. The auditor's reports were unqualified, did not include a reference to any matters to which the auditor drew attention by way of emphasis without qualifying its reports, and did not contain a statement under sections 406(2), 407(2) or (3) of the Companies Ordinance.

HKEX
香港交易所

香港交易及結算所有限公司
HONG KONG EXCHANGES AND CLEARING LIMITED
（Incorporated in Hong Kong with limited liability）
Stock codes: 388 (HKD counter) and 80388 (RMB counter)

Consolidated Financial Statements

For the year ended 31 December 2023

As at 29 February 2024, the Board of directors of Hong Kong Exchanges and Clearing Limited (HKEX or the Company) comprises 12 Independent Non-executive Directors, namely Mrs Laura May-Lung CHA (Chairman), Mr Nicholas Charles ALLEN, Mr Apurv BAGRI, Mr CHEAH Cheng Hye, Ms CHEUNG Ming Ming, Anna, Mrs CHOW WOO Mo Fong, Susan, Mr HUNG Pi Cheng, Benjamin, Ms LEUNG Nisa Bernice Wing-Yu, Mr LEUNG Pak Hon, Hugo, Mr Carlson TONG, Mr YAM Chi Kwong, Joseph and Mr ZHANG Yichen, and one Executive Director, Mr Alejandro Nicolas AGUZIN, who is also the Chief Executive of HKEX.

CONSOLIDATED INCOME STATEMENT
FOR THE YEAR ENDED 31 DECEMBER 2023

(Financial figures are expressed in Hong Kong Dollar)

	Note	2023 $m	2022 $m
Trading fees and trading tariffs	5(a)	**6,081**	6,837
Clearing and settlement fees		**3,885**	4,335
Stock Exchange listing fees	5(b)	**1,523**	1,915
Depository, custody and nominee services fees		**1,276**	1,260
Market data fees		**1,098**	1,081
Other revenue	5(c)	**1,582**	1,506
Revenue	5	**15,445**	16,934
Investment income		**10,972**	3,627
Interest rebates to Participants		**(6,013)**	(2,271)
Net investment income	6	**4,959**	1,356
Donation income of HKEX Foundation	7	**88**	130
Sundry income	8	**24**	36
Revenue and other income		**20,516**	18,456
Less: Transaction-related expenses	9	**(247)**	(176)
Revenue and other income less transaction-related expenses		**20,269**	18,280
Operating expenses			
Staff costs and related expenses	10	**(3,564)**	(3,324)
Information technology and computer maintenance expenses	11	**(814)**	(732)
Premises expenses		**(134)**	(120)
Product marketing and promotion expenses		**(135)**	(129)
Professional fees		**(289)**	(279)
HKEX Foundation charitable donations		**(94)**	(136)
Other operating expenses	12	**(411)**	(375)
		(5,441)	(5,095)
EBITDA (non-HKFRS measure)		**14,828**	13,185
Depreciation and amortisation		**(1,443)**	(1,459)
Operating profit	13	**13,385**	11,726
Finance costs	14	**(135)**	(138)
Share of profits less losses of joint ventures		**82**	71
Profit before taxation		**13,332**	11,659
Taxation	17	**(1,351)**	(1,564)
Profit for the year		**11,981**	10,095
Profit attributable to:			
Shareholders of HKEX	46	**11,862**	10,078
Non-controlling interests	28(a)(i)	**119**	17
Profit for the year		**11,981**	10,095
Basic earnings per share	18(a)	**$9.37**	$7.96
Diluted earnings per share	18(b)	**$9.36**	$7.95

The notes on pages 8 to 95 are an integral part of these consolidated financial statements.

Details of dividends are set out in note 19 to the consolidated financial statements.

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME FOR THE YEAR ENDED 31 DECEMBER 2023

(Financial figures are expressed in Hong Kong Dollar)

	Note	**2023 $m**	2022 $m
Profit for the year		**11,981**	10,095
Other comprehensive income			
Items that may be reclassified subsequently to profit or loss:			
Currency translation differences of foreign subsidiaries		**(16)**	(46)
Cash flow hedges, net of tax	44(a)	**(7)**	12
Changes in fair value of financial assets measured at fair value through other comprehensive income, net of tax	44(b)	**129**	(293)
Other comprehensive income/(loss)		**106**	(327)
Total comprehensive income		**12,087**	9,768
Total comprehensive income attributable to:			
Shareholders of HKEX		**11,971**	9,759
Non-controlling interests		**116**	9
Total comprehensive income		**12,087**	9,768

The notes on pages 8 to 95 are an integral part of these consolidated financial statements.

CONSOLIDATED STATEMENT OF FINANCIAL POSITION
AT 31 DECEMBER 2023

(Financial figures are expressed in Hong Kong Dollar)

		At 31 Dec 2023			At 31 Dec 2022		
	Note	**Current $m**	**Non-current $m**	**Total $m**	Current $m	Non-current $m	Total $m
Assets							
Cash and cash equivalents	20,21	**125,107**	**-**	**125,107**	184,965	-	184,965
Financial assets measured at fair value through profit or loss	20,22	**6,357**	**604**	**6,961**	6,177	787	6,964
Financial assets measured at fair value through other comprehensive income	20,23	**18,250**	**-**	**18,250**	14,962	-	14,962
Financial assets measured at amortised cost	20,24	**74,984**	**1,665**	**76,649**	70,285	209	70,494
Derivative financial instruments	26	**58,127**	**-**	**58,127**	80,718	-	80,718
Accounts receivable, prepayments and deposits	27	**33,313**	**19**	**33,332**	25,354	21	25,375
Tax recoverable		**64**	**-**	**64**	17	-	17
Interests in joint ventures	29	**-**	**352**	**352**	-	291	291
Goodwill and other intangible assets	30	**-**	**19,279**	**19,279**	-	18,968	18,968
Fixed assets	31	**-**	**1,553**	**1,553**	-	1,640	1,640
Right-of-use assets	32	**-**	**1,484**	**1,484**	-	1,604	1,604
Deferred tax assets	41(c)	**-**	**21**	**21**	-	53	53
Total assets		**316,202**	**24,977**	**341,179**	382,478	23,573	406,051
Liabilities and equity							
Liabilities							
Derivative financial instruments	26	**58,100**	**-**	**58,100**	80,705	-	80,705
Margin deposits, Mainland security and settlement deposits, and cash collateral from Participants	20,33	**176,165**	**-**	**176,165**	227,902	-	227,902
Accounts payable, accruals and other liabilities	34	**27,849**	**-**	**27,849**	19,054	-	19,054
Deferred revenue	35	**1,060**	**307**	**1,367**	1,076	333	1,409
Taxation payable		**639**	**-**	**639**	2,172	-	2,172
Other financial liabilities	36	**29**	**-**	**29**	40	-	40
Participants' contributions to Clearing House Funds	20,37	**21,955**	**-**	**21,955**	21,205	-	21,205
Lease liabilities	38	**270**	**1,334**	**1,604**	297	1,448	1,745
Borrowings	39	**382**	**65**	**447**	430	61	491
Provisions	40	**62**	**113**	**175**	67	90	157
Deferred tax liabilities	41(c)	**-**	**1,053**	**1,053**	-	1,072	1,072
Total liabilities		**286,511**	**2,872**	**289,383**	352,948	3,004	355,952
Equity							
Share capital	42			**31,946**			31,918
Shares held for Share Award Scheme	42			**(1,009)**			(918)
Employee share-based compensation reserve	43			**373**			346
Hedging and revaluation reserves	44			**(144)**			(266)
Exchange reserve				**(168)**			(155)
Designated reserves	45			**1,018**			686
Reserve relating to written put options to non-controlling interests				**(395)**			(430)
Retained earnings	46			**19,723**			18,547
Equity attributable to shareholders of HKEX				**51,344**			49,728
Non-controlling interests	28(a)(i)			**452**			371
Total equity				**51,796**			50,099
Total liabilities and equity				**341,179**			406,051
Net current assets				**29,691**			29,530

The notes on pages 8 to 95 are an integral part of these consolidated financial statements.

Approved by the Board of Directors on 29 February 2024

Laura M CHA
Director

Nicholas C ALLEN
Director

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY
FOR THE YEAR ENDED 31 DECEMBER 2023

(Financial figures are expressed in Hong Kong Dollar)

	Attributable to shareholders of HKEX									
	Share capital and shares held for Share Award Scheme (note 42)	Employee share-based compensation reserve (note 43)	Hedging and revaluation reserves (note 44)	Exchange reserve	Designated reserves (note 45)	Reserve relating to written put options to non-controlling interests	Retained earnings (note 46)	Total	Non-controlling interests	Total equity
	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m
At 1 Jan 2022	30,995	306	15	(117)	623	(369)	18,173	49,626	284	49,910
Profit for the year	-	-	-	-	-	-	10,078	10,078	17	10,095
Other comprehensive income	-	-	(281)	(38)	-	-	-	(319)	(8)	(327)
Total comprehensive income	-	-	(281)	(38)	-	-	10,078	9,759	9	9,768
Total transactions with shareholders of HKEX, recognised directly in equity:										
- 2021 second interim dividend at $4.18 per share	-	-	-	-	-	-	(5,290)	(5,290)	-	(5,290)
- 2022 first interim dividend at $3.45 per share	-	-	-	-	-	-	(4,366)	(4,366)	-	(4,366)
- Unclaimed HKEX dividends forfeited (note 34(a))	-	-	-	-	-	-	26	26	-	26
- Shares purchased for Share Award Scheme	(350)	-	-	-	-	-	-	(350)	-	(350)
- Vesting of shares of Share Award Scheme	355	(340)	-	-	-	-	(15)	-	-	-
- Employee share-based compensation benefits	-	380	-	-	-	-	-	380	-	380
- UK tax relating to Share Award Scheme	-	-	-	-	-	-	(3)	(3)	-	(3)
- Transfer of reserves	-	-	-	-	63	-	(63)	-	-	-
- Issuance of written put options to non-controlling interests	-	-	-	-	-	(61)	-	(61)	-	(61)
- Change in ownership interest in a subsidiary	-	-	-	-	-	-	7	7	78	85
	5	40	-	-	63	(61)	(9,704)	(9,657)	78	(9,579)
At 31 Dec 2022	31,000	346	(266)	(155)	686	(430)	18,547	49,728	371	50,099

CONSOLIDATED STATEMENT OF CHANGES IN EQUITY (CONTINUED)
FOR THE YEAR ENDED 31 DECEMBER 2023

	Attributable to shareholders of HKEX									
	Share capital and shares held for Share Award Scheme (note 42)	Employee share-based compensation reserve (note 43)	Hedging and revaluation reserves (note 44)	Exchange reserve	Designated reserves (note 45)	Reserve relating to written put options to non-controlling interests	Retained earnings (note 46)	Total	Non-controlling interests	Total equity
	$m	$m	$m	$m	$m	$m	$m	$m	$m	$m
At 1 Jan 2023	31,000	346	(266)	(155)	686	(430)	18,547	49,728	371	50,099
Profit for the year	-	-	-	-	-	-	11,862	11,862	119	11,981
Other comprehensive income	-	-	122	(13)	-	-	-	109	(3)	106
Total comprehensive income	-	-	122	(13)	-	-	11,862	11,971	116	12,087
Total transactions with shareholders of HKEX, recognised directly in equity:										
- 2022 second interim dividend at $3.69 per share	-	-	-	-	-	-	(4,669)	(4,669)	-	(4,669)
- 2023 first interim dividend at $4.50 per share	-	-	-	-	-	-	(5,695)	(5,695)	-	(5,695)
- Unclaimed HKEX dividends forfeited (note 34(a))	-	-	-	-	-	-	23	23	-	23
- Shares purchased for Share Award Scheme	(448)	-	-	-	-	-	-	(448)	-	(448)
- Vesting of shares of Share Award Scheme	385	(372)	-	-	-	-	(13)	-	-	-
- Employee share-based compensation benefits	-	399	-	-	-	-	-	399	-	399
- Transfer of reserves	-	-	-	-	332	-	(332)	-	-	-
- Redemption of written put options exercised by non-controlling interests (note 39)	-	-	-	-	-	35	-	35	(35)	-
	(63)	27	-	-	332	35	(10,686)	(10,355)	(35)	(10,390)
At 31 Dec 2023	30,937	373	(144)	(168)	1,018	(395)	19,723	51,344	452	51,796

The notes on pages 8 to 95 are an integral part of these consolidated financial statements.

CONSOLIDATED STATEMENT OF CASH FLOWS
FOR THE YEAR ENDED 31 DECEMBER 2023

(Financial figures are expressed in Hong Kong Dollar)

	Note	**2023 $m**	2022 $m
Cash flows from principal operating activities			
Net cash inflow from principal operating activities (non-HKFRS measure)	47(a)	**11,294**	13,062
Cash flows from other operating activities			
Net redemption from external fund managers for sales of financial assets measured at fair value through profit or loss		**206**	1,894
Net cash inflow from operating activities		**11,500**	14,956
Cash flows from investing activities			
Payments for purchases of fixed assets and intangible assets		**(1,386)**	(1,284)
Net (increase)/decrease in financial assets of Corporate Funds:			
Increase in time deposits with original maturities more than three months		**(4,810)**	(451)
Proceeds received upon maturity of financial assets measured at amortised cost (excluding time deposits)		**502**	316
Payments for purchases of financial assets measured at amortised cost (excluding time deposits)		**(1,460)**	(512)
Interest received from long-term debt securities classified as financial assets measured at amortised cost		**37**	-
Interest received from debt securities measured at fair value through other comprehensive income		**806**	207
Dividend received from a joint venture		**21**	24
Net cash outflow from investing activities		**(6,290)**	(1,700)
Cash flows from financing activities			
Purchases of shares for Share Award Scheme		**(448)**	(350)
Payments of other finance costs		**(69)**	(66)
Dividends paid to shareholders of HKEX		**(10,316)**	(9,665)
Lease payments	47(b),47(c)		
- Capital elements		**(307)**	(309)
- Interest elements		**(59)**	(68)
Capital injection by non-controlling interests to a subsidiary		**-**	85
Payment for written put options exercised by non-controlling interests	39	**(51)**	-
Net cash outflow from financing activities		**(11,250)**	(10,373)
Net (decrease)/increase in cash and cash equivalents		**(6,040)**	2,883
Cash and cash equivalents at 1 Jan		**15,258**	12,398
Exchange differences on cash and cash equivalents		**(6)**	(23)
Cash and cash equivalents at 31 Dec		**9,212**	15,258
Analysis of cash and cash equivalents			
Cash, bank balances and short-term investments of Corporate Funds	21	**10,286**	15,952
Less: Cash reserved for supporting Skin-in-the-Game and default fund credits of clearing houses	21(b)	**(1,074)**	(694)
		9,212	15,258

The notes on pages 8 to 95 are an integral part of these consolidated financial statements.

(a) "Cash flows from principal operating activities" is a non-Hong Kong Financial Reporting Standard (non-HKFRS) measure used by management for monitoring cash flows of the Group (defined in note 1) and represents the cash flows generated from the trading and clearing operations of the four exchanges and five clearing houses and ancillary services of the Group. This non-HKFRS measure may not be comparable to similar measures presented by other companies. Cash flows from principal operating activities and cash flows from other operating activities together represent cash flows from operating activities as defined by Hong Kong Accounting Standard (HKAS) 7: Statement of Cash Flows.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

(Financial figures are expressed in Hong Kong Dollar unless otherwise stated)

1. General Information

Hong Kong Exchanges and Clearing Limited (HKEX or the Company) and its subsidiaries (collectively, the Group) own and operate the only stock exchange and futures exchange in Hong Kong and their related clearing houses, a clearing house for clearing over-the-counter derivatives contracts in Hong Kong, an exchange and a clearing house for the trading and clearing of base and ferrous metals futures and options contracts operating in the United Kingdom (UK), and a commodity trading platform in the Mainland.

HKEX is a limited company incorporated and domiciled in Hong Kong. The address of its registered office is 8th Floor, Two Exchange Square, 8 Connaught Place, Central, Hong Kong.

These consolidated financial statements were approved for issue by the Board of Directors (Board) on 29 February 2024.

2. Material Accounting Policies

Apart from the accounting policies presented within the corresponding notes to the consolidated financial statements, other material accounting policies applied in the preparation of these consolidated financial statements are set out below. Except the change in operating segments as described in note 4, the accounting policies have been consistently applied to all the years presented, unless otherwise stated.

(a) Statement of compliance

These consolidated financial statements have been prepared in accordance with Hong Kong Financial Reporting Standards (HKFRSs) issued by the Hong Kong Institute of Certified Public Accountants (HKICPA), and accounting principles generally accepted in Hong Kong. These consolidated financial statements also comply with the applicable disclosure requirements of the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited (Main Board Listing Rules) and the applicable requirements of the Hong Kong Companies Ordinance (Chapter 622).

(b) Basis of preparation

These consolidated financial statements comprise the financial statements of the Company and its subsidiaries and the Group's interests in joint ventures.

These consolidated financial statements have been prepared under the historical cost convention, as modified by the revaluation of certain financial assets and financial liabilities measured at fair value.

The preparation of consolidated financial statements requires the use of certain critical accounting estimates, and requires management to exercise its judgement when applying the Group's accounting policies. Areas involving significant estimates and judgement are disclosed in note 3.

These consolidated financial statements are presented in Hong Kong Dollar (HKD), which is the Company's functional and presentation currency.

2. Material Accounting Policies (continued)

(b) Basis of preparation (continued)

Adoption of new/revised HKFRSs

In 2023, the Group has adopted the following amendments to HKFRSs and HKICPA guidance which are pertinent to the Group's operations and effective for accounting periods beginning on or after 1 January 2023:

Amendments to HKAS 1 and HKFRS Practice Statement 2	Presentation of Financial Statements and Making Materiality Judgements: Disclosure of Accounting Policies
Amendments to HKAS 8	Accounting Policies, Change in Accounting Estimates and Errors: Definition of Accounting Estimates
Amendments to HKAS 12	Income Taxes: Deferred Tax related to Assets and Liabilities arising from a Single Transaction
Amendments to HKAS 12	Income Taxes: International Tax Reform – Pillar Two Model Rules
HKICPA Guidance	Accounting Implications of the Abolition of the MPF-LSP Offsetting Mechanism in Hong Kong

As a result of the adoption of the amendments to HKAS 1 and HKFRS Practice Statement 2, certain accounting policies have been removed.

The amendments to HKAS 12 Income Taxes: International Tax Reform – Pillar Two Model Rules introduce a temporary mandatory exception for deferred tax accounting for the income tax arising from tax laws enacted or substantially enacted to implement the Pillar Two model rules published by the Organisation for Economic Co-operation and Development (OECD), and introduce disclosure requirements about such tax. The impact of adopting the amendments is disclosed in note 17(c).

The adoption of the remaining amendments and guidance did not have any financial impact on the Group.

New/revised HKFRSs issued before 31 December 2023 but not yet effective and not early adopted

The Group has not applied the following amendments to HKFRSs which were issued before 31 December 2023 and are pertinent to its operations but not yet effective:

Amendments to HKAS 1	Presentation of Financial Statements: Classification of Liabilities as Current or Non-current[1]
Amendments to HKAS 1	Presentation of Financial Statements: Non-current Liabilities with Covenants[1]

[1] Effective for accounting periods beginning on or after 1 January 2024

The adoption of the amendments to HKFRSs would not have any financial impact on the Group.

There are no other new/revised HKFRSs not yet effective that are expected to have any financial impact on the Group.

2. Material Accounting Policies (continued)

(c) Impairment of non-financial assets

Assets with an indefinite useful life, which include interests in joint ventures, goodwill and tradenames, are not subject to amortisation but are tested at least annually for impairment. Assets subject to amortisation are reviewed for impairment whenever there is any indication that the carrying amount may not be recoverable. An impairment loss is recognised for the amount by which the asset's carrying amount exceeds its recoverable amount (i.e., the higher of an asset's fair value less costs to sell and value-in-use). Such impairment losses are recognised in the consolidated income statement. An impairment loss other than goodwill is reversed if the circumstances and events leading to the impairment cease to exist.

3. Critical Accounting Estimates and Assumptions

The Group makes estimates and assumptions concerning the future when the consolidated financial statements are prepared. The resulting accounting estimates may differ from the related actual results. The estimates and assumptions that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are discussed below:

(a) Goodwill and tradenames

The Group tests annually whether goodwill and tradenames have suffered any impairment in accordance with the accounting policy stated in note 30.

The recoverable amounts of relevant cash generating units (CGUs) and relevant group of CGUs have been determined based on value-in-use calculations, which are disclosed in note 30. These calculations require the use of estimates and significant judgement by management, including the future cash flows expected to arise from the CGUs, discount rates for calculating the present value and growth rates used to extrapolate cash flow projections beyond the financial forecasts approved by management.

Changes in facts and circumstances may result in revisions to estimates of recoverable amounts and to the conclusion as to whether an indication of impairment exists, which could affect the consolidated income statement in future years.

3. Critical Accounting Estimates and Assumptions (continued)

(b) Valuation of investments

The Group has a significant amount of investments that are not classified as Level 1 investments under HKFRS 13: Fair Value Measurement. Except for investments in minority stakes in unlisted companies (note 53(d)(i)), the valuations have been determined based on quotes from market makers, alternative pricing sources supported by observable inputs, latest transaction prices or redemption prices provided by fund administrators of investment funds.

At 31 December 2023, the financial assets that were not classified as Level 1 investments (excluding derivative financial instruments) under HKFRS 13 amounted to $8,045 million (31 December 2022: $9,219 million) which mainly comprised $5,698 million (31 December 2022: $5,648 million) of investments under investment funds and $1,954 million (31 December 2022: $2,917 million) of debt securities.

As the valuation of investments reflects movements in their estimated fair values, fair value gains or losses may fluctuate or reverse until the investments are sold, mature or are realised upon redemption. The potential impact of the fair value change of such investments on the Group's consolidated income statement and other components of equity is disclosed in note 53(a)(iv).

(c) Income taxes

The Group is subject to income taxes in the countries in which the Group operates. Judgement is required in determining the provision for income taxes and deferred taxes. There are transactions and calculations for which the ultimate tax determination is uncertain. The Group recognises liabilities for potential tax exposures based on its estimates of whether additional taxes will be due. Where the final tax outcome of these matters is different from the amounts that were initially recorded, such differences would impact the income tax and deferred tax provisions in the year in which such determination is made.

Since the launch of Stock Connect in 2014, Northbound trading, clearing and portfolio fees ("NB Fees") have been reported by the Group's subsidiaries as offshore sourced and non-taxable, whereas the related expenses are reported as non-deductible. As at 31 December 2023 , the Inland Revenue Department of Hong Kong ("IRD") has issued notices of additional assessments to two subsidiaries in connection with the offshore claim of the NB Fees amounting to $16 million.

After consultation with tax advisor, the subsidiaries have lodged objections and have applied to hold over the additional tax demanded. The IRD has agreed to holdover the additional tax demanded subject to the purchase of tax reserve certificates ("TRCs"). The purchase of TRCs does not prejudice the subsidiaries' tax positions. No additional tax provision has been made during the year in respect of the above additional assessments.

Subsequent to year end, the IRD has further issued additional assessments to a subsidiary amounting to $5 million, and the subsidiary has lodged objections on the additional tax demanded.

If the actual taxation charge differs from management's estimates, the additional tax payment made of $21 million will be charged to the consolidated income statement in future years.

4. Operating Segments

Accounting Policy

Operating segments are reported in a manner consistent with the internal management reports that are used to make strategic decisions provided to the chief operating decision-maker. The chief operating decision-maker, who is responsible for allocating resources and assessing performance of the operating segments, is the Chief Executive Officer of HKEX. Information relating to segment assets and liabilities is not disclosed as such information is not regularly reported to the chief operating decision-maker.

The accounting policies of the reportable segments are the same as the Group's accounting policies. Taxation charge/credit is not allocated to reportable segments.

In prior years, the Group had five reportable segments ("Corporate Items" is not a reportable segment): Cash, Equity and Financial Derivatives, Commodities, Post Trade and Technology.

In 2023, the Group's operating segments have been reorganised to better reflect the strategic and operational way in which the business and markets are run. Trading and clearing businesses are now managed together in each asset class; as such Post Trade revenue and expenses are reallocated to the Cash, Equity and Financial Derivatives, and Commodities segments respectively. In addition, with HKEX's data business becoming one of the Group's key strategic development focuses, revenue and expenses for its Hong Kong's data business have been reallocated from the Cash and Equity and Financial Derivatives segments, and grouped together with other non-cyclical businesses formerly included in the Technology segment and renamed as the Data and Connectivity segment.

The operations in each of the Group's reportable segments after reorganisation are as follows:

The **Cash** segment covers all equity products traded on the Cash Market platforms of The Stock Exchange of Hong Kong Limited (Stock Exchange) and those traded through Shanghai-Hong Kong Stock Connect and Shenzhen-Hong Kong Stock Connect (Stock Connect); the clearing, settlement and custodian activities relating to these products and any other related activities. The major sources of revenue of the segment are trading fees, clearing and settlement fees, listing fees, depository, custody and nominee services fees and net investment income earned on the Margin Funds and Clearing House Funds relating to these products.

The **Equity and Financial Derivatives** segment refers to derivatives products traded on the Stock Exchange and Hong Kong Futures Exchange Limited (Futures Exchange); the clearing, settlement and custodian activities relating to these products and over-the-counter (OTC) derivatives contracts and other related activities. These include the provision and maintenance of trading and clearing platforms for a range of equity and financial derivatives products, such as stock and equity index futures and options, derivative warrants (DWs), callable bull/bear contracts (CBBCs) and warrants, and OTC derivatives contracts. The major sources of revenue are trading fees and trading tariffs, clearing and settlement fees, listing fees, depository, custody and nominee services fees and net investment income earned on the Margin Funds and Clearing House Funds relating to these products.

The **Commodities** segment refers to the operations of The London Metal Exchange (LME), which operates a global exchange in the UK, for the trading of base and ferrous metals futures and options contracts and the operations of its clearing house, LME Clear Limited (LME Clear). It also covers the operations of Qianhai Mercantile Exchange Co., Ltd. (QME), the commodity trading platform in Mainland China, and the commodities contracts traded on the Futures Exchange. The major sources of revenue of the segment are trading fees and clearing and settlement fees of commodity products, commodity market data fees, net investment income earned on the Margin Funds and Clearing House Funds relating to these products, and fees for ancillary operations.

The **Data and Connectivity** segment covers sales of market data relating to the Hong Kong Cash and Derivatives Markets, all services in connection with providing users with access to the platform and infrastructure of the Group and services provided by BayConnect Technology Company Limited (BayConnect). Its major sources of revenue are market data fees, network, terminal user, data line and software sub-license fees and hosting services fees.

4. Operating Segments (continued)

"Corporate Items" is not a business segment but comprises central income (including net investment income of Corporate Funds and donation income of HKEX Foundation Limited (HKEX Foundation)) and central costs (including costs of central support functions that provide services to all operating segments, HKEX Foundation charitable donations and other costs not directly related to any operating segments).

Comparative figures have been restated to conform to the current year's presentation.

The chief operating decision-maker assesses the performance of the operating segments principally based on their EBITDA (defined below).

EBITDA is defined as earnings before interest expenses and other finance costs, taxation, depreciation and amortisation. It excludes the Group's share of results of the joint ventures and other non-recurring costs. EBITDA is a non-HKFRS measure used by management for monitoring business performance. It may not be comparable to similar measures presented by other companies.

An analysis by operating segment of the Group's EBITDA, profit before taxation and other selected financial information (including analysis of revenue by timing of revenue recognition) for the year, is set out as follows:

	2023					
	Cash $m	Equity and Financial Derivatives $m	Commodities $m	Data and Connectivity $m	Corporate Items $m	Group $m
Timing of revenue recognition:						
Point in time	6,488	2,760	1,636	104	7	10,995
Over time	1,425	692	362	1,963	8	4,450
Revenue	7,913	3,452	1,998	2,067	15	15,445
Net investment income	232	3,050	190	-	1,487	4,959
Donation income of HKEX Foundation	-	-	-	-	88	88
Sundry income	19	-	-	6	(1)	24
Revenue and other income	8,164	6,502	2,188	2,073	1,589	20,516
Less: Transaction-related expenses	(10)	(237)	-	-	-	(247)
Revenue and other income less transaction-related expenses	8,154	6,265	2,188	2,073	1,589	20,269
Operating expenses	(1,127)	(862)	(1,208)	(438)	(1,806)	(5,441)
Reportable segment EBITDA (non-HKFRS measure)	7,027	5,403	980	1,635	(217)	14,828
Depreciation and amortisation	(372)	(252)	(331)	(149)	(339)	(1,443)
Finance costs	(33)	(44)	(5)	(2)	(51)	(135)
Share of profits less losses of joint ventures	80	2	-	-	-	82
Reportable segment profit before taxation	6,702	5,109	644	1,484	(607)	13,332
Other segment information:						
Interest income	326	4,807	4,403	-	1,305	10,841
Interest rebates to Participants	(94)	(1,706)	(4,213)	-	-	(6,013)
Other material non-cash item:						
Employee share-based compensation expenses	(89)	(58)	(35)	(25)	(192)	(399)

4. Operating Segments (continued)

	As restated 2022					
	Cash $m	Equity and Financial Derivatives $m	Commodities $m	Data and Connectivity $m	Corporate Items $m	Group $m
Timing of revenue recognition:						
Point in time	7,433	3,148	1,512	99	2	12,194
Over time	1,502	987	351	1,893	7	4,740
Revenue	8,935	4,135	1,863	1,992	9	16,934
Net investment income/(loss)	78	1,144	182	-	(48)	1,356
Donation income of HKEX Foundation	-	-	-	-	130	130
Sundry income	21	-	6	6	3	36
Revenue and other income	9,034	5,279	2,051	1,998	94	18,456
Less: Transaction-related expenses	(11)	(165)	-	-	-	(176)
Revenue and other income less transaction-related expenses	9,023	5,114	2,051	1,998	94	18,280
Operating expenses	(1,027)	(871)	(1,093)	(447)	(1,657)	(5,095)
Reportable segment EBITDA (non-HKFRS measure)	7,996	4,243	958	1,551	(1,563)	13,185
Depreciation and amortisation	(378)	(248)	(369)	(138)	(326)	(1,459)
Finance costs	(37)	(36)	(6)	(3)	(56)	(138)
Share of profits less losses of joint ventures	71	-	-	-	-	71
Reportable segment profit before taxation	7,652	3,959	583	1,410	(1,945)	11,659
Other segment information:						
Interest income	122	1,631	1,922	-	476	4,151
Interest rebates to Participants	(44)	(487)	(1,740)	-	-	(2,271)
Other material non-cash item:						
Employee share-based compensation expenses	(84)	(62)	(52)	(26)	(156)	(380)

(a) Geographical information

The Group's revenue is derived from its operations in Hong Kong, the UK and Mainland China. Such information and the Group's non-current assets (excluding financial assets and deferred tax assets) by geographical location are detailed below:

	Revenue		**Non-current assets**	
	2023 $m	2022 $m	**At 31 Dec 2023 $m**	At 31 Dec 2022 $m
Hong Kong (place of domicile)	**13,320**	14,941	**4,949**	5,069
United Kingdom	**2,033**	1,892	**17,515**	17,215
Mainland China	**92**	101	**221**	240
Others	**-**	-	**2**	-
	15,445	16,934	**22,687**	22,524

(b) Information about major customers

In 2023 and 2022, the revenue from the Group's largest customer amounted to less than 10 per cent of the Group's total revenue.

5. Revenue

Accounting Policy

Revenue excludes value added tax or other sales tax, and is recognised in the consolidated income statement on the following basis:

Trading fees and trading tariffs are recognised on a trade date basis.

Stock Exchange listing fees mainly comprise annual listing fees and initial listing fees. Annual listing fees are recognised on a straight-line basis over the period covered. Initial listing fees are recognised over time when the services are transferred to the listed companies or issuers of warrants, CBBCs and other securities.

Clearing and settlement fees arising from trades between Participants transacted on the Stock Exchange are recognised on the day following the trade day upon acceptance of the trades. Fees for clearing and settlement of trades transacted on the Shanghai Stock Exchange and Shenzhen Stock Exchange through Stock Connect (A-shares) are recognised on the trade day upon acceptance of the trades. Fees for clearing and settlement of trades in respect of base and ferrous metals futures and options contracts transacted on the LME are recognised on the trade match day. Fees for all other settlement transactions are recognised upon completion of the settlement.

Custody fees for securities held in the Central Clearing and Settlement System (CCASS) depository are calculated and accrued on a monthly basis. Portfolio fees for A-shares held or recorded in the CCASS depository, and portfolio fees for Hong Kong securities held by China Depository and Clearing Corporation Limited (ChinaClear) are calculated and accrued on a daily basis.

Income on registration and transfer fees for nominee services are calculated and accrued on the book close dates of the relevant stocks during the financial year.

Market data fees and other fees are recognised when the related services are rendered.

(a) Trading Fees and Trading Tariffs

	2023	2022
	$m	$m
Equity securities traded on the Stock Exchange and through Stock Connect	**2,769**	3,363
DWs, CBBCs and warrants traded on the Stock Exchange	**424**	629
Futures and options contracts traded on the Stock Exchange and the Futures Exchange	**1,822**	1,874
Commodities contracts traded on the LME and QME	**1,066**	971
	6,081	6,837

5. Revenue (continued)

(b) Stock Exchange Listing Fees

	2023				2022			
	Equity				Equity			
	Main Board	**GEM**	**CBBCs, DWs & others**	**Total**	Main Board	GEM	CBBCs, DWs & others	Total
	$m	**$m**	**$m**	**$m**	$m	$m	$m	$m
Annual listing fees	**689**	**43**	**4**	**736**	705	47	3	755
Initial and subsequent issue listing fees	**147**	**7**	**628**	**782**	210	9	936	1,155
Other listing fees	**4**	**1**	**-**	**5**	4	1	-	5
	840	**51**	**632**	**1,523**	919	57	939	1,915

(c) Other Revenue

	2023 $m	2022 $m
Network, terminal user, data line and software sub-license fees	**788**	751
Hosting services fees	**350**	290
Commodities stock levies and warehouse listing fees	**39**	43
Participants’ subscription and application fees	**76**	77
Accommodation income (note (i))	**80**	84
Conversion agency fees	**72**	69
Sales of Trading Rights	**12**	17
LME financial over-the-counter booking fees	**39**	45
BayConnect sales and service revenue	**88**	98
Miscellaneous revenue	**38**	32
	1,582	1,506

(i) Accommodation income mainly comprises charges on participants for depositing securities as alternatives to cash deposits of Margin Funds, or depositing currencies whose relevant bank deposit rates are negative, and charges imposed on Participants of LME Clear Limited (LME Clear) for cash collateral where the investment return on the collateral is below the benchmarked interest rates stipulated in the clearing rules of LME Clear.

(d) Revenue recognised in 2023 that was included in the deferred revenue balance at the beginning of the year amounted to $1,076 million (2022: $1,100 million).

6. Net Investment Income

Accounting Policy

Interest income on investments and interest rebates payable to Participants are recognised on a time apportionment basis using the effective interest method.

Gains and losses arising from changes in fair value of financial assets measured at fair value through profit or loss and derivative financial instruments are included under net investment income in the consolidated income statement.

	2023 $m	2022 $m
Gross interest income from financial assets measured at amortised cost	**10,035**	3,944
Gross interest income from financial assets measured at fair value through other comprehensive income	**806**	207
Interest rebates to Participants	**(6,013)**	(2,271)
Net interest income	**4,828**	1,880
Net gains/(losses) on financial assets mandatorily measured at fair value through profit or loss and derivative financial instruments:		
- investment funds	**421**	(486)
- other unlisted investments (note 53(d)(i))	**(253)**	(21)
- foreign exchange swaps	**(48)**	-
	120	(507)
Others	**11**	(17)
Net investment income	**4,959**	1,356

7. Donation Income of HKEX Foundation

Accounting Policy

HKEX Foundation Limited is a charitable foundation controlled by HKEX (note 28(b)).

Donation income of HKEX Foundation is recognised when the right to receive such donation is established.

	2023 $m	2022 $m
Stock Code Balloting Scheme	**87**	129
Others	**1**	1
	88	130

(a) The amount excludes $25 million (2022:$26 million) donation received from HKEX, which has been eliminated on consolidation.

8. Sundry Income

	2023 $m	2022 $m
Forfeiture of unclaimed dividends (note (a))	**19**	21
Others	**5**	15
	24	36

(a) In accordance with CCASS Rule 1109, the Group exercised its forfeiture right to appropriate cash dividends of $19 million (2022: $21 million) held by HKSCC Nominees Limited, which had remained unclaimed for a period of more than seven years and recognised these as sundry income. The Group has, however, undertaken to honour all forfeited claims amounting to $257 million at 31 December 2023 (31 December 2022: $239 million) if adequate proof of entitlement is provided by the beneficial owner claiming any dividends forfeited.

9. Transaction-related Expenses

Accounting Policy

Transaction-related expenses comprise of license fees, bank charges and other costs which directly vary with trading and clearing transactions. They are presented below Revenue and other income to reflect the nature of such direct costs. They are expensed in the period in which they are incurred.

10. Staff Costs and Related Expenses

	2023 $m	2022 $m
Salaries and other short-term employee benefits	**2,923**	2,728
Employee share-based compensation benefits of Share Award Scheme (note 43)	**399**	380
Termination benefits	**21**	16
Retirement benefit costs (note (a)):		
- ORSO Plan	**171**	158
- MPF Scheme	**4**	4
- LME Pension Scheme	**35**	28
- PRC Retirement Schemes	**10**	10
- Other contribution plans	**1**	-
	3,564	3,324

(a) Retirement Benefit Costs

The Group has sponsored a defined contribution provident fund scheme (ORSO Plan) which is registered under the Occupational Retirement Schemes Ordinance (ORSO) and a Mandatory Provident Fund scheme (MPF Scheme) for the benefits of its employees in Hong Kong. The Group contributes 12.5 per cent of the employee's basic salary to the ORSO Plan if an employee contributes 5 per cent. If the employee chooses not to contribute, the Group will contribute 10 per cent of the employee's salary to the ORSO Plan. Contributions to the MPF Scheme are in accordance with the statutory limits prescribed by the MPF Ordinance. Forfeited contributions of the ORSO Plan for employees who leave before the contributions are fully vested are not used to offset existing contributions but are credited to a reserve account of that Plan, and are available for distribution to the members of the Plan at the discretion of the trustees.

10. Staff Costs and Related Expenses (continued)

(a) Retirement Benefit Costs (continued)

For employees of LME and LME Clear, the Group has also sponsored a defined contribution pension scheme (LME Group Retirement Savings Plan or LME Savings Plan). For employees who joined LME and LME Clear before 1 May 2014, the Group contributes 15 per cent to 17 per cent of the employee's basic salary to the LME Savings Plan. For employees who joined the LME and LME Clear on or after 1 May 2014, they are automatically enrolled into the LME Savings Plan on a matched contribution basis and may choose a personal contribution level ranging from 3 per cent to 5 per cent of their basic salaries, which is matched by the Group's contribution ranging from 6 per cent to 10 per cent of their basic salaries. Staff may choose to contribute more than 5 per cent of their basic salaries, but the Group's contribution is capped at 10 per cent, and staff may also opt-out of the LME Savings Plan if they wish. There are no forfeited contributions for the LME Savings Plan as the contributions are fully vested to the employees upon payment to the scheme.

Pursuant to the relevant laws and regulations in the People's Republic of China (PRC), the Group has joined defined contribution retirement schemes for the employees arranged by local government labour and social security authorities (PRC Retirement Schemes). The Group makes contributions to the retirement schemes at the applicable rates based on the amounts stipulated by the local government authorities. Upon retirement, the local government labour and social security authorities are responsible for the payment of the retirement benefits to the retired employees. In addition, the Group has made contributions for employees of other overseas subsidiaries subject to the relevant regulations in the countries in which the overseas subsidiaries operate.

Assets of the ORSO Plan, MPF Scheme, LME Savings Plan, PRC Retirement Schemes and contribution plans of other overseas subsidiaries are held separately from those of the Group and are independently administered and are not included in the consolidated statement of financial position.

The abolition of the Mandatory Provident Fund (MPF)-Long Service Payment (LSP) offsetting mechanism in Hong Kong does not have any financial impact to the Group as it is the Group's practice of not offsetting any MPF contribution against long service payment or severance payment.

11. Information Technology and Computer Maintenance Expenses

	2023 $m	2022 $m
Costs of services and goods:		
- consumed by the Group	**741**	658
- directly consumed by Participants	**73**	74
	814	732

12. Other Operating Expenses

	2023 $m	2022 $m
Bank charges	**17**	16
Communication expenses	**7**	8
Custodian and fund management related fees	**33**	46
Financial data subscription fees	**55**	52
Insurance	**17**	15
Loss on disposal of fixed assets	**10**	-
Non-executive directors' fees	**24**	24
Office demolition and relocation expenses	**4**	6
Write back of provision for impairment losses of receivables	**(1)**	(2)
Repairs and maintenance expenses	**63**	62
Security expenses	**21**	21
Travel expenses	**46**	26
Regulatory fees	**24**	20
Other miscellaneous expenses	**91**	81
	411	375

13. Operating Profit

	2023 $m	2022 $m
Operating profit is stated after charging/(crediting):		
Auditor's remuneration		
- audit fees	**20**	19
- other non-audit fees	**4**	2
Loss on disposal of fixed assets	**10**	-
Write back of provision for impairment losses of receivables	**(1)**	(2)
Net foreign exchange (gains)/losses on financial assets (excluding financial assets and financial liabilities measured at fair value through profit or loss)	**(11)**	17

14. Finance Costs

	2023 $m	2022 $m
Interest on borrowings (note 39)	**7**	4
Interest on lease liabilities (note 38)	**59**	68
Banking facility commitment fees (note (a))	**53**	51
Negative interest on Euro and Japanese Yen deposits	**16**	15
	135	138

(a) Bank facility commitment fees, that relate to liquidity support provided to the Group's clearing houses, are amortised to the consolidated income statement throughout the commitment periods.

15. Directors' Emoluments and Interests of Directors

All Directors, including one Executive Director (HKEX's Chief Executive Officer), received emoluments during the years ended 31 December 2023 and 31 December 2022. The aggregate emoluments paid and payable to the Directors during the year were as follows:

	2023 $'000	2022 $'000
Executive Director:		
Salaries and other short-term employee benefits	**10,239**	10,328
Performance cash incentive	**14,040**	12,375
Retirement benefit costs	**1,250**	1,250
	25,529	23,953
Employee share-based compensation benefits (note (a))	**63,766**	62,608
	89,295	86,561
Non-executive Directors:		
Fees	**24,294**	23,643
Other benefits	**-**	-
	24,294	23,643
	113,589	110,204

(a) Employee share-based compensation benefits represent the fair value of share awards granted under the Share Award Scheme (Awarded Shares) on grant date (note 43) recognised in the consolidated income statement during the year.

15. Directors' Emoluments and Interests of Directors (continued)

(b) The emoluments of all Directors, including HKEX's Chief Executive Officer who is an ex-officio member, are set out below. The amounts represent emoluments paid or receivable in respect of their services as a director.

	2023							
Name of Director	**Fees $'000**	**Salary $'000**	**Other benefits (note (i)) $'000**	**Performance cash incentive $'000**	**Retirement benefit costs (note (ii)) $'000**	**Sub-total $'000**	**Employee share-based compensation benefits $'000**	**Total $'000**
Laura M Cha	**5,267**	**-**	**-**	**-**	**-**	**5,267**	**-**	**5,267**
Alejandro N Aguzin	**-**	**10,000**	**239**	**14,040**	**1,250**	**25,529**	**63,766**	**89,295**
Nicholas C Allen	**2,494**	**-**	**-**	**-**	**-**	**2,494**	**-**	**2,494**
Apurv Bagri	**1,360**	**-**	**-**	**-**	**-**	**1,360**	**-**	**1,360**
C H Cheah	**1,683**	**-**	**-**	**-**	**-**	**1,683**	**-**	**1,683**
Anna M M Cheung	**1,620**	**-**	**-**	**-**	**-**	**1,620**	**-**	**1,620**
Susan M F Chow Woo	**1,820**	**-**	**-**	**-**	**-**	**1,820**	**-**	**1,820**
Rafael Gil-Tienda (note (iii))	**591**	**-**	**-**	**-**	**-**	**591**	**-**	**591**
Benjamin P C Hung	**1,260**	**-**	**-**	**-**	**-**	**1,260**	**-**	**1,260**
Nisa B W Y Leung	**1,280**	**-**	**-**	**-**	**-**	**1,280**	**-**	**1,280**
Hugo P H Leung	**2,400**	**-**	**-**	**-**	**-**	**2,400**	**-**	**2,400**
Carlson Tong (note (iv))	**1,080**	**-**	**-**	**-**	**-**	**1,080**	**-**	**1,080**
Joseph C K Yam (note (iv))	**1,088**	**-**	**-**	**-**	**-**	**1,088**	**-**	**1,088**
Stephen K W Yiu (note (iii))	**921**	**-**	**-**	**-**	**-**	**921**	**-**	**921**
Y Zhang	**1,430**	**-**	**-**	**-**	**-**	**1,430**	**-**	**1,430**
Total	**24,294**	**10,000**	**239**	**14,040**	**1,250**	**49,823**	**63,766**	**113,589**

	2022							
Name of Director	Fees $'000	Salary $'000	Other benefits (note (i)) $'000	Performance cash incentive $'000	Retirement benefit costs (note (ii)) $'000	Sub-total $'000	Employee share-based compensation benefits $'000	Total $'000
Laura M Cha	5,166	-	-	-	-	5,166	-	5,166
Alejandro N Aguzin	-	10,000	328	12,375	1,250	23,953	62,608	86,561
Nicholas C Allen	1,253	-	-	-	-	1,253	-	1,253
Apurv Bagri	1,245	-	-	-	-	1,245	-	1,245
C H Cheah	1,663	-	-	-	-	1,663	-	1,663
Anna M M Cheung	1,548	-	-	-	-	1,548	-	1,548
Susan M F Chow Woo	1,783	-	-	-	-	1,783	-	1,783
Rafael Gil-Tienda	2,098	-	-	-	-	2,098	-	2,098
Benjamin P C Hung	1,238	-	-	-	-	1,238	-	1,238
Nisa B W Y Leung	1,253	-	-	-	-	1,253	-	1,253
Hugo P H Leung	1,958	-	-	-	-	1,958	-	1,958
Stephen K W Yiu	3,073	-	-	-	-	3,073	-	3,073
Y Zhang	1,365	-	-	-	-	1,365	-	1,365
Total	23,643	10,000	328	12,375	1,250	47,596	62,608	110,204

Notes:

(i) Other benefits included leave pay, insurance premium and club membership.

(ii) Retirement benefit costs include employer's contributions to provident fund. Employees who retire before normal retirement age are eligible for 18 per cent of the employer's contribution to the provident fund after completion of two years of service. The rate of vested benefit increases at an annual increment of 18 per cent thereafter reaching 100 per cent after completion of seven years of service.

(iii) Retired on 26 April 2023

(iv) Appointment effective from 26 April 2023

15. Directors' Emoluments and Interests of Directors (continued)

(c) Directors' material interests in transactions, arrangements or contracts

No significant transactions, arrangements and contracts in relation to HKEX's business to which HKEX was a party and in which a director of HKEX had a material interest, whether directly or indirectly, subsisted at the end of the year or at any time during the year.

16. Five Top-paid Employees

One (2022: one) of the five top-paid employees was HKEX's Chief Executive Officer whose emoluments are disclosed in note 15. Details of the emoluments of the other four (2022: four) top-paid employees were as follows:

	2023 $'000	2022 $'000
Salaries and other short-term employee benefits	**16,236**	22,374
Performance cash incentive	**21,044**	11,944
Retirement benefit costs	**1,221**	1,375
	38,501	35,693
Employee share-based compensation benefits (note (a))	**26,988**	40,630
	65,489	76,323

(a) Employee share-based compensation benefits represent the fair value of Awarded Shares on grant date (note 43) amortised to the consolidated income statement during the year.

(b) The emoluments of these four (2022: four) employees, including share-based compensation benefits, were within the following bands:

	2023 Number of employees	2022 Number of employees
$13,500,001 - $14,000,000	**-**	1
$14,000,001 - $14,500,000	**1**	-
$14,500,001 - $15,000,000	**1**	-
$16,000,001 - $16,500,000	**1**	1
$18,500,001 - $19,000,000	**-**	1
$20,500,001 - $21,000,000	**1**	-
$27,000,001 - $27,500,000	**-**	1
	4	4

The above employees included senior executives who were also Directors of the subsidiaries during the years. No Directors of the subsidiaries waived any emoluments.

17. Taxation

Accounting Policy

The current tax charge is calculated on the basis of the tax laws enacted or substantively enacted at the end of the reporting period in the countries where HKEX and its subsidiaries operate and generate taxable income. Management periodically evaluates positions taken in tax returns with respect to situations in which applicable tax regulation is subject to interpretation and considers whether it is probable that a taxation authority will accept an uncertain tax treatment. Provisions are established where appropriate on the basis of amounts expected to be paid to tax authorities.

(a) Taxation charge/(credit) in the consolidated income statement represented:

	2023 **$m**	2022 $m
Current tax - Hong Kong Profits Tax		
- Provision for the year	**1,229**	1,481
- Over provision in respect of prior years	**(4)**	(2)
	1,225	1,479
Current tax - Overseas Tax		
- Provision for the year	**163**	117
- Over provision in respect of prior years	**(21)**	-
	142	117
Total current tax (note (i))	**1,367**	1,596
Deferred tax (note 41(a))		
- Origination and reversal of temporary differences	**(16)**	(32)
Taxation charge	**1,351**	1,564

(i) Hong Kong Profits Tax has been provided at the rate of 16.5 per cent (2022: 16.5 per cent) on the estimated assessable profit for the year. Taxation on overseas profits has been calculated on the estimated assessable profit at the rates of taxation prevailing in the countries in which the Group operates, with the average corporation tax rate applicable to the subsidiaries in the UK being 23.5 per cent (2022: 19 per cent).

17. Taxation (continued)

(b) The taxation on the Group's profit before taxation differs from the theoretical amount that would arise using the weighted average tax rate applicable to profits of the consolidated entities as follows:

	2023 **$m**	2022 $m
Profit before taxation	**13,332**	11,659
Tax calculated at domestic tax rates applicable to profits in the respective countries (note (i))	**2,187**	1,907
Income not subject to taxation	**(991)**	(475)
Expenses not deductible for taxation purposes	**93**	82
Change in deferred tax arising from unrecognised tax losses and other deferred tax adjustments	**87**	52
Over provision in respect of prior years	**(25)**	(2)
Taxation charge	**1,351**	1,564

(i) The weighted average applicable tax rate was 16.4 per cent (2022: 16.4 per cent).

(c) OECD Pillar Two model rules

The Group is within the scope of the Pillar Two model rules published by the OECD. Under the rules, the Group is liable to pay a top-up tax for the difference between their Global Anti-Base Erosion (GloBE) effective tax rate per jurisdiction and the 15 per cent minimum rate. Of the various jurisdictions where the Group operates, Pillar Two legislation has been enacted in the UK as at 31 December 2023 and will become applicable to UK entities from 1 January 2024.

The Group has applied the exception to recognising and disclosing information about deferred tax assets and liabilities related to Pillar Two income taxes, as provided in Amendments to HKAS 12.

The Group has carried out an assessment on the impact brought by the Pillar Two legislation in the UK. The assessment indicated that the top-up tax for the Group's UK entities should be negligible as they will be able to take advantage of the Country-by-Country Reporting Transitional Safe Harbours given that the simplified effective tax rate of the UK entities is expected to be higher than 15 per cent in 2024.

18. Earnings Per Share

The calculation of the basic and diluted earnings per share is as follows:

(a) Basic earnings per share

	2023	2022
Profit attributable to shareholders ($m)	**11,862**	10,078
Weighted average number of shares in issue less shares held for Share Award Scheme (in ’000)	**1,265,463**	1,265,489
Basic earnings per share ($)	**9.37**	7.96

(b) Diluted earnings per share

	2023	2022
Profit attributable to shareholders ($m)	**11,862**	10,078
Weighted average number of shares in issue less shares held for Share Award Scheme (in ’000)	**1,265,463**	1,265,489
Effect of Awarded Shares (in ’000)	**2,346**	2,235
Weighted average number of shares for the purpose of calculating diluted earnings per share (in ’000)	**1,267,809**	1,267,724
Diluted earnings per share ($)	**9.36**	7.95

19. Dividends

Accounting Policy

Interim dividends declared are recognised as liabilities in the consolidated financial statements in the period in which the dividends are approved by the directors.

	2023 $m	2022 $m
First interim dividend paid:		
$4.50 (2022: $3.45) per share	**5,705**	4,374
Less: Dividend for shares held by Share Award Scheme (note (a))	**(10)**	(8)
	5,695	4,366
Second interim dividend declared (note (b)):		
$3.91 (2022: $3.69) per share based on issued share capital at 31 Dec	**4,957**	4,678
Less: Dividend for shares held by Share Award Scheme at 31 Dec (note (a))	**(13)**	(9)
	4,944	4,669
	10,639	9,035

(a) The results and net assets of The HKEX Employees' Share Award Scheme (Share Award Scheme) are included in HKEX's financial statements. Therefore, dividends for shares held by the Share Award Scheme were deducted from the total dividends.

(b) The second interim dividend declared after 31 December was not recognised as a liability at 31 December as it had not been approved by the Board.

20. Financial Assets

Accounting Policy

The Group classifies its financial assets in the following measurement categories:

- those measured at fair value (either through profit or loss (note 22) or through other comprehensive income (note 23)); and
- those measured at amortised cost (note 24).

The classification depends on the business model for managing the financial assets and the contractual terms of the cash flows.

Financial assets of Clearing House Funds and Margin Funds are classified as current assets as they will be liquidated whenever liquid funds are required.

Other financial assets are classified as current assets unless they are expected to mature or be disposed of after twelve months from the end of the reporting period, in which case, they are included in non-current assets. For investment funds which have no maturity date, they are included in current assets unless they cannot be redeemed within twelve months from the end of the reporting period.

21. Cash and Cash Equivalents

Accounting Policy

Cash and cash equivalents comprise cash on hand, bank balances and other short-term highly liquid investments that are readily convertible into known amounts of cash and are subject to an insignificant risk of changes in value (mainly reverse repurchase investments, time deposits and short-term debt securities), normally with original maturities of three months or less, or with remaining maturities of three months or less from the date of acquisition.

	At 31 Dec 2023				
	Cash for A-shares (notes (a) and (c)) $m	**Corporate Funds (notes (b) and 25) $m**	**Margin Funds (notes (c) and 33) $m**	**Clearing House Funds (notes (c) and 37) $m**	**Total $m**
Cash on hand and balances and deposits with banks	**2,733**	**7,956**	**31,614**	**13,061**	**55,364**
Unlisted debt securities	**-**	**-**	**-**	**611**	**611**
Reverse repurchase investments	**-**	**2,330**	**59,755**	**7,047**	**69,132**
	2,733	**10,286**	**91,369**	**20,719**	**125,107**

	At 31 Dec 2022				
	Cash for A-shares (notes (a) and (c)) $m	Corporate Funds (notes (b) and 25) $m	Margin Funds (notes (c) and 33) $m	Clearing House Funds (notes (c) and 37) $m	Total $m
Cash on hand and balances and deposits with banks	2,810	14,213	48,857	6,075	71,955
Unlisted debt securities	-	174	-	1,418	1,592
Reverse repurchase investments	-	1,565	98,325	11,528	111,418
	2,810	15,952	147,182	19,021	184,965

(a) Cash for A-shares includes:

(i) Renminbi (RMB) cash prepayments received by Hong Kong Securities Clearing Company Limited (HKSCC) from its Clearing Participants for releasing their allocated A-shares on the trade day. Such prepayments will be used to settle HKSCC’s Continuous Net Settlement (CNS) obligations payable on the next business day; and

(ii) Hong Kong Dollar/United States Dollar cash collateral received by HKSCC from its Clearing Participants for releasing their allocated A-shares on the trade day. Such collateral will be refunded to the Clearing Participants when they settle their RMB CNS obligations on the next business day.

(b) At 31 December 2023, cash and cash equivalents of Corporate Funds of $1,074 million (31 December 2022: $694 million) (note 25(b)) were solely used to support Skin-in-the-Game and default fund credits of Clearing House Funds (note 37(a)).

(c) The cash and cash equivalents of Margin Funds, Clearing House Funds, Corporate Funds reserved for supporting Skin-in-the-Game and default fund credits of Clearing House Funds (note (b)), and Cash for A-shares are held for specific purposes and cannot be used by the Group to finance other activities. These balances are not included in cash and cash equivalents of the Group for cash flow purpose in the consolidated statement of cash flows.

22. Financial Assets Measured at Fair Value through Profit or Loss

Accounting Policy

Classification

Investments and other financial assets are classified under financial assets measured at fair value through profit or loss if they do not meet the conditions to be measured at fair value through other comprehensive income (note 23) or amortised cost (note 24). On initial recognition, the Group may irrevocably designate a financial asset as at fair value through profit or loss that otherwise meets the requirements to be measured at amortised cost or at fair value through other comprehensive income if doing so eliminates or significantly reduces an accounting mismatch that would otherwise arise.

Investments in equity instruments that are not held for trading are classified under financial assets measured at fair value through profit or loss unless the Group has made an irrevocable election at the time of initial recognition to account for the investment at fair value through other comprehensive income.

Recognition and measurement

Purchases and sales of financial assets measured at fair value through profit or loss are recognised on the trade date. They are initially recognised at fair value with transaction costs recognised as expenses in the consolidated income statement and subsequently carried at fair value. Gains and losses arising from changes in fair value are included in the consolidated income statement in the period in which they arise.

Interest income is included in net fair value gains/(losses) from these financial assets.

Fair values of quoted investments are based on the most representative prices within the bid-ask spreads which are currently considered as the bid-prices. The investment funds are valued based on the latest available transaction price or redemption price for each fund, as determined by the fund administrator. For unlisted securities or financial assets without an active market, the Group establishes the fair value by using valuation techniques including the use of recent arm’s length transactions, reference to recent market transactions, trading multiples and financial data of other comparable companies, and other instruments that are substantially the same and discounted cash flow analysis.

	Corporate Funds (note 25)	
	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Mandatorily measured at fair value		
Investment funds:		
- listed outside Hong Kong	**870**	662
- unlisted	**5,698**	5,648
	6,568	6,310
Unlisted equity securities	**393**	654
	6,961	6,964
The expected recovery dates of the financial assets are analysed as follows:		
Within twelve months	**6,357**	6,177
More than twelve months	**604**	787
	6,961	6,964

23. Financial Assets Measured at Fair Value through Other Comprehensive Income

Accounting Policy

Classification

A debt investment is measured at fair value through other comprehensive income if it meets both of the following conditions and is not designated as at fair value through profit or loss:

- it is held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets; and
- its contractual terms give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Recognition and measurement

At initial recognition, the Group measures a financial asset at its fair value plus transaction costs that are directly attributable to the acquisition of the financial asset.

Financial assets measured at fair value through other comprehensive income are subsequently measured at fair value. Interest income calculated using the effective interest method, foreign exchange gains and losses and impairment are recognised in the consolidated income statement. Other changes in carrying amounts are recognised in other comprehensive income. On derecognition, gains and losses accumulated in other comprehensive income are reclassified to the consolidated income statement.

Fair values of quoted investments or investments with an active market are based on the most representative prices within the bid-ask spreads which are currently considered as the bid-prices. For unlisted securities or financial assets without an active market, the Group establishes the fair value by using valuation techniques including the use of recent arm’s length transactions and dealer quotes for similar investments.

Impairment

The Group assesses on a forward-looking basis the expected credit losses associated with its debt instruments measured at fair value through other comprehensive income. Expected credit losses are a probability-weighted estimate of credit losses. Credit losses are measured as the present value of all expected cash shortfalls (i.e., the difference between the cash flows due to the Group in accordance with the contract and the cash flows that the Group expects to receive).

23. Financial Assets Measured at Fair Value through Other Comprehensive Income (continued)

Accounting Policy (continued)

Impairment (continued)

For financial assets measured at fair value through other comprehensive income, the Group recognised a provision for impairment losses equal to 12-month expected credit losses unless there has been a significant increase in credit risk of the financial assets since initial recognition, in which case the provision for impairment losses is measured at an amount equal to lifetime expected credit losses.

Expected credit losses are measured at each reporting date to reflect changes in the financial asset's credit risk since initial recognition.

In assessing whether the credit risk of a financial asset has increased significantly since initial recognition, the Group compares the risk of default occurring on the financial asset assessed at the reporting date with that assessed at the date of initial recognition. In making this reassessment, the Group considers that a default event occurs when the financial asset is past due by 90 days or one or more credit impaired events that have a detrimental impact on the estimated future cash flows of that financial asset have occurred.

The following information is taken into account when assessing whether credit risk has increased significantly since initial recognition:

- failure to make payments of principal or interest on their contractually due dates;
- an actual or expected significant deterioration in a financial asset's external or internal credit rating (if available);
- an actual or expected significant deterioration in the operating results of the debtor; and
- existing or forecast changes in the technological, market, economic or legal environment that have a significant adverse effect on the debtor's ability to meet its obligation to the Group.

Depending on the nature of the financial instruments, the assessment of a significant increase in credit risk is performed on either an individual basis or a collective basis. When the assessment is performed on a collective basis, the financial assets are grouped based on shared credit risk characteristics, such as past due status and credit risk ratings.

Any change in the expected credit loss amount is recognised as an impairment loss or reversal of impairment loss in the consolidated income statement, with a corresponding adjustment to the other comprehensive income.

23. Financial Assets Measured at Fair Value through Other Comprehensive Income (continued)

	At 31 Dec 2023		
	Margin Funds (note 33) $m	**Clearing House Funds (note 37) $m**	**Total $m**
Listed debt securities (note (a))	**6,057**	**-**	**6,057**
Unlisted debt securities (note (a))	**9,790**	**2,403**	**12,193**
	15,847	**2,403**	**18,250**
The expected recovery dates of the financial assets are analysed as follows:			
Within twelve months (note (b))	**15,847**	**2,403**	**18,250**

	At 31 Dec 2022		
	Margin Funds (note 33) $m	Clearing House Funds (note 37) $m	Total $m
Listed debt securities (note (a))	2,265	-	2,265
Unlisted debt securities (note (a))	9,666	3,031	12,697
	11,931	3,031	14,962
The expected recovery dates of the financial assets are analysed as follows:			
Within twelve months (note (b))	11,931	3,031	14,962

(a) No provision for impairment loss was made at 31 December 2023 and 31 December 2022 as the financial assets were considered to be of low credit risk and the expected credit loss was minimal. Debt securities held were of investment grade and had a weighted average credit rating of Aa1 (Moody) (31 December 2022: Aa2 (Moody)) with no history of default and there were no unfavourable current conditions and forecast of future economic conditions at the reporting dates.

(b) Includes financial assets maturing after twelve months of $9,573 million (31 December 2022: $7,806 million) attributable to Margin Funds and $239 million (31 December 2022: $Nil) attributable to Clearing House Funds that could readily be liquidated to meet liquidity requirements of the Funds (note 53(b)).

24. Financial Assets Measured at Amortised Cost

Accounting Policy

Classification

Investments are classified under financial assets measured at amortised cost if they satisfy both of the following conditions:

- the assets are held within a business model whose objective is to hold assets in order to collect contractual cash flows; and
- the contractual terms of the financial assets give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

Accounts receivable and other deposits are also classified under this category (note 27).

Recognition and measurement

Financial assets measured at amortised cost are initially recognised at fair value plus transaction costs and subsequently carried at amortised cost using the effective interest method. The amortised cost is reduced by loss allowance for expected credit losses.

Interest income, foreign exchange gains and losses and impairment are recognised in the consolidated income statement. Any gains and losses on derecognition is recognised in the consolidated income statement.

Impairment

The Group assesses on a forward-looking basis the expected credit loss associated with its financial assets measured at amortised cost.

For accounts receivable due from customers, the Group applies the simplified approach permitted by HKFRS 9: Financial Instruments, which requires expected lifetime losses to be recognised from initial recognition of the receivables. Expected credit losses of receivables are estimated using a provision matrix based on the Group's historical credit loss experience, adjusted for factors that are specific to the debtors and an assessment of both the current and forecast general economic conditions at the reporting date.

For all other financial assets measured at amortised cost (including time deposits, debt instruments and other deposits), the Group recognises a provision for impairment losses equal to 12-month expected credit losses unless there has been a significant increase in credit risk of the financial assets since initial recognition, in which case the provision for impairment losses is measured at an amount equal to lifetime expected credit losses.

Expected credit losses are remeasured at each reporting date to reflect changes in the financial asset's credit risk since initial recognition. Any change in the expected credit loss amount is recognised as an impairment loss or reversal of impairment loss in the consolidated income statement, with a corresponding adjustment to the carrying amount through a loss allowance account.

The gross carrying amount of a financial asset is written off (either partially or in full) to the extent that there is no realistic prospect of recovery. This is generally the case when the Group determines that the debtor does not have assets or sources of income that could generate sufficient cash flows to repay the amounts subject to the write-off.

Subsequent recoveries of an asset that has previously been written off are recognised as a reversal of impairment in the consolidated income statement in the period in which the recovery occurs.

24. Financial Assets Measured at Amortised Cost (continued)

	At 31 Dec 2023		
	Corporate Funds (notes (b) and 25) $m	**Margin Funds (note 33) $m**	**Total $m**
Debt securities	**2,067**	**-**	**2,067**
Time deposits with original maturities over three months	**15,403**	**59,084**	**74,487**
Other financial assets	**95**	**-**	**95**
	17,565	**59,084**	**76,649**
The expected recovery dates of the financial assets are analysed as follows:			
Within twelve months	**15,900**	**59,084**	**74,984**
More than twelve months	**1,665**	**-**	**1,665**
	17,565	**59,084**	**76,649**

	At 31 Dec 2022		
	Corporate Funds (notes (b) and 25) $m	Margin Funds (note 33) $m	Total $m
Debt securities	1,219	-	1,219
Time deposits with original maturities over three months	10,599	58,580	69,179
Other financial assets	96	-	96
	11,914	58,580	70,494
The expected recovery dates of the financial assets are analysed as follows:			
Within twelve months	11,705	58,580	70,285
More than twelve months	209	-	209
	11,914	58,580	70,494

(a) No provision for impairment loss was made at 31 December 2023 and 31 December 2022 as the financial assets were considered to be of low credit risk and the expected credit loss was minimal. Debt securities held were of investment grade and had a weighted average credit rating of A1 (Moody) (31 December 2022: Aa2 (Moody)). Deposits were placed with the investment grade banks, licensed banks and restricted licence banks regulated by the Hong Kong Monetary Authority, and banks regulated by local banking regulators in the countries where the Group's subsidiaries operate. All these financial assets had no history of default and there were no unfavourable current conditions and forecast of future economic conditions at the reporting dates.

(b) At 31 December 2023, debt securities of Corporate Funds of $497 million (31 December 2022: $604 million) (note 25(b)) were solely used to support Skin-in-the-Game and default fund credits of HKSCC Guarantee Fund (note 37(a)).

(c) The fair values of financial assets maturing after twelve months are disclosed in note 53(d)(ii).

25. Corporate Funds

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Corporate Funds comprised the following instruments:		
Cash and cash equivalents (notes (b) and 21)	**10,286**	15,952
Financial assets measured at fair value through profit or loss (note 22)	**6,961**	6,964
Financial assets measured at amortised cost (notes (b) and 24)	**17,565**	11,914
	34,812	34,830

(a) Financial assets held by the Group which are funded by share capital and funds generated from operations are classified as Corporate Funds (i.e., other than financial assets of Margin Funds, Clearing House Funds, Cash for A-shares, and derivative financial instruments).

(b) At 31 December 2023, cash and cash equivalents of Corporate Funds of $1,074 million (31 December 2022: $694 million) and financial assets measured at amortised cost of Corporate Funds of $497 million (31 December 2022: $604 million) were solely used to support Skin-in-the-Game and default fund credits of Clearing House Funds (note 37(a)).

26. Derivative Financial Instruments

Accounting Policy

Derivative financial instruments include outstanding derivatives contracts of LME Clear, which acts as a central counterparty to the base and ferrous metals futures and options contracts traded on the LME, forward foreign exchange contracts and foreign exchange swaps. Derivatives are initially recognised at fair value on trade date and subsequently remeasured at their fair values. Except where outstanding derivatives contracts are held in the capacity as a central counterparty and derivatives which relate to qualifying cash flow hedges (note 44(a)), derivatives are categorised as held for trading with changes in fair value recognised in the consolidated income statement.

Derivative financial assets and liabilities are offset and the net amount reported in the consolidated statement of financial position when there is a legally enforceable right to offset the recognised amounts and there is an intention to settle on a net basis or realise the asset and settle the liability simultaneously.

26. Derivative Financial Instruments (continued)

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Mandatorily measured at fair value		
Derivative financial assets:		
- base and ferrous metals futures and options contracts cleared through LME Clear (note (a))	**58,097**	80,705
- forward foreign exchange contracts held as cash flow hedging instruments (note 44(a))	**4**	13
- foreign exchange swaps (note (b))	**26**	-
	58,127	80,718
Mandatorily measured at fair value		
Derivative financial liabilities:		
- base and ferrous metals futures and options contracts cleared through LME Clear (note (a))	**58,097**	80,705
- foreign exchange swaps (note (b))	**3**	-
	58,100	80,705

(a) The amounts represent the fair value of the outstanding base and ferrous metals futures and options contracts cleared through LME Clear that do not qualify for netting under HKAS 32 - Financial Instruments: Presentation, where LME Clear is acting in its capacity as a central counterparty to the contracts traded on the LME.

(b) The Group has entered into foreign exchange swaps for optimising foreign currency cash flows while hedging the overall foreign exchange exposures of the Group.

At 31 December 2023, total notional amount for outstanding foreign exchange swaps was $10,722 million (31 December 2022: $Nil).

27. Accounts Receivable, Prepayments and Deposits

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Receivable from ChinaClear, SHCH and Exchange and Clearing Participants:		
- CNS money obligations receivable (note (a))	**21,430**	12,793
- transaction levy, stamp duty and fees receivable	**664**	966
- Settlement Reserve Fund and Settlement Guarantee Fund held by ChinaClear (note 33)	**9,734**	10,206
- Inter-CCP margin held by SHCH (note (b)):		
- satisfied by margin deposits collected from OTC Clear Clearing Participants (note 33)	**130**	-
- satisfied by Corporate Funds	**113**	-
	243	-
- others	**5**	3
Receivables for investment funds sold before 31 Dec	**205**	248
Other receivables, prepayments and deposits	**1,095**	1,204
Less: Provision for impairment losses of receivables (notes (c) and (d))	**(44)**	(45)
	33,332	25,375

(a) Upon acceptance of Stock Exchange trades for settlement in CCASS under the CNS basis, HKSCC interposes itself between the HKSCC Clearing Participants as the settlement counterparty to the trades through novation. The CNS money obligations due by/to HKSCC Clearing Participants on the Stock Exchange trades are recognised as receivables and payables (note 34) when they are confirmed and accepted on the day after the trade day.

For a trade in A-shares transacted for Stock Exchange Participants, the rights and obligations of the parties to the trade will be transferred to ChinaClear, and a market contract between HKSCC and the relevant HKSCC Clearing Participants is created through novation. The CNS money obligations due by/to HKSCC Clearing Participants and ChinaClear are recognised as receivables and payables (note 34) when the trades are confirmed on the trade day.

(b) Under Swap Connect, OTC Clear and Shanghai Clearing House (SHCH) are required to provide inter-central counterparties (inter-CCP) margin to each other to cover the potential loss arising from the default of the other party (note 33). Part of the inter-CCP margin provided by OTC Clear to SHCH is satisfied by margin deposits collected from OTC Clear Clearing Participants and the remaining balance is satisfied by Corporate Funds of OTC Clear.

27. Accounts Receivable, Prepayments and Deposits (continued)

(c) Expected credit losses

For accounts receivable, the Group applies the simplified approach permitted by HKFRS 9 (2014), which requires expected lifetime losses to be recognised from initial recognition of the receivables.

The expected loss rates are based on the payment profiles of debtors and the corresponding historical credit losses experienced during the year. The historical loss rates are adjusted to reflect current and forward-looking information on macroeconomic factors affecting the ability of the customers to settle the receivables. On that basis, the loss allowance for accounts receivable as at 31 December 2023 and 31 December 2022 was determined as follows:

	At 31 Dec 2023			
	Current or within 30 days past due	**31 to 180 days past due**	**More than 180 days past due**	**Total**
Expected loss rate	**4%**	**12%**	**100%**	
Gross carrying amount – accounts receivable subject to expected credit loss provision ($m)	**672**	**20**	**18**	**710**
Loss allowance ($m)	**24**	**2**	**18**	**44**

	At 31 Dec 2022			
	Current or within 30 days past due	31 to 180 days past due	More than 180 days past due	Total
Expected loss rate	4%	12%	100%	
Gross carrying amount – accounts receivable subject to expected credit loss provision ($m)	568	33	20	621
Loss allowance ($m)	21	4	20	45

For the remaining receivables and other deposits (excluding prepayments) amounting to $32,451 million as of 31 December 2023 (31 December 2022: $24,586 million), the expected credit loss was minimal as these receivables were mainly due from Participants which are subject to the Group's stringent financial requirements and admission criteria, compliance monitoring and risk management measures, these receivables had no recent history of default, part of the receivables were subsequently settled, and there was no unfavourable current conditions and forecast future economic conditions at the reporting dates.

(d) The movements in provision for impairment losses of receivables were as follows:

	2023 $m	2022 $m
At 1 Jan	**45**	50
Write back of provision for loss allowance for receivables under other operating expenses	**(1)**	(2)
Exchange differences	**-**	(3)
At 31 Dec	**44**	45

(e) CNS money obligations receivable mature within two days after the trade date. The balance of Settlement Reserve Fund and Settlement Guarantee Fund with ChinaClear is rebalanced on a monthly basis, and the balance of inter-CCP margin held by SHCH is rebalanced on a daily basis. Fees receivable are due immediately or up to 60 days depending on the type of services rendered. The majority of the remaining accounts receivable, prepayments and deposits were due within three months.

28. Principal Subsidiaries and Controlled Structured Entities

Accounting Policy

Subsidiaries are entities (including structured entities (note (b)) over which the Group has control. The Group controls an entity when the Group is exposed to, or has the rights to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity.

A structured entity is an entity that has been designed so that voting or similar rights are not the dominant factor in deciding who controls the entity, such as when any voting rights relate to administrative tasks only and the relevant activities are directed by means of contractual arrangements.

(a) Principal subsidiaries

HKEX had direct or indirect interests in the following principal subsidiaries:

Company	Place of incorporation and operation	Issued and fully paid up share/registered capital	Principal activities	Interest held by the Group At 31 Dec 2023	Interest held by the Group At 31 Dec 2022
Direct principal subsidiaries:					
The Stock Exchange of Hong Kong Limited	Hong Kong	929 ordinary shares ($929)	Operates the only Stock Exchange in Hong Kong	**100%**	100%
Hong Kong Futures Exchange Limited	Hong Kong	230 ordinary shares ($28,750,000)	Operates a futures and options exchange in Hong Kong	**100%**	100%
Hong Kong Securities Clearing Company Limited	Hong Kong	4 ordinary shares ($1,060,000,002)	Operates a clearing house for securities traded on the Stock Exchange and those traded through Stock Connect, and the central securities depository, and provides custody and nominee services for eligible securities listed in Hong Kong and Mainland China	**100%**	100%
OTC Clearing Hong Kong Limited (OTC Clear) (note (i))	Hong Kong	24,459 ordinary shares ($1,636,301,781) 5,117 non-voting ordinary shares ($518,206,540)	Operates a clearing house for over-the-counter derivatives	**84%**	83%
HKFE Clearing Corporation Limited (HKCC)	Hong Kong	3,766,700 ordinary shares ($831,010,000)	Operates a clearing house for derivatives contracts traded on the Futures Exchange	**100%**	100%
The SEHK Options Clearing House Limited (SEOCH)	Hong Kong	4,000,000 ordinary shares ($271,000,000)	Operates a clearing house for stock options contracts traded on the Stock Exchange in Hong Kong	**100%**	100%

28. Principal Subsidiaries and Controlled Structured Entities (continued)

(a) Principal subsidiaries (continued)

Company	Place of incorporation and operation	Issued and fully paid up share/registered capital	Principal activities	Interest held by the Group At 31 Dec 2023	Interest held by the Group At 31 Dec 2022
Indirect principal subsidiaries:					
The London Metal Exchange	United Kingdom	100 ordinary shares of £1 each	Operates an exchange for the trading of base and ferrous metals futures and options contracts	**100%**	100%
LME Clear Limited	United Kingdom	107,500,001 ordinary shares of £1 each	Operates a clearing house for base and ferrous metals futures and options contracts	**100%**	100%
Qianhai Mercantile Exchange Co.,Ltd. (QME) (note (i))	Mainland China	RMB400,000,000	Operates a commodity trading platform in Mainland China	**90%**	90%

The above table lists the subsidiaries of the Group which, in the opinion of its directors, principally affect the results or financial position of the Group.

(i) Subsidiaries with non-controlling interests

At 31 December 2023, the Group held 84 per cent (31 December 2022: 83 per cent) interest in OTC Clear, while the remaining 16 per cent (31 December 2022: 17 per cent) interest was held by non-controlling interests. The non-controlling interests do not have voting rights at general meetings of OTC Clear. Details of the change in interests are set out in note 39.

QME is a limited company established in Mainland China. At 31 December 2023, the Group held 90 per cent (31 December 2022: 90 per cent) interest in QME, while the remaining 10 per cent (31 December 2022: 10 per cent) interest was held by non-controlling interests.

BayConnect is a limited company established in Mainland China. At 31 December 2023, the Group held 51 per cent (31 December 2022: 51 per cent) interest in BayConnect, while the remaining 49 per cent (31 December 2022: 49 per cent) interest was held by non-controlling interests.

28. Principal Subsidiaries and Controlled Structured Entities (continued)

(a) Principal subsidiaries (continued)

(i) Subsidiaries with non-controlling interests (continued)

Set out below is the financial information related to the non-controlling interests of each subsidiary:

	OTC Clear		QME		BayConnect	
	2023 $m	2022 $m	**2023 $m**	2022 $m	**2023 $m**	2022 $m
Amounts allocated to non-controlling interests:						
Profit/(loss) for the year	**134**	32	**(16)**	(16)	**1**	1
Other comprehensive income/(loss)	**-**	-	**1**	4	**(4)**	(12)
Total comprehensive income/(loss)	**134**	32	**(15)**	(12)	**(3)**	(11)

	At 31 Dec 2023 $m	At 31 Dec 2022 $m	**At 31 Dec 2023 $m**	At 31 Dec 2022 $m	**At 31 Dec 2023 $m**	At 31 Dec 2022 $m
Accumulated non-controlling interests	**391**	292	**(71)**	(56)	**132**	135

No summarised financial information of OTC Clear, QME and BayConnect is presented as the non-controlling interests are not material to the Group.

(ii) Significant restrictions

Cash and savings deposits are held by subsidiaries in Mainland China and are subject to exchange control restrictions. The carrying amount of these restricted assets in the consolidated statement of financial position at 31 December 2023 was $228 million (31 December 2022: $211 million).

(b) Controlled structured entities

HKEX controls two structured entities which operate in Hong Kong, particulars of which are as follows:

Structured entity	Principal activities
The HKEX Employees' Share Award Scheme (HKEX Employee Share Trust)	Purchases, administers and holds HKEX shares for the Share Award Scheme for the benefit of eligible HKEX employees (note 43)
HKEX Foundation Limited	Charitable foundation

HKEX has the power to direct the relevant activities of the HKEX Employee Share Trust and HKEX Foundation Limited and it has the ability to use its power over the entities to affect its exposure to returns. Therefore, they are considered as controlled structured entities of the Group.

29. Interests in Joint Ventures

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Share of net assets of joint ventures	**352**	291

(a) Details of the joint ventures were as follows:

Name	Place of business and country of incorporation	Principal activities	% of ownership interest At 31 Dec 2023	% of ownership interest At 31 Dec 2022
China Exchanges Services Company Limited (CESC)	Hong Kong	Development of index-linked and equity derivatives products	**33%**	33%
Bond Connect Company Limited (BCCL)	Hong Kong	Provision of support services related to Bond Connect	**40%**	40%

In 2012, HKEX, the Shanghai Stock Exchange and the Shenzhen Stock Exchange established a joint venture, CESC, with an aim of developing financial products and related services. CESC is a strategic investment for the Group. It is expected to enhance the competitiveness of Hong Kong, and it aims to promote the development of Mainland China's capital markets and the internationalisation of the Group.

In 2017, HKEX and China Foreign Exchange Trade System (CFETS) established a joint venture, BCCL, which provides support services related to Bond Connect. BCCL is a strategic investment of the Group as it provides services to facilitate the trading of Bond Connect, which enhances HKEX's position in the fixed income market and expands the mutual market programme from equity into bonds.

Set out below is the measurement method and the carrying amounts of the two joint ventures:

Name	Measurement method	Carrying amount At 31 Dec 2023 $m	Carrying amount At 31 Dec 2022 $m
CESC	Equity	**40**	38
BCCL	Equity	**312**	253
		352	291

The two joint ventures are private companies and no quoted market prices are available for their shares.

No summarised financial information of CESC and BCCL is presented as the joint ventures are not material to the Group.

30. Goodwill and Other Intangible Assets

Accounting Policy

Goodwill

Goodwill arising on the acquisition of subsidiaries is carried at cost as established at the date of acquisition less accumulated impairment losses, if any.

For the purpose of impairment testing, goodwill acquired in a business combination is allocated to each CGU, or group of CGUs, that is expected to benefit from the synergies of the combination. Each CGU or group of CGUs to which the goodwill is allocated represents the lowest level within the entity at which the goodwill is monitored for internal management purposes (i.e., operating segment level).

Goodwill is not amortised but impairment reviews are undertaken annually or more frequently if events or changes in circumstances indicate a potential impairment.

The Group's accounting policy for impairment is described in note 2(c).

Tradenames

Tradenames acquired in a business combination are recognised at fair value at the acquisition date. The fair value is based on the discounted estimated royalty payments that are expected to be avoided as a result of the tradenames being owned.

Tradenames arising from the acquisition of LME entities have indefinite useful lives and are carried at cost less accumulated impairment losses, if any.

Tradenames are reviewed annually to determine whether events and circumstances continue to support the indefinite useful life assessment.

Customer relationships

Customer relationships acquired in a business combination are recognised initially at fair value at the acquisition date. The fair value is determined using the multi-period excess earnings method, whereby the asset is valued after deducting a fair return on all other assets that are part of creating the related cash flows. Subsequently, the customer relationships are carried at cost (i.e., the initial fair value) less accumulated amortisation and impairment losses, if any. Amortisation is calculated using the straight-line method over the expected lives of the customer relationships, which are determined to be 8 to 25 years.

30. Goodwill and Other Intangible Assets (continued)

Accounting Policy (continued)

Computer software systems

Development costs that are directly attributable to the design, building and testing of identifiable and unique software products controlled by the Group are recognised as intangible assets if the related software does not form an integral part of the hardware on which it operates (i.e., system software without which the related hardware can still operate) and when the following criteria are met:

- It is technically feasible to complete the software so that it will be available for use;
- Management intends to complete the software and use it;
- There is an ability to use the software;
- It can be demonstrated how the software will generate probable future economic benefits;
- Adequate technical, financial and other resources to complete the development and to use the software are available; and
- The expenditure attributable to the software during its development can be reliably measured.

Other development expenditures that do not meet these criteria are recognised in the consolidated income statement as incurred. Development costs previously recognised in the consolidated income statement are not recognised as an asset in a subsequent period.

Qualifying software system development expenditure and related directly attributable costs capitalised as intangible assets are amortised when they are available for use. They are amortised at rates sufficient to write off their costs net of residual values over their estimated useful lives of three to five years on a straight-line basis. The residual values and useful lives are reviewed, and adjusted if appropriate, at the end of each reporting period, with the effect of any changes in estimate accounted for on a prospective basis.

Costs incurred in configuring or customising software in a cloud computing arrangement can only be recognised as intangible assets if the activities create an intangible asset that the Group controls and the intangible asset meets the recognition criteria. Those costs that do not result in intangible assets are expensed when service is delivered, unless they are incurred for customising the cloud-based software which the promises are not distinct to the cloud computing arrangement, where such costs are amortised over the contract terms of the cloud computing arrangement.

The Group’s accounting policy for impairment is described in note 2(c).

30. Goodwill and Other Intangible Assets (continued)

	Goodwill $m	Other Intangible Assets: Tradenames $m	Other Intangible Assets: Customer relationships $m	Other Intangible Assets: Software systems $m	Total $m
Cost:					
At 1 Jan 2022	13,361	896	3,148	5,977	23,382
Exchange differences	6	1	2	(17)	(8)
Additions	-	-	-	842	842
Disposals	-	-	-	(215)	(215)
At 31 Dec 2022	13,367	897	3,150	6,587	24,001
At 1 Jan 2023	**13,367**	**897**	**3,150**	**6,587**	**24,001**
Exchange differences	**4**	**-**	**-**	**(7)**	**(3)**
Additions	**-**	**-**	**-**	**1,123**	**1,123**
Disposals	**-**	**-**	**-**	**(36)**	**(36)**
At 31 Dec 2023	**13,371**	**897**	**3,150**	**7,667**	**25,085**
Accumulated amortisation:					
At 1 Jan 2022	-	-	1,184	3,226	4,410
Exchange differences	-	-	-	(10)	(10)
Amortisation	-	-	133	715	848
Disposals	-	-	-	(215)	(215)
At 31 Dec 2022	-	-	1,317	3,716	5,033
At 1 Jan 2023	**-**	**-**	**1,317**	**3,716**	**5,033**
Exchange differences	**-**	**-**	**-**	**(4)**	**(4)**
Amortisation	**-**	**-**	**132**	**681**	**813**
Disposals	**-**	**-**	**-**	**(36)**	**(36)**
At 31 Dec 2023	**-**	**-**	**1,449**	**4,357**	**5,806**
Net book value:					
At 31 Dec 2023	**13,371**	**897**	**1,701**	**3,310**	**19,279**
At 31 Dec 2022	13,367	897	1,833	2,871	18,968
Cost of software systems under development included above:					
At 31 Dec 2023	-	-	-	**1,933**	**1,933**
At 31 Dec 2022	-	-	-	1,533	1,533

Amortisation of $813 million (2022: $848 million) is included in “depreciation and amortisation” in the consolidated income statement.

Tradenames are regarded as having indefinite useful lives and there is no foreseeable limit to the period over which they are expected to generate cash flows for the Group as it is expected that their values will not be reduced through usage and there are no legal or similar limits on the period for their use.

30. Goodwill and Other Intangible Assets (continued)

Impairment tests for CGUs containing goodwill and intangible assets with indefinite useful lives

Goodwill and tradenames that arose on the acquisition of subsidiaries are allocated to and monitored by management at the operating segment level, which comprises CGUs, or groups of CGUs that are expected to benefit from synergies of combination with the acquired businesses. As a result of the reorganisation of the Group's reportable segments (note 4), the goodwill and tradenames previously allocated to the Post Trade segment were combined with the amounts allocated to the Commodities segment in 2023. A summary of the allocation of goodwill and tradenames to these operating segments after the reorganisation is as follows:

	At 31 Dec 2023		As restated At 31 Dec 2022	
	Goodwill $m	**Tradenames $m**	Goodwill $m	Tradenames $m
Commodities segment	**13,262**	**897**	13,256	897
Data and Connectivity segment	**109**	**-**	111	-
	13,371	**897**	13,367	897

The Commodities segment comprises the operations of the LME for the trading of base and ferrous metals futures and options contracts in the UK and the operations of its clearing house, LME Clear (UK commodities CGU), and the operations of QME in Mainland China (China commodities CGU). As the China commodities CGU is still considered at development stage, its valuation has not been taken into account in determining the recoverable amount of the Commodities segment at 31 December 2023.

The recoverable amount of each CGU is determined based on value-in-use calculations. These calculations use cash flow projections based on financial forecasts approved by management covering a five-year period. Cash flows beyond the five-year period are extrapolated using the estimated terminal growth rates stated below. The key assumptions, EBITDA margins, growth rates and discount rates used for value-in-use calculations are as follows:

	At 31 Dec 2023		As restated At 31 Dec 2022	
	Commodities segment	**Data and Connectivity segment**	Commodities segment	Data and Connectivity segment
EBITDA margin (average of next five years)	**55%**	**28%**	56%	30%
Growth rate	**3%**	**3%**	3%	3%
Discount rate	**8%**	**13%**	8%	13%

Management determined the EBITDA margins based on past performance, expectations regarding market development, and the business model the entity undertakes. The growth rates do not exceed the long-term average growth rate for the business in the markets in which each of the CGUs currently operates. The discount rates reflect specific risks relating to each CGU.

The recoverable amounts of the operating segments based on the estimated value-in-use calculations were higher than their carrying amounts (including goodwill and tradenames) at 31 December 2023 and 31 December 2022. Accordingly, no provision for impairment loss for goodwill or tradenames is considered necessary.

If the LME trading and clearing fees in the forecast period were 17 per cent lower than forecast, or the discount rate adopted was increased to 10 per cent, the recoverable amount of the Commodities segment would be lower than its carrying amount. Except for this, any reasonably possible changes in the key assumptions used in the value-in-use assessment would not affect management's view on impairment at 31 December 2023.

31. Fixed Assets

Accounting Policy

Tangible fixed assets are stated at cost less accumulated depreciation and impairment losses.

Tangible fixed assets are depreciated when they are available for use. They are depreciated at rates sufficient to write off their costs net of expected residual values over their estimated useful lives on a straight-line basis. The residual values and useful lives are reviewed at the end of each reporting period, with the effect of any changes in estimate accounted for on a prospective basis.

The useful lives of major categories of fixed assets are as follows:

Leasehold buildings	Up to 35 years or remaining lives of the leases if shorter
Leasehold improvements	Over the remaining lives of the leases but not exceeding 10 years
Computer trading and clearing systems	
- hardware and software	3 to 5 years
Other computer hardware and software	3 to 5 years
Furniture, equipment and motor vehicles	3 to 5 years
Data centre facilities and equipment	3 to 20 years

Qualifying software expenditure and related directly attributable costs are capitalised and recognised as a fixed asset if the software forms an integral part of the hardware on which it operates (i.e., operating system software without which the related hardware cannot operate).

Subsequent costs and qualifying development expenditure incurred after the completion of a system are included in the asset's carrying amount or recognised as a separate asset only when it is probable that future economic benefits associated with that item will flow to the Group and the cost of the item can be measured reliably.

The Group's accounting policy for impairment is described in note 2(c).

31. Fixed Assets (continued)

	Leasehold buildings $m	Computer trading and clearing systems $m	Other computer hardware and software $m	Data centre facilities and equipment $m	Leasehold improvements, furniture, equipment and motor vehicles $m	Total $m
Cost:						
At 1 Jan 2022	708	1,163	675	511	1,199	4,256
Exchange differences	-	(6)	(2)	-	(4)	(12)
Additions	-	4	86	149	103	342
Disposals	-	-	(3)	-	(63)	(66)
At 31 Dec 2022	708	1,161	756	660	1,235	4,520
At 1 Jan 2023	**708**	**1,161**	**756**	**660**	**1,235**	**4,520**
Exchange differences	**-**	**(2)**	**-**	**-**	**(1)**	**(3)**
Additions	**-**	**69**	**143**	**15**	**31**	**258**
Disposals	**-**	**(8)**	**(3)**	**(2)**	**(137)**	**(150)**
At 31 Dec 2023	**708**	**1,220**	**896**	**673**	**1,128**	**4,625**
Accumulated depreciation:						
At 1 Jan 2022	262	882	423	256	828	2,651
Exchange differences	-	(5)	(1)	-	(4)	(10)
Depreciation	26	74	58	31	116	305
Disposals	-	-	(3)	-	(63)	(66)
At 31 Dec 2022	288	951	477	287	877	2,880
At 1 Jan 2023	**288**	**951**	**477**	**287**	**877**	**2,880**
Exchange differences	**-**	**(2)**	**-**	**-**	**(1)**	**(3)**
Depreciation	**23**	**71**	**77**	**44**	**120**	**335**
Disposals	**-**	**(8)**	**(3)**	**(2)**	**(127)**	**(140)**
At 31 Dec 2023	**311**	**1,012**	**551**	**329**	**869**	**3,072**
Net book value:						
At 31 Dec 2023	**397**	**208**	**345**	**344**	**259**	**1,553**
At 31 Dec 2022	420	210	279	373	358	1,640
Cost of fixed assets in the course of construction included above:						
At 31 Dec 2023	**-**	**69**	**109**	**1**	**81**	**260**
At 31 Dec 2022	-	17	72	16	118	223

Depreciation of $335 million (2022: $305 million) is included in “depreciation and amortisation” in the consolidated income statement.

32. Right-of-use Assets

Accounting Policy

For an asset leased by the Group, the right-of-use asset is initially measured at cost (which comprises the initial measurement of lease liabilities, initial direct costs, reinstatement costs, any payments made at or before the commencement date less any lease incentives received), and subsequently at cost less any accumulated depreciation and impairment losses. The right-of-use asset is depreciated over the shorter of the asset's useful life and the lease term on a straight-line basis.

The Group has applied judgement to determine the lease term of some lease contracts which includes renewal options. The assessment of whether the Group is reasonably certain to exercise such options impacts the lease term, which significantly affects the amount of lease liabilities and right-of-use assets recognised.

	Lease premium for land $m	Properties $m	Information technology facilities $m	Equipment and motor vehicles $m	Total $m
At 1 Jan 2022	17	1,806	67	6	1,896
Exchange differences	-	(3)	-	-	(3)
Additions of leases	-	17	-	-	17
Depreciation	(1)	(288)	(12)	(5)	(306)
At 31 Dec 2022	16	1,532	55	1	1,604
At 1 Jan 2023	**16**	**1,532**	**55**	**1**	**1,604**
Additions of leases	**-**	**171**	**-**	**5**	**176**
Modification of leases	**-**	**(1)**	**-**	**-**	**(1)**
Depreciation	**-**	**(282)**	**(12)**	**(1)**	**(295)**
At 31 Dec 2023	**16**	**1,420**	**43**	**5**	**1,484**

(a) Lease premium for land represents prepaid lease payment for a medium-term lease in Hong Kong. In addition, the Group leases various properties, information technology facilities, office equipment and motor vehicles through lease contracts. These contracts are expected to expire within 7 years.

(b) Depreciation of $295 million (2022: $306 million) is included in "depreciation and amortisation" in the consolidated income statement.

33. Margin Deposits, Mainland Security and Settlement Deposits, and Cash Collateral from Participants

Accounting Policy

The obligation to refund the Margin deposits, Mainland security and settlement deposits, and cash collateral from Participants is disclosed under current liabilities. Non-cash collateral received from Participants is not recognised on the consolidated statement of financial position.

Margin Funds are established by cash received or receivable from Participants in respect of margin deposits, Mainland security and settlement deposits, and cash collateral of the five clearing houses to cover their open positions. Part of the Mainland security and settlement deposits is used by HKSCC to satisfy its obligations as a clearing participant of ChinaClear in respect of trades transacted through Stock Connect. Under Swap Connect, OTC Clear and SHCH are required to provide inter-CCP margin to each other to cover the potential loss arising from the default of the other party, and OTC Clear satisfies such obligations by using part of margin deposits collected from its Participants. These funds are held in segregated accounts of the respective clearing houses for this specified purpose and cannot be used by the Group to finance any other activities.

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Margin deposits, Mainland security and settlement deposits, and cash collateral from Participants comprised:		
HKCC Clearing Participants' margin deposits	**62,513**	74,847
HKSCC Clearing Participants' margin deposits, Mainland security and settlement deposits, and cash collateral	**18,227**	17,262
LME Clear Clearing Participants' margin deposits	**67,905**	105,285
OTC Clear Clearing Participants' margin deposits	**14,914**	15,630
OTC Clear's inter-CCP margin from SHCH	**237**	-
SEOCH Clearing Participants' margin deposits	**12,369**	14,878
	176,165	227,902
The margin deposits, Mainland security and settlement deposits, and cash collateral were invested in the following instruments for managing the obligations of the Margin Funds (note 20):		
Cash and cash equivalents (note 21)	**91,369**	147,182
Financial assets measured at fair value through other comprehensive income (note 23)	**15,847**	11,931
Financial assets measured at amortised cost (note 24)	**59,084**	58,580
Settlement Reserve Fund and Settlement Guarantee Fund held by ChinaClear (note 27)	**9,734**	10,206
Inter-CCP margin held by SHCH (note 27)	**130**	-
Margin receivable from Participants	**1**	3
	176,165	227,902

34. Accounts Payable, Accruals and Other Liabilities

Accounting Policy

Financial liabilities (other than derivative financial instruments (note 26) and financial guarantee contracts (note 36)) are initially recognised at fair value, which is then treated as their cost after initial recognition, and subsequently carried at amortised cost using the effective interest method.

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Payable to ChinaClear and Exchange and Clearing Participants:		
- CNS money obligations payable (note 27(a))	**24,137**	15,527
- HKD/USD cash collateral for A-shares (note 21(a)(ii))	**26**	76
- others	**604**	735
Transaction levy payable to the SFC	**110**	157
Levies payable to the Accounting and Financial Reporting Council	**37**	40
Unclaimed dividends (note (a))	**487**	448
Stamp duty payable to the Collector of Stamp Revenue	**523**	660
Cash collateral received for reverse repurchase investments	**464**	-
Other payables, accruals and deposits received	**1,461**	1,411
	27,849	19,054

(a) Unclaimed dividends represent dividends declared by listed companies, including HKEX, but not yet claimed by their shareholders. During the year, cash dividends of listed companies other than HKEX held by HKSCC Nominees Limited which had remained unclaimed for a period of more than seven years amounting to $19 million (2022: $21 million) were forfeited and recognised as sundry income (note 8) and dividends declared by HKEX which were unclaimed over a period of six years amounting to $23 million (2022: $26 million) were forfeited and transferred to retained earnings in accordance with HKEX's Articles of Association (note 46).

(b) CNS money obligations payable mature within two days after the trade date. The majority of the remaining accounts payable, accruals and other liabilities would mature within three months.

35. Deferred Revenue

Accounting Policy

Deferred revenue, or "contract liability" under HKFRS 15, is recognised when the Group receives consideration (or the amount is due) from the customers before the Group transfers goods or services to the customers.

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Deferred revenue arising from unsatisfied performance obligations	**1,367**	1,409
Analysed as:		
Non-current liabilities	**307**	333
Current liabilities	**1,060**	1,076
	1,367	1,409

36. Other Financial Liabilities

Accounting Policy

Financial guarantee contracts are initially recognised at fair value, and subsequently at the higher of the amount determined in accordance with the expected credit loss model and the amount initially recognised less, where appropriate, the cumulative amount of income recognised in accordance with the principles of HKFRS 15: Revenue from Contracts with Customers.

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Financial liabilities of Clearing House Funds (note 37)	**9**	20
Financial liabilities of Corporate Funds:		
Financial guarantee contract (note (a))	**20**	20
	29	40

(a) The amount represents the carrying value of a financial guarantee provided by the Group to the Collector of Stamp Revenue, details of which are disclosed in note 49(b).

37. Clearing House Funds

Accounting Policy

Clearing Participants' cash contributions to Clearing House Funds are included under current liabilities. Non-cash collateral received from Clearing Participants is not recognised on the consolidated statement of financial position.

Clearing House Funds, or default funds, are established under the Clearing House Rules. Assets contributed by the Clearing Participants and the Group are held by the respective clearing houses (together with the accumulated income less related expenses for the clearing houses in Hong Kong) expressly for the purpose of ensuring that the respective clearing houses are able to fulfil their counterparty obligations in the event that one or more of the Clearing Participants fail to meet their obligations to the clearing houses. The HKSCC Guarantee Fund also provides resources to enable HKSCC to discharge its liabilities and obligations if defaulting Clearing Participants deposit defective securities into CCASS. The amounts earmarked for contribution to the Rates and FX Guarantee Resources of OTC Clear and its accumulated investment income was also included in Clearing House Funds for presentation purpose. These funds are held in segregated accounts of the respective clearing houses for this specified purpose and cannot be used by the Group to finance any other activities. Contributions by the clearing houses to their respective default funds (Skin-in-the-Game), together with default fund credits granted to HKSCC and HKCC Participants, are included in Corporate Funds.

37. Clearing House Funds (continued)

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
The Clearing House Funds comprised:		
Clearing Participants' cash contributions	**21,955**	21,205
Contribution to OTC Clear Rates and FX Guarantee Resources	**156**	156
Clearing House Funds reserves (note 45)	**1,002**	671
	23,113	22,032
The Clearing House Funds were invested in the following instruments for managing the obligations of the Funds (note 20):		
Cash and cash equivalents (note 21)	**20,719**	19,021
Financial assets measured at fair value through other comprehensive income (note 23)	**2,403**	3,031
Less: Other financial liabilities of Clearing House Funds (note 36)	**(9)**	(20)
	23,113	22,032
The Clearing House Funds comprised the following Funds:		
HKCC Reserve Fund	**4,779**	1,483
HKSCC Guarantee Fund	**3,262**	4,439
LME Clear Default Fund	**7,814**	11,528
OTC Clear Rates and FX Guarantee Fund	**5,588**	3,234
OTC Clear Rates and FX Guarantee Resources	**183**	174
SEOCH Reserve Fund	**1,487**	1,174
	23,113	22,032

(a) At 31 December 2023, the Skin-in-the-Game, together with default fund credits granted to HKSCC and HKCC Participants (note 53(c)), amounted to $1,571 million (31 December 2022: $1,298 million), and were included in Corporate Funds (note 25(b)).

38. Lease Liabilities

Accounting Policy

Lease liability is initially measured at the present value of the lease payments that are not paid at the commencement date, discounted using the interest rate implicit in the lease. If that rate cannot be readily determined, which is generally the case for leases in the Group, the lessee's incremental borrowing rate is used. The lease liability subsequently increases by the interest cost on the lease liability and is reduced by lease payments made. Each lease payment is allocated between the principal and interest.

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Total lease liabilities	**1,604**	1,745
Analysed as:		
Non-current liabilities	**1,334**	1,448
Current liabilities	**270**	297
	1,604	1,745

Some lease contracts include an option to renew for an additional period after the end of the initial contract term. The Group assesses at the lease commencement date the likelihood of exercising the extension options, and only include those reasonably certain to be exercised in the measurement of lease liabilities.

39. Borrowings

Accounting Policy

The potential cash payments related to put options issued by HKEX for the non-voting ordinary shares of a subsidiary held by non-controlling interests are accounted for as financial liabilities under borrowings, which are initially recognised at present value of amount payable by HKEX to acquire the shares held by non-controlling interests with a corresponding charge directly to equity under “reserve relating to written put options to non-controlling interests”.

The written put option financial liabilities are subsequently measured at amortised cost. The interest charge arising is recorded under finance costs in the consolidated income statement.

When written put options are exercised by the non-controlling interests, the amount of non-controlling interests allocated to HKEX is credited directly to equity under “reserve relating to written put options to non-controlling interests”.

The written put option liabilities are classified as current liabilities unless the Group has an unconditional right to defer settlement of the liability for at least twelve months after the end of the reporting period.

39. Borrowings (continued)

	Written put options to non-controlling interests	
	2023 **$m**	2022 $m
At 1 Jan	**491**	426
Issuance of written put options to non-controlling interests debited against related reserve under equity	**-**	61
Redemption of written put options exercised by non-controlling interests	**(51)**	-
Interest expenses (note 14)	**7**	4
At 31 Dec	**447**	491
Analysed as:		
Non-current liabilities	**65**	61
Current liabilities	**382**	430
	447	491

The amounts were repayable as follows:

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Within one year	**382**	430
After two years but within five years	**65**	61
	447	491

Prior to 2022, OTC Clear issued 3,541 non-voting ordinary shares to certain third party shareholders at a total consideration of $433 million. In December 2022, a further 1,576 non-voting ordinary shares were issued at a consideration of $85 million. As part of the arrangement, put options were written by HKEX to the non-controlling interests to sell part or all of their non-voting ordinary shares in OTC Clear to HKEX at the initial subscription prices less accumulated dividends received by the non-controlling interests. The put options are exercisable by the non-controlling interests at any time following the date falling five years after the shares were issued if the non-controlling interests can demonstrate to HKEX that they have used reasonable endeavours for at least three months to find a suitable purchaser for their shares at a price equal to or more than their fair market values. The carrying amount of written put options represents the present value of the amount payable by HKEX to acquire the shares held by non-controlling interests at the date at which the written put options first become exercisable.

During the year ended 31 December 2023, HKEX purchased 427 non-voting ordinary shares at a consideration of $51 million (2022: $Nil) upon exercise of the written put options by the non-controlling interests. The amount of non-controlling interests allocated to HKEX relating to the written put options exercised was $35 million, and was credited directly to equity under “reserve relating to written put options to non-controlling interests”.

At 31 December 2023, $382 million of the written put options were exercisable (31 December 2022: $340 million) and the remaining $65 million of the options will become exercisable in December 2027 (31 December 2022: $90 million and $61 million of the options exercisable in October 2023 and December 2027 respectively).

40. Provisions

Accounting Policy

Provisions are recognised when the Group has a present legal or constructive obligation as a result of past events, it is probable that an outflow of resources will be required to settle the obligation, and a reliable estimate of the amount can be made. The amount recognised as a provision is the best estimate of the consideration required to settle the present obligation at the end of the reporting period.

	Reinstatement costs $m	Employee benefit costs $m	Total $m
At 1 Jan 2023	**99**	**58**	**157**
Provision for the year	**17**	**149**	**166**
Over provision for prior years	**(3)**	**-**	**(3)**
Amount used during the year	**-**	**(141)**	**(141)**
Amount paid during the year	**-**	**(4)**	**(4)**
At 31 Dec 2023	**113**	**62**	**175**
Analysed as:			
Non-current liabilities	**113**	**-**	**113**
Current liabilities	**-**	**62**	**62**
	113	**62**	**175**

(a) The provision for reinstatement costs represents the estimated costs of restoring the leased office premises to their original state upon the expiry of the leases. The leases are expected to expire within 7 years.

(b) The provision for employee benefit costs represents unused annual leave that has been accumulated at the end of the reporting period. It is expected to be fully utilised in the coming twelve months.

41. Deferred Taxation

Accounting Policy

Deferred tax is recognised, using the liability method, on temporary differences arising between the tax bases of assets and liabilities and their carrying amounts in the financial statements, except that deferred tax liabilities are not recognised if they arise from the initial recognition of goodwill.

Deferred tax assets and liabilities related to Pillar Two income taxes are not recognised.

Deferred tax assets are recognised to the extent that it is probable that future taxable profit will be available against which the temporary differences or the current tax losses can be utilised.

41. Deferred Taxation (continued)

(a) The movements on the net deferred tax liabilities/(assets) were as follows:

	Accelerated tax depreciation		Intangible assets[1]		Tax losses		Employee benefits		Leases		Financial assets		Total	
	2023	2022	**2023**	2022	**2023**	2022	**2023**	2022	**2023**	2022	**2023**	2022	**2023**	2022
	$m	$m	**$m**	$m	**$m**	$m	**$m**	$m	**$m**	$m	**$m**	$m	**$m**	$m
At 1 Jan	**395**	407	**680**	705	**(11)**	(13)	**(15)**	(23)	**(1)**	(1)	**(29)**	32	**1,019**	1,107
Exchange differences	**-**	-	**-**	1	**-**	-	**-**	-	**-**	-	**(1)**	(2)	**(1)**	(1)
Charged/(credited) to the consolidated income statement (note 17(a))	**37**	(12)	**(31)**	(26)	**1**	2	**1**	4	**1**	-	**(25)**	-	**(16)**	(32)
Charged/(credited) to other comprehensive income	**-**	-	**-**	-	**-**	-	**-**	-	**-**	-	**30**	(59)	**30**	(59)
Charged directly to retained earnings	**-**	-	**-**	-	**-**	-	**-**	4	**-**	-	**-**	-	**-**	4
At 31 Dec	**432**	395	**649**	680	**(10)**	(11)	**(14)**	(15)	**-**	(1)	**(25)**	(29)	**1,032**	1,019

[1] Intangible assets include customer relationships and tradenames.

(b) The Group had unrecognised tax losses of $1,968 million at 31 December 2023 (31 December 2022: $1,852 million) that may be carried forward for offsetting against future taxable income. Tax losses of PRC entities amounting to $752 million (31 December 2022: $728 million) will expire 5 years after the losses were incurred, and the remaining tax losses have no expiry date and can be carried forward indefinitely.

(c) Deferred tax assets and liabilities are offset when there is a legally enforceable right to set off current tax assets against current tax liabilities and when the deferred taxes relate to tax levied by the same taxation authority on the same taxable entity or different taxable entities where there is an intention to settle the balances on a net basis. The following amounts, determined after appropriate offsetting, are shown in the consolidated statement of financial position:

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Deferred tax assets	**(21)**	(53)
Deferred tax liabilities	**1,053**	1,072
	1,032	1,019

(d) The analysis of deferred tax (assets)/liabilities is as follows:

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Deferred tax assets		
Amounts to be recovered after more than 12 months	**(3)**	(8)
Amounts to be recovered within 12 months	**(18)**	(45)
	(21)	(53)
Deferred tax liabilities		
Amounts to be settled after more than 12 months	**1,033**	1,057
Amounts to be settled within 12 months	**20**	15
	1,053	1,072
Net deferred tax liabilities	**1,032**	1,019

42. Share Capital and Shares Held for Share Award Scheme

Accounting Policy

Where HKEX shares are acquired by the Share Award Scheme from the market, the total consideration of shares paid (including any directly attributable incremental costs) is presented as Shares held for Share Award Scheme and deducted from total equity.

Upon vesting, the related costs of the vested Awarded Shares and shares acquired from reinvesting dividends (dividend shares) are credited to Shares held for Share Award Scheme, with a corresponding decrease in employee share-based compensation reserve for Awarded Shares, and decrease in retained earnings for dividend shares.

Issued and fully paid – ordinary shares with no par:

	Number of shares ’000	Number of shares held for Share Award Scheme[1] ’000	Share capital $m	Shares held for Share Award Scheme $m	Total $m
At 1 Jan 2022	1,267,837	(2,371)	31,896	(901)	30,995
Shares purchased for Share Award Scheme (note (a))	-	(1,040)	-	(350)	(350)
Vesting of shares of Share Award Scheme (note (b))	-	1,005	22	333	355
At 31 Dec 2022	1,267,837	(2,406)	31,918	(918)	31,000
At 1 Jan 2023	**1,267,837**	**(2,406)**	**31,918**	**(918)**	**31,000**
Shares purchased for Share Award Scheme (note (a))	**-**	**(1,764)**	**-**	**(448)**	**(448)**
Vesting of shares of Share Award Scheme (note (b))	**-**	**878**	**28**	**357**	**385**
At 31 Dec 2023	**1,267,837**	**(3,292)**	**31,946**	**(1,009)**	**30,937**

[1] Excluding shares vested but not yet transferred to awardees of 61,896 shares at 31 December 2023 (31 December 2022: 52,772 shares)

(a) During the year, the Share Award Scheme (note 43) acquired 1,763,793 HKEX shares (2022: 1,040,416 shares) through purchases on the open market. The total amount paid to acquire the shares during the year was $448 million (2022: $350 million).

(b) During the year, a total of 878,256 HKEX shares (2022: 1,005,134 shares) were vested. The total cost of the vested shares was $357 million (2022: $333 million). In 2023, $28 million (2022: $22 million) was credited to share capital in respect of vesting of certain shares whose fair values were higher than the costs.

43. Employee Share-based Arrangements

Accounting Policy

The Group operates the Share Award Scheme (the Scheme), which is an equity-settled share-based compensation plan under which Awarded Shares are granted to employees of the Group (including the Executive Director) as part of their remuneration package.

The fair value of the Awarded Shares is determined by reference to the cost of purchase of the Awarded Shares, or the market value of the shares on grant date. The amount to be expensed as share-based compensation expenses is determined by reference to the fair value of the Awarded Shares granted. The total expense is recognised over the relevant vesting periods, with a corresponding credit to an employee share-based compensation reserve under equity.

The Group revises its estimates of the number of Awarded Shares that are expected to ultimately vest based on the vesting conditions at the end of each reporting period. Any resulting adjustment to the cumulative amount recognised in prior years is charged/credited to employee share-based compensation expense in the current year, with a corresponding adjustment to the employee share-based compensation reserve.

The movements of employee share-based compensation reserve were as follows:

	2023 **$m**	2022 $m
At 1 Jan	**346**	306
Employee share-based compensation benefits (note 10)	**399**	380
Vesting of shares of Share Award Scheme	**(372)**	(340)
At 31 Dec	**373**	346

The Scheme allows shares to be granted to employees of the Group, including the Executive Director (Employee Share Awards).

The amounts of shares awarded to eligible employees and/or selected senior executives (Awarded Sum) are approved by the Board. Pursuant to the Scheme, the Scheme's trustee, based on the Board's recommendation, applies forfeited or unallocated HKEX Shares held under the Scheme and HKEX shares that have been purchased from the market to satisfy the Awarded Shares for allocation to the selected employees. Before vesting, the Awarded Shares are held by the trust set up by the Scheme.

Further shares are derived from dividends payable on the Awarded Shares held in the Scheme from reinvesting dividends (dividend shares), and are allocated to the awardees on a pro rata basis and have the same vesting periods as the related Awarded Shares.

43. Employee Share-based Arrangements (continued)

(a) Employee Share Awards

Employee Share Awards vest progressively over the vesting period after the awards are granted, provided that the relevant awardee (i) remains employed by the Group (ii) is made redundant or (iii) is deemed to be a "good leaver", and Employee Share Awards vest immediately if the relevant awardee dies or suffers from permanent disability. Effective from 1 January 2023, the scheme rules relating to the vesting of shares have been amended, with any share awards granted on or after 1 January 2023 vesting in accordance with the original vesting schedule, instead of vesting immediately on the date of retirement of the awardees. Unless otherwise determined by the Board, the Remuneration Committee or the Chief Executive Officer, the vesting period of Employee Share Awards granted is three years, and the shares will be vested in two equal tranches from the second to the third year after the shares are granted.

For awardees who do not meet the vesting criteria, the unvested shares are forfeited. The forfeited shares are held by the trust set up by the Scheme.

Details of Awarded Shares awarded during 2022 and 2023

Date of award	Number of Awarded Shares awarded	Average fair value per share $	Vesting period ends
25 Feb 2022	1,600	388.90	17 May 2022 - 17 May 2024
25 Feb 2022	9,300	388.86	10 Jan 2023 - 10 Jan 2025
3 Mar 2022	42,600	366.83	28 Feb 2025
9 Mar 2022	827,630[1,2]	456.07	7 Dec 2023 - 7 Dec 2024
29 Apr 2022	8,100	338.55	1 Sep 2022 - 1 Sep 2024
9 Jun 2022	21,800	357.93	13 Jan 2023 - 31 Dec 2025
13 Jun 2022	5,400	342.99	7 Feb 2023 - 11 Feb 2025
15 Jul 2022	8,400	357.26	15 Mar 2023 - 15 Mar 2025
18 Aug 2022	500	334.65	4 Sep 2022 - 4 Sep 2023
31 Aug 2022	600	319.44	1 Apr 2023 - 1 Apr 2025
1 Dec 2022	23,600	321.80	25 Nov 2024 - 25 Nov 2025
2 Dec 2022	1,300	316.30	1 Sep 2023 - 1 Sep 2025
28 Dec 2022	2,042	341.06	25 Nov 2024 - 25 Nov 2025
27 Feb 2023	1,032,050[1,2]	328.89	8 Dec 2024 - 8 Dec 2025
9 Mar 2023	274	341.08	8 Dec 2024 - 8 Dec 2025
22 Mar 2023	1,693	332.73	1 Sep 2023 - 1 Sep 2026
17 Nov 2023	163	287.07	2 Feb 2024 - 2 Feb 2026
17 Nov 2023	586	287.07	17 Nov 2023 - 4 Sep 2024
17 Nov 2023	2,058	287.07	17 Nov 2023 -15 Nov 2026
17 Nov 2023	14,095	287.07	31 Dec 2023 - 31 Dec 2026
30 Nov 2023	2,498	279.02	1 Mar 2024 - 1 Mar 2026

[1] 162,003 and 170,171 shares were awarded by re-granting the forfeited or unallocated shares held by the Scheme on 9 March 2022 and 27 February 2023 respectively.

[2] 84,603 and 88,041 shares were awarded to HKEX's Chief Executive Officer on 9 March 2022 and 27 February 2023 respectively.

In addition to the above, total Awarded Sum amounting to $421 million were also granted to selected employees in December 2023. At 31 December 2023, the shares had not yet been awarded to the employees.

Details of Awarded Shares (excluding dividend shares) vested during 2022 and 2023

During the year, 837,299 HKEX shares (2022: 962,014 shares) were vested at an aggregate fair value of $372 million (2022: $340 million), of which 148,179 shares (2022: 105,878 shares) were for the HKEX's Chief Executive Officer.

43. Employee Share-based Arrangements (continued)

(b) Summary of Awarded Shares awarded and dividend shares

Movements in number of Awarded Shares awarded and dividend shares

	2023	2022
Number of Awarded Shares and dividend shares:		
Outstanding at 1 Jan	**1,367,905**	1,506,211
Awarded[1]	**1,053,417**	952,872
Forfeited	**(55,425)**	(131,916)
Vested	**(837,299)**	(962,014)
Dividend shares:		
- allocated to awardees	**58,739**	49,322
- allocated to awardees but subsequently forfeited	**(1,583)**	(3,450)
- vested[2]	**(40,957)**	(43,120)
Outstanding at 31 Dec	**1,544,797**	1,367,905

[1] Weighted average fair value per share was $328.11 (2022: $442.64).

[2] In 2023, 40,957 dividend shares (2022: 43,120 shares), of which 6,677 shares (2022: 2,146 shares) were for the HKEX's Chief Executive Officer, at a cost of $13 million (2022: $15 million) were vested.

Remaining vesting periods or performance period of Awarded Shares awarded and dividend shares outstanding at 31 December

	At 31 Dec 2023		At 31 Dec 2022	
	Remaining vesting period	**Number of Awarded Shares and dividend shares outstanding**	Remaining vesting period	Number of Awarded Shares and dividend shares outstanding
Shares awarded in:				
2020	**0.11 year**	**5,100**	0.11 year to 1.11 years	19,300
2021	**0.04 year to 0.92 year**	**12,948**	0.04 year to 1.92 years	442,089
2022	**0.03 year to 2.00 years**	**455,949**	0.03 year to 3.00 years	873,400
2023	**0.09 year to 3.00 years**	**1,021,485**	-	-
Dividend shares	**0.03 year to 2.67 years**	**49,315**	0.03 year to 3.00 years	33,116
		1,544,797		1,367,905

(c) Total number of shares held by Share Award Scheme

	At 31 Dec 2023	At 31 Dec 2022
Number of Awarded Shares and dividend shares (note (b))	**1,544,797**	1,367,905
Forfeited or unallocated shares[1]	**1,746,923**	1,038,278
Number of shares held by Share Award Scheme[2] (note 42)	**3,291,720**	2,406,183

[1] The shares will be granted to eligible employees in future.

[2] Excluding shares vested but not yet transferred to awardees of 61,896 shares at 31 December 2023 (31 December 2022: 52,772 shares).

44. Hedging and Revaluation Reserves

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Hedging reserve (note (a))	**3**	10
Revaluation reserve (note (b))	**(147)**	(276)
	(144)	(266)

(a) Hedging reserve

Accounting Policy

The Group designates bank balances and forward foreign exchange contracts as hedges of foreign exchange risks associated with the cash flows of highly probable forecast transactions (cash flow hedges).

The Group documents at the inception of the transaction the relationship between hedging instruments and hedged items, as well as its risk management objectives and strategies for undertaking various hedge transactions. The Group also documents its assessment, both at hedge inception and on an ongoing basis, of whether the hedging instruments have been and will continue to be highly effective in offsetting changes in cash flows of hedged items.

The changes in the fair value relating to the effective portion of hedging instruments that are designated and qualified as cash flow hedges is recognised in other comprehensive income and accumulated in hedging reserve in equity. The gains or losses relating to the ineffective portion are recognised immediately in the consolidated income statement.

Amounts accumulated in hedging reserve are reclassified to the consolidated income statement in the periods when the hedged item is recognised in the consolidated income statement. Where the hedged item subsequently results in the recognition of a non-financial asset (such as fixed or intangible assets), the amounts accumulated in hedging reserve are reclassified and included in the initial measurement of the cost of the asset.

44. Hedging and Revaluation Reserves (continued)

(a) Hedging reserve (continued)

The movements of hedging reserve were as follows:

	2023 **$m**	2022 $m
At 1 Jan	**10**	(2)
Cash flow hedges:		
- net fair value gains/(losses) of hedging instruments recognised in other comprehensive income	**27**	(33)
- reclassified to operating expenses as staff costs and related expenses and information technology and computer maintenance expenses	**(22)**	30
- reclassified to intangible assets	**(14)**	18
- deferred tax credited/(charged) to other comprehensive income	**2**	(3)
At 31 Dec	**3**	10

(i) The functional currencies of LME and LME Clear are United States Dollars (USD). To hedge the foreign currency exposure of their operating expenses payable in Pound sterling (GBP), these entities have designated forward foreign exchange contracts as cash flow hedges for hedging the foreign exchange risk of their staff costs and related expenses, information technology and computer maintenance expenses and intangible assets.

Further details of the forward foreign exchange contracts that have been designated as cash flow hedge of the Group's highly probable forecast transactions at the end of the reporting period are as follows:

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Carrying amount	**4**	13
Notional amount	**GBP 113m**	GBP 97m
Maturity date	**0-12 months**	0-12 months
Hedge ratio	**1:1**	1:1
Change in value of outstanding hedging instruments since inception of the hedge	**4**	13
Change in value of hedged item used to determine hedge ineffectiveness	**(4)**	(13)
Weighted average hedged rate for outstanding hedging instruments (GBP vs USD)	**1.27**	1.19

(ii) The total amounts arising from ineffective cash flow hedges recognised in the consolidated income statement of the Group during the year were less than $1 million (2022: $Nil).

44. Hedging and Revaluation Reserves (continued)

(b) Revaluation reserve

	2023 $m	2022 $m
At 1 Jan	**(276)**	17
Changes in fair value of financial assets measured at fair value through other comprehensive income	**161**	(355)
Deferred tax on financial assets measured at fair value through other comprehensive income	**(32)**	62
At 31 Dec	**(147)**	(276)

45. Designated Reserves

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Clearing House Funds reserves (notes (a) and 37)	**1,002**	671
PRC statutory reserve (note (b))	**16**	15
	1,018	686

(a) Clearing House Funds reserves

	HKCC Reserve Fund reserve $m	HKSCC Guarantee Fund reserve $m	OTC Clear Rates and FX Guarantee Fund reserve $m	OTC Clear Rates and FX Guarantee Resources reserve $m	SEOCH Reserve Fund reserve $m	Total $m
At 1 Jan 2022	244	165	74	15	114	612
Surplus of net investment income net of expenses of Clearing House Funds transfer from retained earnings (note 46)	7	10	36	3	3	59
At 31 Dec 2022	251	175	110	18	117	671
At 1 Jan 2023	**251**	**175**	**110**	**18**	**117**	**671**
Surplus of net investment income net of expenses of Clearing House Funds transfer from retained earnings (note 46)	**22**	**93**	**194**	**9**	**13**	**331**
At 31 Dec 2023	**273**	**268**	**304**	**27**	**130**	**1,002**

45. Designated Reserves (continued)

(b) PRC statutory reserve

	2023 $m	2022 $m
At 1 Jan	**15**	11
Transfer from retained earnings (note 46)	**1**	4
At 31 Dec	**16**	15

Pursuant to relevant PRC laws, each of the subsidiaries in Mainland China is required to appropriate 10 per cent of its net profit to a non-distributable statutory reserve until such reserve reaches 50 per cent of the subsidiary's registered capital. The statutory reserve can be utilised, upon approval by the shareholders of the subsidiary, to offset accumulated losses or to increase the paid-in capital of the subsidiary, provided that the balance of the reserve after transfer to paid-up capital is not less than 25 per cent of the subsidiary's registered capital.

46. Retained Earnings

	2023 $m	2022 $m
At 1 Jan	**18,547**	18,173
Profit attributable to shareholders	**11,862**	10,078
Transfer to Clearing House Funds reserves (note 45(a))	**(331)**	(59)
Transfer to PRC statutory reserve (note 45(b))	**(1)**	(4)
Dividends:		
2022/2021 second interim dividend	**(4,669)**	(5,290)
2023/2022 first interim dividend	**(5,695)**	(4,366)
Unclaimed HKEX dividends forfeited (note 34(a))	**23**	26
Vesting of shares of Share Award Scheme	**(13)**	(15)
UK tax relating to Share Award Scheme	**-**	(3)
Change in ownership interest in a subsidiary	**-**	7
At 31 Dec	**19,723**	18,547

47. Notes to the Consolidated Statement of Cash Flows

(a) Reconciliation of profit before taxation to net cash inflow from principal operating activities

	2023 $m	2022 $m
Profit before taxation	**13,332**	11,659
Adjustments for:		
Net interest income	**(4,828)**	(1,880)
Net fair value (gains)/losses on financial assets mandatorily measured at fair value through profit or loss and derivative financial instruments	**(120)**	507
Finance costs	**135**	138
Depreciation and amortisation	**1,443**	1,459
Employee share-based compensation benefits	**399**	380
Share of profits less losses of joint ventures	**(82)**	(71)
Other non-cash adjustments	**(5)**	(53)
Net decrease/(increase) in financial assets of Margin Funds	**51,898**	(24,253)
Net (decrease)/increase in financial liabilities of Margin Funds	**(51,737)**	23,898
Net increase in Clearing House Fund financial assets	**(1,070)**	(2,077)
Net increase in Clearing House Fund financial liabilities	**739**	2,018
Decrease in cash prepayments and collateral for A-shares	**77**	4,562
Increase in Corporate Funds used for supporting Skin-in-the-Game and default fund credits	**(273)**	(31)
Corporate Funds transferred to SHCH as inter-CCP margin	**(113)**	-
Net increase in foreign exchange derivative contracts	**(62)**	-
(Increase)/decrease in accounts receivable, prepayments and deposits	**(8,231)**	4,869
Increase/(decrease) in other liabilities	**8,754**	(9,162)
Net cash inflow from principal operations	**10,256**	11,963
Interest received from financial assets measured at amortised cost and cash and cash equivalents	**9,998**	3,944
Interest paid to Participants	**(6,013)**	(2,271)
Income tax paid	**(2,947)**	(574)
Net cash inflow from principal operating activities (non-HKFRS measure)	**11,294**	13,062

47. Notes to the Consolidated Statement of Cash Flows (continued)

(b) Reconciliation of liabilities arising from financing activities

	Borrowings $m	Lease liabilities $m
At 1 Jan 2022	426	2,059
Issuance of written put options to non-controlling interests (note 39)	61	-
Additions of leases	-	17
Interest on borrowings (note 14)	4	-
Interest on lease liabilities (note 14)	-	68
Cash flows		
- Payments of capital elements of lease liabilities	-	(309)
- Payments of interest elements of lease liabilities	-	(68)
Exchange differences	-	(22)
At 31 Dec 2022	491	1,745
At 1 Jan 2023	**491**	**1,745**
Additions of leases	**-**	**159**
Modification of leases	**-**	**(1)**
Interest on borrowings (note 14)	**7**	**-**
Interest on lease liabilities (note 14)	**-**	**59**
Cash flows		
- Payments of capital elements of lease liabilities	**-**	**(307)**
- Payments of interest elements of lease liabilities	**-**	**(59)**
- Payment for written put options exercised by non-controlling interests (note 39)	**(51)**	**-**
Exchange differences	**-**	**8**
At 31 Dec 2023	**447**	**1,604**

(c) Cash outflow for leases

Amounts for leases included in the consolidated statement of cash flow comprise the following:

	2023 $m	2022 $m
Within operating cash flows	**-**	(1)
Within financing cash flows	**(366)**	(377)
Total lease rental paid	**(366)**	(378)

48. Commitments

Commitments in respect of capital expenditures

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Contracted but not provided for:		
- fixed assets	**14**	22
- intangible assets	**157**	159
Authorised but not contracted for:		
- fixed assets	**505**	323
- intangible assets	**879**	520
	1,555	1,024

49. Contingent Liabilities and Contingent Assets

Accounting Policy

A contingent liability is a possible obligation that arises from past events and whose existence will only be confirmed by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the Group. It can also be a present obligation arising from past events that is not recognised because it is not probable that outflow of economic resources will be required or the amount of obligation cannot be measured reliably.

A contingent liability is not recognised but is disclosed in the consolidated financial statements. When a change in the probability of an outflow occurs so that outflow is probable or when the amount of obligation becomes reliably measurable, it will then be recognised as a provision.

A contingent asset is a possible asset that arises from past events and whose existence will only be confirmed by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the Group. It is not recognised but is disclosed in the consolidated financial statements where an inflow of economic benefits is probable. It is recognised when the realisation of income is virtually certain.

At 31 December 2023, the Group's material contingent liabilities and contingent assets were as follows:

(a) The Group had a contingent liability in respect of potential calls to be made by the SFC to replenish all or part of compensation less recoveries paid by the Unified Exchange Compensation Fund established under the repealed Securities Ordinance up to an amount not exceeding $71 million (31 December 2022: $71 million). Up to 31 December 2023, no calls had been made by the SFC in this connection.

(b) The Group had undertaken to indemnify the Collector of Stamp Revenue against any underpayment of stamp duty by its Participants of up to $200,000 for each Participant (note 36(a)). In the unlikely event that all of its 574 trading Participants (31 December 2022: 598) covered by the indemnity at 31 December 2023 defaulted, the maximum liability of the Group under the indemnity would amount to $115 million (31 December 2022: $120 million).

(c) HKEX had given an undertaking in favour of HKSCC to contribute up to $50 million in the event of HKSCC being wound up while it is a wholly-owned subsidiary of HKEX or within one year after HKSCC ceases to be a wholly-owned subsidiary of HKEX, for payment of the liabilities of HKSCC contracted before HKSCC ceases to be a wholly-owned subsidiary of HKEX, and for the costs of winding up.

(d) Material litigation

The LME and LME Clear were named as defendants in two judicial review claims filed in the English High Court (the Court) in 2022 (the Proceedings) and three related claims filed in the Court in 2023. The total claims amount to approximately US$600 million.

On 8 March 2022, the LME, in consultation with LME Clear, suspended trading in all nickel contracts with effect from 08:15 UK time, and cancelled all trades executed on or after 00:00 UK time on 8 March. This decision to suspend trading was taken because the nickel market had become disorderly. Cancellations were made retrospectively to take the market back to the last point in time at which the LME could be confident that the market was operating in an orderly manner. At all times the LME sought to act in the interests of the market as a whole.

The Proceedings sought to challenge the LME's decision to cancel the claimants' alleged trades in nickel contracts executed on or after 00:00 UK time on 8 March 2022 (the Decision). The claimants have alleged that this was unlawful on public law grounds and/or constituted a violation of their human rights.

The hearing of the judicial review took place from 20 to 22 June 2023, at which the Court heard submissions from the parties on the issue of whether the Decision was unlawful on public law grounds and/or constituted a violation of the claimants' human rights.

49. Contingent Liabilities and Contingent Assets (continued)

(d) Material litigation (continued)

On 29 November 2023, the Court gave judgment in the LME and LME Clear's favour on all grounds, and ordered the claimants to pay the LME and LME Clear's costs of the Proceedings, which are to be assessed by the Court if not agreed with the claimants.

One of the claimants has sought and been granted permission to appeal. The appeal is likely to be heard by the Court of Appeal during 2024. The LME management is of the view that the appeal is without merit and LME and LME Clear will contest it vigorously.

A further three claims were issued in the Court in March 2023, by claimants seeking damages for losses alleged to have been suffered as a result of the Decision, alleging that this was an unlawful interference with their human rights. These claims remain stayed, pending the final determination of the Proceedings. The limitation period for similar damages claims under the Human Rights Act has now expired.

In light of the judgement of the Court, no provision has been made in the consolidated financial statements.

The Group has not recognised any recovery of costs of the Proceedings as receivables in the consolidated financial statements at 31 December 2023 as the amount is still subject to negotiation with the claimants.

50. Connected Transactions and Material Related Party Transactions

(a) Connected transactions and related party transactions

Certain Directors of HKEX may be directors and/or shareholders of (i) Exchange Participants of the Stock Exchange, Futures Exchange, the LME and QME (Exchange Participants) and Clearing Participants of HKSCC, HKCC, SEOCH, LME Clear and OTC Clear (Clearing Participants); (ii) companies listed on the Stock Exchange; and (iii) Exchange Participants for buying shares on behalf of HKSCC. Securities and derivatives contracts traded by, and fees levied on, these Exchange Participants and Clearing Participants, fees levied on these listed companies and fees paid to these Exchange Participants for buying shares on behalf of HKSCC are all undertaken in the ordinary course of business of the Group on the standard terms and conditions applicable to all other Exchange Participants, Clearing Participants, listed companies and Exchange Participants for buying shares on behalf of HKSCC.

(b) Material related party transactions

In addition to the above and those disclosed elsewhere in these consolidated financial statements, the Group entered into the following material related party transactions:

(i) Key management personnel compensation

	2023 $m	2022 $m
Salaries and other short-term employee benefits	**211**	188
Employee share-based compensation benefits	**143**	160
Retirement benefit costs	**9**	9
	363	357

(ii) Post-retirement benefit plans

The Group has sponsored an ORSO Plan and the LME Pension Scheme as its post-retirement benefit plans (note 10(a)).

(iii) Save as aforesaid, the Group has entered into other transactions in the ordinary course of business with companies that are related parties but the amounts were immaterial.

51. Pledges of Assets

LME Clear receives securities and gold bullion as non-cash collateral for margins posted by its Clearing Participants. The total fair value of this non-cash collateral was US$3,748 million (HK$29,266 million) at 31 December 2023 (31 December 2022: US$619 million (HK$4,831 million)). LME Clear is obliged to return this non-cash collateral upon request when the Clearing Participants' collateral obligations have been substituted with cash collateral or otherwise discharged. LME Clear is permitted to sell or pledge such collateral in the event of the default of a Clearing Participant. Any non-cash collateral lodged at central securities depositories or custodians is subject to a lien or pledge for the services they provide in respect of the collateral held.

LME Clear also holds securities as collateral in respect of its investments in overnight triparty reverse repurchase agreements under which it is obliged to return equivalent securities to the counterparties at maturity of the reverse repurchase agreements. The fair value of this collateral was US$9,095 million (HK$71,019 million) at 31 December 2023 (31 December 2022: US$14,982 million (HK$116,934 million)). Such non-cash collateral, together with certain financial assets amounting to US$1,102 million (HK$8,604 million) at 31 December 2023 (31 December 2022: US$923 million (HK$7,206 million)), have been pledged to LME Clear's investment agents and custodian banks under security arrangements for the settlement and depository services they provide in respect of the collateral and investments held.

Non-cash collateral is not recorded on the consolidated statement of financial position of the Group.

52. Capital Management

The Group's objectives when managing capital are:

- To safeguard the Group's ability to continue as a going concern, so that it continues to provide returns for shareholders and benefits for other stakeholders;
- To support the Group's stability and growth;
- To provide capital for the purpose of strengthening the Group's risk management capability; and
- To ensure that the Group's regulated entities comply with their respective regulatory capital requirements.

The Group actively and regularly reviews and manages its capital structure to ensure an optimal capital structure and shareholder returns. The Group takes into consideration the expected capital requirements and capital efficiency, regulatory capital requirements of its regulated entities, prevailing and projected profitability, projected operating cash flows, projected capital expenditures and projected strategic investment opportunities.

52. Capital Management (continued)

The Group has a number of regulated entities that are subject to regulatory capital requirements set by the respective regulators. The regulatory capital requirements of the Group's subsidiaries at 31 December 2023 are summarised as follows:

Subsidiaries	Regulatory authority	Regulatory capital requirements
Stock Exchange, Futures Exchange	SFC, Hong Kong	Maintain at all times net current assets funded by equity sufficient to cover each subsidiary's projected total operating expenses for at least the following six months of $1,896 million (31 December 2022: $1,878 million), and net current assets funded by equity or long-term loans from HKEX sufficient to cover its projected total operating expenses for at least the following twelve months of $3,792 million (31 December 2022: $3,756 million).
HKSCC, HKCC, SEOCH, OTC Clear	SFC, Hong Kong	Maintain at all times liquid net assets funded by equity (i.e., liquid assets of Corporate Funds (excluding those solely used to support Skin-in-the-Game and default fund credits of Clearing House Funds) minus non-current liabilities) sufficient to cover each subsidiary's projected total operating expenses for at least the following six months of $916 million (31 December 2022: $853 million), and net current assets funded by equity or long-term loans from HKEX (excluding those solely used to support Skin-in-the-Game and default fund credits of Clearing House Funds) sufficient to cover its projected total operating expenses for at least the following twelve months of $1,833 million (31 December 2022: $1,706 million).
LME	The Financial Conduct Authority, UK	Maintain at all times net capital and liquid financial resources of at least the costs of orderly closure plus a risk based capital charge, amounting to US$106.2 million (HK$829 million) (31 December 2022: HK$614 million).
LME Clear	Bank of England, UK	Maintain cash or highly liquid financial instruments with minimal market and credit risk, amounting to US$109.8 million (HK$857 million) (31 December 2022: HK$784 million), plus 10 per cent minimum reporting threshold of US$11.0 million (HK$86 million) (31 December 2022: HK$79 million) and US$27.5 million (HK$215 million) (31 December 2022: HK$196 million) financial resources available to set off losses in the event of default (Skin-in-the-Game). Capital resources must be in the form of share capital, retained earnings and reserves, reduced by intangible assets and retained losses.

At 31 December 2023, the Group had set aside $4,000 million (31 December 2022: $4,000 million) of shareholders' funds for the purpose of supporting the risk management regime of the clearing houses in their roles as central counterparties, of which $2,160 million (31 December 2022: $2,160 million) had been injected into HKSCC, HKCC and SEOCH as share capital.

52. Capital Management (continued)

All regulated entities of the Group had adequate capital to meet their regulatory requirements at 31 December 2023 and 31 December 2022.

The Group adopts a dividend policy of providing shareholders with regular dividends with a normal target payout ratio of 90 per cent of the Group's profit of the year (excluding the financial results of HKEX Foundation Limited) and it may also offer a scrip dividend alternative to shareholders if considered appropriate. The consideration of share capital issued under the scrip dividend scheme (if any), together with the 10 per cent of the profit not declared as dividends, are retained as capital of the Group for future use.

The Group monitors capital on the basis of its gross gearing ratio (i.e., gross debt divided by adjusted capital) and net gearing ratio (i.e., net debt divided by adjusted capital). For this purpose, the Group defines gross debt as the total borrowings (excluding lease liabilities), net debt as gross debt less cash and cash equivalents of Corporate Funds (excluding those reserved for supporting Skin-in-the-Game and default fund credits of Clearing House Funds), and adjusted capital as all components of equity attributable to shareholders of HKEX other than designated reserves. The Group's strategy is to maintain the ratios at less than 50 per cent.

	At 31 Dec 2023 $m	At 31 Dec 2022 $m
Borrowings (note 39)	**447**	491
Less:		
Cash and cash equivalents of Corporate Funds (note 21)	**10,286**	15,952
Less: Amounts reserved for supporting Skin-in-the-Game and default fund credits of Clearing House Funds (note 21(b))	**(1,074)**	(694)
	9,212	15,258
Net debt (note (a))	**-**	-
Equity attributable to shareholders of HKEX	**51,344**	49,728
Less: Designated reserves (note 45)	**(1,018)**	(686)
Adjusted capital	**50,326**	49,042
Gross gearing ratio	**1%**	1%
Net gearing ratio	**0%**	0%

(a) Net debt is zero when the amount of cash and cash equivalents of Corporate Funds (excluding those reserved for supporting Skin-in-the-Game and default fund credits of Clearing House Funds) is higher than gross debt.

53. Financial Risk Management

The Group's activities expose it to a variety of financial risks: market risk (including foreign exchange risk, price risk and interest rate risk), liquidity risk and credit risk. The Group's overall risk management programme focuses on the unpredictability of financial markets and seeks to minimise potential adverse effects on the Group's performance.

(a) Market risk

Nature of risk
Market risk is the risk of loss arising from movements in observable market variables such as foreign exchange rates, equity prices and interest rates. The Group is exposed to market risk primarily through its financial assets and financial liabilities (including borrowings and lease liabilities). The Group is also exposed to credit-contingent market risk arising from the default of Clearing Participants, which is further elaborated under credit risk (note (c)).

Risk management
The Group's investment policy is to prudently invest all funds managed by the Group in a manner which will satisfy liquidity requirements, safeguard financial assets and manage risks while optimising return on investments.

Investment and fund management by HKEX and the Group's subsidiaries is governed by the HKEX Group Investment Policies, which are approved by the Board and reviewed regularly. Investment restrictions and guidelines set out in the Investment Policies form an integral part of risk control. Fund-specific restrictions and guidelines are set according to the investment objectives of each fund (i.e., Corporate Funds, Clearing House Funds, Margin Funds and Cash for A-shares). Specific limits are set to control risks where applicable (e.g., permissible asset type, asset allocation, liquidity, credit requirement, counterparty concentration, tenor, foreign exchange exposures, interest rate risks and stress loss limits under extreme but plausible conditions) of the investments.

A portion of the Corporate Funds is invested in externally-managed investment funds (External Portfolio) under the Externally-Managed Investment Policy. The policy includes an asset allocation policy which aims to preserve and enhance the return of the External Portfolio by investing in a diverse mix of asset classes whose returns are not highly correlated to each other over time to mitigate portfolio volatility and asset class concentration risk. The policy also defines the risk-return parameters for the External Portfolio and restrictions to be observed, and the governance structure on selection and monitoring of fund managers. The fund managers of the investment funds are selected based on their performance track records and areas of expertise, and each should be financially strong and stable, and their selections are approved by the Investment Committee as delegated by the Board. Specific risk management limits are set for the External Portfolio (e.g., permissible asset type, asset allocation, liquidity, foreign exchange exposures and stress loss limits under extreme but plausible conditions).

The Investment Committee, comprised of Non-executive Directors of HKEX, advises the Board on portfolio management and monitors the risk and performance of HKEX's investments. A Treasury team in the Finance Division is dedicated to the day-to-day management and investment of the internally-managed funds, and monitor the performance of the External Portfolio.

53. Financial Risk Management (continued)

(a) Market risk (continued)

(i) Foreign exchange risk

Nature of risk

Foreign exchange risk is the risk that the value or cash flows of an asset, liability or forecast transaction denominated in foreign currency (i.e., a currency other than the functional currency of the entity to which the transactions relate) will fluctuate because of changes in foreign exchange rates. The functional currency of the Hong Kong and PRC entities are either HKD or Renminbi (RMB) and the functional currency of the LME entities is USD. Foreign exchange risks arise mainly from the Group's investments and bank deposits in currencies other than HKD and USD and its GBP expenditure for the LME entities.

Risk management

The Group manages its foreign exchange rate risks by setting limits of net long or short unhedged positions of each individual foreign currency.

Forward foreign exchange contracts and foreign currency bank deposits may be used to hedge the currency exposure of the Group's non-HKD and non-USD assets and liabilities and highly probable forecast transactions to mitigate risks arising from fluctuations in exchange rates. In particular, the LME entities may designate forward foreign exchange contracts as cash flow hedges for hedging the foreign exchange risk of certain operating expenses and intangible assets.

Foreign exchange swaps are used for optimising foreign currency cash flows while hedging the overall foreign exchange exposures of the Group.

Under the Investment Polices, investment in non-HKD financial instruments is subject to the following restrictions:

- For the External Portfolio, at least 50 per cent of the External Portfolio must be invested in HKD or USD investments or investments hedged back to HKD or USD, except that a further portion not exceeding HK$1 billion can be invested in RMB investments.
- For internally-managed Corporate Funds, Clearing House Funds, Margin Funds and Cash for A-shares, the net long or short position of each individual foreign currency (i.e., the net open position (NOP)) is monitored. Except for the Group's investment in minority stakes of unlisted companies, the NOP exposures of USD, RMB and other foreign currencies should generally not exceed USD1 billion, RMB1 billion and HKD500 million (for each other foreign currency) respectively.

For LME Clear, investments of the Margin Fund and Default Fund will generally be in the currency in which cash was received.

53. Financial Risk Management (continued)

(a) Market risk (continued)

(i) Foreign exchange risk (continued)

Exposure

The following table details the Group's financial assets and financial liabilities denominated in a currency other than the functional currency of the entity to which they relate and the net open foreign currency positions (i.e., gross positions less forward foreign exchange contracts, foreign exchange swaps and other offsetting exposures (hedges)) at 31 December presented in HKD equivalents.

		At 31 Dec 2023			At 31 Dec 2022		
	Foreign currency	**Gross open position $m**	**Hedges[3] $m**	**Net open position $m**	Gross open position $m	Hedges $m	Net open position $m
Financial assets[1]	EUR	**2,455**	**(2,431)**	**24**	11,992	(11,986)	6
	GBP	**3,078**	**(2,699)**	**379**	2,878	(2,584)	294
	JPY	**1,593**	**(1,588)**	**5**	1,265	(1,261)	4
	RMB	**26,351**	**(26,040)**	**311**	19,105	(18,950)	155
	USD	**8,191**	**(7,810)**	**381**	8,575	(6,542)	2,033
	Others	**2**	**(1)**	**1**	3	(1)	2
Financial liabilities[2]	EUR	**(2,586)**	**2,586**	**-**	(11,986)	11,986	-
	GBP	**(3,067)**	**2,699**	**(368)**	(2,846)	2,584	(262)
	JPY	**(5,798)**	**5,798**	**-**	(1,261)	1,261	-
	RMB	**(20,328)**	**20,324**	**(4)**	(18,956)	18,950	(6)
	USD	**(6,126)**	**6,018**	**(108)**	(6,648)	6,542	(106)
	Others	**(2)**	**1**	**(1)**	(1)	1	-
Total net open positions for the Group	EUR			**24**			6
	GBP			**11**			32
	JPY			**5**			4
	RMB			**307**			149
	USD			**273**			1,927
	Others			**-**			2
				620			2,120

1 Financial assets comprised cash and cash equivalents, base metals derivatives contracts, financial assets measured at fair value through other comprehensive income, financial assets measured at amortised cost, and accounts receivable and deposits.

2 Financial liabilities comprised margin deposits, Mainland security and settlement deposits, and cash collateral from Participants, Participants' contributions to Clearing House Funds, base metals derivatives contracts, borrowings, lease liabilities, and accounts payable and other liabilities.

3 The amounts include foreign exchange swaps for optimising foreign currency cash flows while hedging the overall foreign exposure of the Group (note 26(b)).

In addition, at 31 December 2023, the LME entities have entered into certain forward foreign exchange contracts amounting to GBP113 million (31 December 2022: GBP97 million) and designated them as cash flow hedges for hedging the foreign currency risk of their operating expenses and intangible assets (note 44(a)).

53. Financial Risk Management (continued)

(a) Market risk (continued)

(ii) Equity and commodity price risk

Nature of risk

The Group is exposed to equity price risk from equity investments in investment funds held as part of the External Portfolio. The Group is also exposed to equity price risk on the investments in minority stakes in unlisted companies (note 53(d)(i)).

The movements of fair value of base and ferrous metals futures and options contracts cleared through LME Clear would not have any financial impact on the Group's results as the assets and liabilities will move by the same amount and fully offset each other.

Risk management

The Group sets prudent investment limits and restrictions to control investments in investment funds and a stress loss limit is set to limit its exposures. The Group selects fund managers after an extensive assessment of the underlying funds, their strategy and the overall quality of the fund managers, and the performance of the funds is monitored on a monthly basis, or on an ad hoc basis during adverse market conditions.

(iii) Interest rate risk

Nature of risk

There are two types of interest rate risk:

- Fair value interest rate risk - the risk that the value of a financial instrument will fluctuate because of changes in market interest rates; and

- Cash flow interest rate risk - the risk that the future cash flows of a financial instrument will fluctuate because of changes in market interest rates.

The Group is exposed to both fair value and cash flow interest rate risks as the Group has significant assets and liabilities (including borrowings) which are interest-bearing.

Risk management

The Group manages its interest rate risks by monitoring the interest rate impact on quarterly earnings per share. Limits are also set for tenor of the investments under the internally managed funds.

Exposure

The following tables present the carrying value and highest and lowest contractual interest rates of the financial assets held by the Group (excluding investments in investment funds, zero-coupon Exchange Fund Bills, and bank deposits held at savings and current accounts) at 31 December:

	Fixed rate financial assets		**Floating rate financial assets**	
	At 31 Dec 2023	At 31 Dec 2022	**At 31 Dec 2023**	At 31 Dec 2022
Carrying value ($m)	**103,713**	114,983	**81,028**	117,535
Highest contractual interest rates	**5.93%**	5.95%	**6.79%**	5.99%
Lowest contractual interest rates[1]	**1.72%**	0.25%	**3.54%**	-2.00%

[1] The contractual interest rates for certain reverse repurchase investments denominated in Euro held by LME Clear at 31 December 2022 were below 0 per cent.

53. Financial Risk Management (continued)

(a) Market risk (continued)

(iv) Sensitivity analysis

Investments other than investment funds
The Group performs sensitivity analysis to identify and measure foreign exchange risk and interest rate risks of the Group's investments other than investment funds.

Foreign exchange risk
The following table indicates the instantaneous change in the Group's profit after tax (and retained earnings) and other components of equity that would arise if foreign exchange rates to which the Group has significant exposure at the end of the reporting period had changed at that date, assuming all other risk variables remained constant. In this respect, it is assumed that the pegged rate between HKD and USD would only move within the limits undertaken by the Hong Kong Monetary Authority.

	At 31 Dec 2023			At 31 Dec 2022		
	Increase/ (decrease) in foreign exchange rates	**Effect on profit after tax and retained earnings $m**	**Effect on other components of equity $m**	Increase/ (decrease) in foreign exchange rates	Effect on profit after tax and retained earnings $m	Effect on other components of equity $m
GBP	**5%**	**<1**	**43**	5%	1	37
	(5%)	**<(1)**	**(43)**	(5%)	(1)	(37)
RMB	**5%**	**15**	**-**	5%	7	-
	(5%)	**(15)**	**-**	(5%)	(7)	-
USD	**1%**	**3**	**-**	1%	19	-
	(1%)	**(3)**	**-**	(1%)	(19)	-

The analysis above represents an aggregation of the instantaneous effects on each of the group entities' profit after tax and other comprehensive income measured in the respective functional currencies, translated into HKD at the exchange rate ruling at the end of the reporting period for presentation purposes.

The sensitivity analysis assumes that the change in foreign exchange rates had been applied to re-measure those financial instruments which expose the Group to foreign currency risk at the end of the reporting period. The analysis excludes differences that would result from the translation of the financial statements of foreign operations into the Group's presentation currency.

Interest rate risk
At 31 December 2023, it is estimated that a general increase/decrease of 75 basis points (31 December 2022: 25 basis points) in interest rates, with all other variables held constant, would have increased/decreased the Group's profit after tax and retained earnings by approximately $242 million (31 December 2022: $99 million). Other components of equity would have decreased/increased by approximately $85 million (31 December 2022: $33 million) in response to the general increase/decrease in interest rates.

The sensitivity analysis above indicates the instantaneous change in the Group's profit after tax (and retained earnings) and other components of the equity that would arise assuming that the change in interest rates had occurred at the end of the reporting period and had been applied to remeasure those financial instruments which expose the Group to fair value interest rate risk at the end of the reporting period. In respect of the exposure to cash flow interest rate risk arising from non-derivative instruments held by the Group at the end of the reporting period, the impact on the Group's profit after tax (and retained earnings) is estimated as an annualised impact on interest expense or income of such a change in interest rates.

53. Financial Risk Management (continued)

(a) Market risk (continued)

(iv) Sensitivity analysis (continued)

<u>Investment funds</u>
At 31 December, the fair value of the Group's External Portfolio by strategy employed was as follows:

Strategy	**At 31 Dec 2023 $m**	At 31 Dec 2022 $m
Public Equities	**1,071**	1,027
Diversifiers[1]	**4,096**	3,943
Government Bonds and Mortgage-backed Securities	**1,401**	1,340
Total	**6,568**	6,310
Number of investment funds	**34**	32

[1] Diversifiers comprise Absolute Return and Multi-Sector Fixed Income asset classes.

The Group monitors market risk exposures of the External Portfolio through a stress testing limit framework to control the potential market risk loss of the portfolio under stressed market conditions over a quarter's earnings cycle. The stress testing applied by the Group estimates potential extreme losses through a set of stress scenarios derived from historical stress events (such as the Asian Financial Crisis in 1997, the Great Financial Crisis in 2008, etc.). The Group monitors the External Portfolio's limit utilisation monthly, and there was no limit breach during 2023 and 2022.

To illustrate the sensitivity of the External Portfolio's market value as a result of potential market moves, the Group also calculates a 1-year Value at Risk (VaR) estimation for the External Portfolio at a 95 per cent confidence interval. The VaR calculation is a statistical estimation of the potential changes in the market value of the External Portfolio over a 1-year period based on returns and volatilities observed historically. The 95 per cent confidence interval implies that the 1-year loss for the External Portfolio could be equal to or larger than the VaR estimation once in every 20 years on average. As of 31 December 2023, the estimated 1-year VaR was 4.9 per cent (31 December 2022: 4.2 per cent), implying the market value of the External Portfolio could potentially change by approximately $322 million (2022: $265 million) in the next year.

The 1-year VaR is a statistical measure of the historical risks and has limitations associated with the assumptions employed. Historical simulation assumes that actual observed historical changes in the respective investment fund's monthly performance reflect possible future changes. This implies that the approach is vulnerable to sudden changes in market behaviour. In addition, it does not cover stressed market events, nor does it represent the Group's forecast of the External Portfolio's future returns.

53. Financial Risk Management (continued)

(b) Liquidity risk

Nature of risk

Liquidity risk is the risk that an entity will encounter difficulty in meeting obligations associated with financial liabilities that are settled by delivering cash or another financial asset, and it results from amount and maturity mismatches of assets and liabilities.

Risk management

The Group employs projected cash flow analysis to manage liquidity risk by forecasting the amount of cash required and monitoring the working capital of the Group to ensure that all liabilities due and known funding requirements could be met.

Investments are kept sufficiently liquid to meet operational needs and regulatory requirements, and possible liquidity requirements of the Clearing House Funds and Margin Funds. The Group sets liquidity metrics for Corporate Funds, Clearing House Funds and Margin Funds. In particular, Clearing House Funds and Corporate Funds solely used for supporting the Skin-in-the Game and default fund credits of Clearing House Funds are invested in overnight deposits, reverse repurchase investments or Exchange Fund Bills issued by the Hong Kong Monetary Authority and should be available on a daily basis.

As recognised clearing houses, the Group's clearing houses have to observe the liquidity requirements laid down in Principles for Financial Market Infrastructures (PFMI requirements) issued by the Committee on Payments and Market Infrastructures (CPMI) and the International Organization of Securities Commissions (IOSCO). In particular, the clearing houses conduct daily liquidity stress testing that covers a number of potential stress scenarios, and sufficient liquidity has to be set aside to cover such stress testing.

Banking facilities have been put in place for contingency purposes. At 31 December 2023, the Group's total available banking facilities for its daily operations amounted to $25,912 million (31 December 2022: $22,839 million), which included $18,972 million (31 December 2022: $16,338 million) of committed banking facilities and $6,500 million (31 December 2022: $6,500 million) of repurchase facilities.

The Group also put in place foreign exchange facilities for its daily clearing operations and for the RMB Equity Trading Support Facility to support the trading of RMB stocks listed on the Stock Exchange. At 31 December 2023, the total amount of such facilities was $33,852 million (31 December 2022: $28,493 million).

In addition, the Group has arranged contingency banking facilities amounting to RMB13,000 million (HK$14,256 million) (31 December 2022: RMB13,000 million (HK$14,665 million)) for settling payment obligations to ChinaClear should there be events that disrupt normal settlement arrangements for Stock Connect.

53. Financial Risk Management (continued)

(b) Liquidity risk (continued)

Exposure

The Group is not exposed to liquidity risk on the outstanding base and ferrous metals futures and options contracts cleared through LME Clear. Accordingly, they are not included in the analyses for financial assets and financial liabilities in the tables below.

The tables below analyse the Group's non-derivative financial assets into the relevant maturity buckets based on the following criteria:

- investments held under the investment funds are allocated taking into account the redemption notice periods, lock-up periods and redemption restrictions;
- the expected amounts, subject to costs to liquidate that are expected to be immaterial, that could be realised from the investments (other than investment funds), bank deposits and cash and cash equivalents within one month to meet cash outflows on financial liabilities if required are allocated to the up to 1-month bucket;
- investments in minority stakes in unlisted companies are allocated to the >5 years bucket;
- accounts receivable are allocated based on their due dates; and
- other financial assets are allocated based on their contractual maturity dates or the expected dates of disposal.

	At 31 Dec 2023					
	Up to 1 month $m	**>1 month to 3 months $m**	**>3 months to 1 year $m**	**>1 year to 5 years $m**	**>5 years $m**	**Total $m**
Cash and cash equivalents	**125,107**	**-**	**-**	**-**	**-**	**125,107**
Financial assets measured at fair value through profit or loss	**3,270**	**2,016**	**1,071**	**211**	**393**	**6,961**
Financial assets measured at fair value through other comprehensive income	**18,250**	**-**	**-**	**-**	**-**	**18,250**
Financial assets measured at amortised cost	**76,554**	**-**	**-**	**88**	**7**	**76,649**
Accounts receivable and deposits[1]	**33,090**	**27**	**-**	**-**	**-**	**33,117**
Total non-derivative financial assets	**256,271**	**2,043**	**1,071**	**299**	**400**	**260,084**

	At 31 Dec 2022					
	Up to 1 month $m	>1 month to 3 months $m	>3 months to 1 year $m	>1 year to 5 years $m	>5 years $m	Total $m
Cash and cash equivalents	184,965	-	-	-	-	184,965
Financial assets measured at fair value through profit or loss	3,089	2,046	1,042	133	654	6,964
Financial assets measured at fair value through other comprehensive income	14,962	-	-	-	-	14,962
Financial assets measured at amortised cost	70,398	-	-	85	11	70,494
Accounts receivable and deposits[1]	25,138	21	3	-	-	25,162
Total non-derivative financial assets	298,552	2,067	1,045	218	665	302,547

[1] Amounts exclude prepayments of $215 million (31 December 2022: $213 million).

53. Financial Risk Management (continued)

(b) Liquidity risk (continued)

Exposure (continued)

The table below analyses the Group's non-derivative financial liabilities at 31 December into relevant maturity buckets based on their contractual maturity dates. The amounts disclosed in the tables are the contractual undiscounted cash flows and represent the earliest date the Group can be required to pay.

	At 31 Dec 2023					
	Up to 1 month $m	**>1 month to 3 months $m**	**>3 months to 1 year $m**	**>1 year to 5 years $m**	**>5 years $m**	**Total $m**
Margin deposits, Mainland security and settlement deposits, and cash collateral from Participants	**176,165**	**-**	**-**	**-**	**-**	**176,165**
Accounts payable, accruals and other liabilities	**27,713**	**16**	**118**	**2**	**-**	**27,849**
Other financial liabilities:						
Other financial liabilities of Clearing House Funds	**9**	**-**	**-**	**-**	**-**	**9**
Other financial liabilities of Corporate Funds:						
Financial guarantee contract (maximum amount guaranteed) (note 49(b))	**115**	**-**	**-**	**-**	**-**	**115**
Participants' contributions to Clearing House Funds	**21,486**	**422**	**47**	**-**	**-**	**21,955**
Borrowings:						
Written put options to non-controlling interests	**-**	**-**	**382**	**85**	**-**	**467**
Lease liabilities	**33**	**52**	**243**	**1,120**	**341**	**1,789**
Total non-derivative financial liabilities	**225,521**	**490**	**790**	**1,207**	**341**	**228,349**

	At 31 Dec 2022					
	Up to 1 month $m	>1 month to 3 months $m	>3 months to 1 year $m	>1 year to 5 years $m	>5 years $m	Total $m
Margin deposits, Mainland security and settlement deposits, and cash collateral from Participants	227,902	-	-	-	-	227,902
Accounts payable, accruals and other liabilities	18,918	16	120	-	-	19,054
Other financial liabilities:						
Other financial liabilities of Clearing House Funds	15	5	-	-	-	20
Other financial liabilities of Corporate Funds:						
Financial guarantee contract (maximum amount guaranteed) (note 49(b))	120	-	-	-	-	120
Participants' contributions to Clearing House Funds	20,713	442	50	-	-	21,205
Borrowings:						
Written put options to non-controlling interests	-	-	433	85	-	518
Lease liabilities	35	56	259	1,049	581	1,980
Total non-derivative financial liabilities	267,703	519	862	1,134	581	270,799

53. Financial Risk Management (continued)

(b) Liquidity risk (continued)

Exposure (continued)
As at 31 December 2023, the maximum gross nominal values of outstanding forward foreign exchange contracts and foreign exchange swaps held by the Group were $1,120 million (31 December 2022: $914 million) and $10,722 million (31 December 2022: $Nil) respectively. The table below analyses the Group's outstanding foreign exchange derivative contracts as at 31 December (which include all contracts regardless of whether they had gains or losses at the end of reporting period) that would be settled on a gross basis into relevant maturity buckets based on their remaining contractual maturity dates. The amounts disclosed in the table are contractual undiscounted cash flows, which are different from the carrying amount (i.e., market value) in the consolidated statement of financial position.

	31 Dec 2023			
	Up to 1 month $m	**>1 month to 3 months $m**	**>3 months to 1 year $m**	**Total $m**
Forward foreign exchange contracts				
- outflows	**89**	**184**	**843**	**1,116**
- inflows	**89**	**184**	**847**	**1,120**
Foreign exchange swaps				
- outflows	**10,699**	**-**	**-**	**10,699**
- inflows	**10,722**	**-**	**-**	**10,722**

	31 Dec 2022			
	Up to 1 month $m	>1 month to 3 months $m	>3 months to 1 year $m	Total $m
Forward foreign exchange contracts				
- outflows	65	142	694	901
- inflows	66	144	704	914

(c) Credit risk

Nature of risk
The Group is exposed to credit risk, which is the risk that a counterparty will be unable to pay amounts in full when due. It arises primarily from the Group's investments and accounts receivable. Impairment provisions are made against the Group's investments and accounts receivable based on the accounting policy set out in notes 23 and 24.

The Group is also exposed to clearing and settlement risk, as the clearing houses of the Group act as the counterparties to eligible trades concluded on the Stock Exchange, the Futures Exchange, the over-the-counter market, and the LME through the novation of the obligations of the buyers and sellers. HKSCC is also responsible for the good title to the securities deposited and accepted in the CCASS depository. As a result, the Group has considerable market risk and credit risk since the Participants' ability to honour their obligations in respect of their trades and securities deposited may be adversely impacted by economic conditions. If the Participants default on their obligations on settlement or there are defects in the title of securities deposited and accepted in the CCASS depository, the Group could be exposed to potential risks not otherwise accounted for in these consolidated financial statements.

53. Financial Risk Management (continued)

(c) Credit risk (continued)

Risk management - Investment and accounts receivable risk

The Group limits its exposure to credit risk by rigorously selecting the counterparties (i.e., deposit-takers, bond issuers, debtors and fund managers) and by diversification. All investments (excluding those held by the investment funds) were governed by the Group Credit Limit for Settlement and Investments framework. Under the framework, specific limits are set on an investment portfolio level, on a single counterparty level and on a geographical level. The investment portfolio is subject to a maximum portfolio expected loss limit, each investment counterparty is subject to a minimum investment grade rating, each investment is subject to maximum concentration limit per counterparty and the total investment in each country is subject to maximum concentration limit per country. Fund managers of investment funds are financially strong and stable, and their selections are approved by the Investment Committee as delegated by the Board.

At 31 December 2023, the investments in debt securities held by the Group (excluding those held by the investment funds) were of investment grade and had a weighted average credit rating of Aa2 (Moody) (31 December 2022: Aa2 (Moody)). Deposits are placed only with the investment grade banks, licensed banks and restricted licence banks regulated by the Hong Kong Monetary Authority, and banks regulated by local banking regulators in the countries where the Group's subsidiaries operate. LME entities invest a significant portion of cash in reverse repurchase investments, where high quality assets are held against such investments as collateral.

The Group mitigates its exposure to risks relating to accounts receivable from its Participants by requiring the Participants to meet the Group's established financial requirements and criteria for admission as Participants.

Risk management - Clearing and settlement risk

The Group mitigates its exposure to clearing and settlement-related risks by requiring the Participants to meet the Group's established financial requirements and criteria for admission as Participants, monitoring compliance with risk management measures such as imposing position limits and requiring Clearing Participants and other clearing house participants to deposit margins, Mainland security and settlement deposits, and cash collateral and contribute to the Clearing House Funds set up by the Group's five clearing houses. HKSCC also retains recourse against those Participants whose securities are deposited and accepted in the CCASS depository.

Under the Margin Fund and Guarantee Fund arrangements, each HKSCC Clearing Participant is granted by HKSCC a Margin Credit of $5 million and a Dynamic Contribution Credit of $1 million, and each HKCC Clearing Participant is granted a Dynamic Contribution Credit of HKCC Reserve Fund of $1 million. If a HKSCC or HKCC Clearing Participant defaults and any loss arises, HKSCC will absorb the default loss up to the Margin Credit and Dynamic Contribution Credit utilised by the defaulting HKSCC Clearing Participant, after deducting its collateral and Guarantee Fund contribution maintained with HKSCC, and HKCC will absorb the default loss up to the Dynamic Contribution Credit utilised by the defaulting HKCC Clearing Participant, after deducting its collateral and Reserve Fund contribution maintained with HKCC. After the initial losses, HKSCC is required to absorb further losses after the HKSCC Guarantee Fund reserve and the Guarantee Fund contribution (excluding the Dynamic Contribution portion) of non-defaulting HKSCC Clearing Participants are depleted, and HKCC is required to absorb further losses after the HKCC Reserve Fund reserve and the Reserve Fund contribution (excluding the Dynamic Contribution portion) of non-defaulting HKCC Clearing Participants are depleted. The amount of losses borne by HKSCC and HKCC will be calculated on a pro rata basis with reference to the non-defaulting HKSCC and HKCC Clearing Participants' Dynamic Contributions and Dynamic Contribution Credits granted by HKSCC and HKCC respectively.

53. Financial Risk Management (continued)

(c) Credit risk (continued)

Risk management - Clearing and settlement risk (continued)
At 31 December 2023, HKSCC had 587 Clearing Participants (31 December 2022: 618) and the total amounts of Margin Credit and Dynamic Contribution Credit utilised by HKSCC Clearing Participants amounted to $763 million (31 December 2022: $823 million), while HKCC had 139 Clearing Participants (31 December 2022:149) and the total amount of Dynamic Contribution Credit utilised by HKCC Clearing Participants amounted to $79 million (31 December 2022: $57 million).

The HKSCC Margin Credit and Dynamic Contribution Credit and the HKCC Dynamic Contribution Credit are supported by the $4,000 million of shareholders' funds set aside by the HKEX Group for risk management purpose, of which $1,060 million and $830 million were injected into HKSCC and HKCC respectively.

Exposure
At 31 December, the maximum exposure to credit risk of the financial assets of the Group was equal to their carrying amounts. The maximum exposure to credit risk of the financial guarantee contract issued by the Group was as follows:

	At 31 Dec 2023		At 31 Dec 2022	
	Carrying amount in consolidated statement of financial position $m	**Maximum exposure to credit risk $m**	Carrying amount in consolidated statement of financial position $m	Maximum exposure to credit risk $m
Financial guarantee contract				
Undertaking to indemnify the Collector of Stamp Revenue (note 49(b))	**(20)**	**115**	(20)	120

Collateral held for mitigating credit risk
Certain securities, cash deposits and non-cash collateral are being held by the Group to mitigate the Group's exposure to credit risk. The financial effect of the collateral, which is capped by the amount receivable from each counterparty, was as follows:

	At 31 Dec 2023		At 31 Dec 2022	
	Carrying amount in consolidated statement of financial position $m	**Collateral held for mitigating credit risk $m**	Carrying amount in consolidated statement of financial position $m	Collateral held for mitigating credit risk $m
Accounts receivable and deposits[1]	**33,117**	**7,444**	25,162	4,862
Fair value of base and ferrous metals futures and options contracts cleared through LME Clear	**58,097**	**58,097**	80,705	80,705
Reverse repurchase investments	**69,132**	**69,132**	111,418	111,418

[1] Amounts exclude prepayments of $215 million (31 December 2022: $213 million).

53. Financial Risk Management (continued)

(d) Fair values of financial assets and financial liabilities

(i) Financial assets and financial liabilities carried at fair value

At 31 December 2023 and 31 December 2022, no non-financial assets or liabilities were carried at fair values.

The following tables present the carrying value of financial assets and financial liabilities measured at fair value according to the levels of the fair value hierarchy defined in HKFRS 13: Fair Value Measurement, with the fair value of each financial asset and financial liability categorised based on the lowest level of input that is significant to that fair value measurement. The levels are defined as follows:

- Level 1: fair values measured using quoted prices (unadjusted) in active markets for identical assets or liabilities.

- Level 2: fair values measured using valuation techniques in which all significant inputs other than quoted prices included within Level 1 are directly or indirectly based on observable market data.

- Level 3: fair values measured using valuation techniques in which any significant input is not based on observable market data.

53. Financial Risk Management (continued)

(d) Fair values of financial assets and financial liabilities (continued)

(i) Financial assets and financial liabilities carried at fair value (continued)

Recurring fair value measurements:	At 31 Dec 2023 Level 1 $m	Level 2 $m	Level 3 $m	Total $m	At 31 Dec 2022 Level 1 $m	Level 2 $m	Level 3 $m	Total $m
Financial assets								
Financial assets measured at fair value through profit or loss:								
- investment funds	**870**	**5,698**	**-**	**6,568**	662	5,648	-	6,310
- equity securities	**-**	**-**	**393**	**393**	-	-	654	654
Financial assets measured at fair value through other comprehensive income:								
- debt securities	**16,296**	**1,954**	**-**	**18,250**	12,045	2,917	-	14,962
Derivative financial instruments:								
- base and ferrous metals futures and options contracts cleared through LME Clear	**-**	**58,097**	**-**	**58,097**	-	80,705	-	80,705
- forward foreign exchange contracts	**-**	**4**	**-**	**4**	-	13	-	13
- foreign exchange swaps	**-**	**26**	**-**	**26**	-	-	-	-
	17,166	**65,779**	**393**	**83,338**	12,707	89,283	654	102,644
Financial liabilities								
Derivative financial instruments:								
- base and ferrous metals futures and options contracts cleared through LME Clear	**-**	**58,097**	**-**	**58,097**	-	80,705	-	80,705
- foreign exchange swaps	**-**	**3**	**-**	**3**	-	-	-	-
	-	**58,100**	**-**	**58,100**	-	80,705	-	80,705

During 2023 and 2022, there were no transfers of instruments between Level 1 and Level 2 or transfer into or out of Level 3.

Level 2 fair values of investment funds, debt securities, base and ferrous metals futures and options contracts, and foreign exchange derivative contracts have been determined based on quotes from market makers, funds administrators or alternative pricing sources supported by observable inputs. The most significant input are market interest rates, market prices of metals, market foreign exchange rates, net asset values and latest redemption prices or transaction prices of the respective investment funds.

The Group’s policy is to recognise transfers into and out of fair value hierarchy levels as of the date of the event or change in circumstances that caused the transfer.

53. Financial Risk Management (continued)

(d) Fair values of financial assets and financial liabilities (continued)

(i) Financial assets and financial liabilities carried at fair value (continued)

Fair value measurements using significant unobservable inputs (Level 3)

	2023 $m	2022 $m
At 1 Jan	**654**	694
Losses recognised in consolidated income statement under net investment income (note 6)	**(253)**	(21)
Losses recognised in other comprehensive income	**(8)**	(19)
At 31 Dec	**393**	654
Total losses recognised in the consolidated income statement for assets held at 31 Dec	**(253)**	(21)

At 31 December 2023, the Group held minority stakes in three unlisted investments – Fusion Bank Limited, Huakong TsingJiao Information Science (Beijing) Limited, and Guangzhou Futures Exchange.

Fusion Bank Limited is a virtual bank in Hong Kong with a license granted by the Hong Kong Monetary Authority. The company offers a variety of banking services including savings, time deposits, loans, local fund transfers and foreign exchange.

Huakong TsingJiao Information Science (Beijing) Limited is a data technology company, which specialises in the research and development of multi-party computation technologies, allowing collaborative data analysis without revealing private data during the computation and analysis process.

Guangzhou Futures Exchange is an exchange in the Greater Bay Area focusing on serving the real economy and green development initiatives. Since its set up in 2021, the exchange has successfully launched its first two products, industrial silicon and lithium carbonate futures and options, and will continue to develop more products related to green development in the future.

As these investments are not traded in an active market, these investments are classified as Level 3 investments. Valuations are prepared on bi-annually basis, at each interim and annual reporting date. The assumptions and inputs to the valuation model, valuation techniques and valuation results are reviewed and approved by management.

At 31 December 2023, the total fair value of the three investments was $393 million (31 December 2022: $654 million). Market-based approach and asset-based approach have been adopted to determine their fair values, which are estimated based on the analysis of the investments' financial position, operating results and prospects, and by reference to trading multiples and financial data of other comparable companies.

53. Financial Risk Management (continued)

(d) Fair values of financial assets and financial liabilities (continued)

(ii) Fair values of financial assets and financial liabilities not reported at fair values

Summarised in the following table are the carrying amounts and fair values of long-term financial assets and financial liabilities not presented in the consolidated statement of financial position at their fair values, except for lease liabilities where disclosure of fair values is not required. These assets and liabilities were classified under Level 2 in the fair value hierarchy.

	At 31 Dec 2023		At 31 Dec 2022	
	Carrying amount in consolidated statement of financial position $m	**Fair value $m**	Carrying amount in consolidated statement of financial position $m	Fair value $m
Assets				
Financial assets measured at amortised cost:				
- debt securities maturing over one year[1]	**1,570**	**1,593**	113	113
- other financial assets maturing over one year[2]	**95**	**74**	96	70
Liabilities				
Borrowings:				
- written put options to non-controlling interests[3]	**447**	**452**	491	490
Financial guarantee to the Collector of Stamp Revenue[4]	**20**	**30**	20	29

[1] The fair values are provided by a reputable independent financial institution.

[2] The fair values are based on cash flows discounted using Hong Kong Government bond rates of a tenor similar to the contractual maturity of the respective assets, adjusted by an estimated credit spread. The discount rates used ranged from 3.61 per cent to 4.61 per cent at 31 December 2023 (31 December 2022: 4.79 per cent to 5.32 per cent).

[3] The fair values are based on cash flows discounted using the prevailing market interest rates for loans with similar credit rating and similar tenor of the respective loans. The discount rates used was 4.26 per cent at 31 December 2023 (31 December 2022: 4.88 per cent to 5.74 per cent).

[4] The fair values are based on the fees charged by financial institutions for granting such guarantees discounted to perpetuity using a ten-year Hong Kong Government bond rate, adjusted by an estimated credit spread, but capped at the maximum exposure of the financial guarantee. The discount rate used was 4.80 per cent at 31 December 2023 (31 December 2022: 5.19 per cent).

The carrying amounts of short-term financial assets and receivables (e.g., accounts receivable, financial assets measured at amortised cost and cash and cash equivalents) and short-term payables (e.g., accounts payable and other liabilities) approximated their fair values, and accordingly no disclosure of the fair values of these items is presented.

53. Financial Risk Management (continued)

(e) Offsetting financial assets and financial liabilities

Accounting Policy

Financial assets and liabilities are offset and the net amount reported in the consolidated statement of financial position when there is a legally enforceable right to offset the recognised amounts and there is an intention to settle on a net basis or realise the asset and settle the liability simultaneously. The legally enforceable right must not be contingent on future events and must be enforceable in the normal course of business and in the event of default, insolvency or bankruptcy of the company or the counterparty.

For base and ferrous metals futures and options contracts cleared through LME Clear, the asset and liability positions of LME Clear arising through its activities as a central counterparty are matched. Therefore, the same amounts are recorded for both assets and liabilities with the fair value gains and losses recognised, but offset, in the consolidated income statement.

The disclosures set out in the tables below include financial assets and financial liabilities that:

- are offset in the Group's consolidated statement of financial position; or
- are subject to an enforceable master netting arrangement or similar agreement that covers similar financial instruments, irrespective of whether they are offset in the consolidated statement of financial position.

53. Financial Risk Management (continued)

(e) Offsetting financial assets and financial liabilities (continued)

(i) Financial assets and financial liabilities subject to offsetting, enforceable master netting arrangements or similar agreements

	At 31 Dec 2023					
				Related amounts not offset in the consolidated statement of financial position		
Type of financial instruments	Gross amounts $m	Gross amounts set off in the consolidated statement of financial position $m	Net amounts presented in the consolidated statement of financial position[3] $m	Amounts subject to master netting arrangements $m	Cash collateral $m	Net amounts $m
Financial assets:						
CNS money obligations receivable[1]	**259,093**	**(237,663)**	**21,430**	**(3,727)**	**(5,264)**	**12,439**
Base and ferrous metals futures and options contracts cleared through LME Clear[2]	**1,189,427**	**(1,131,330)**	**58,097**	**(44,730)**	**(13,367)**	**-**
Other accounts receivable from Participants, ChinaClear, information vendors and hosting services customers, net of provision for impairment losses	**10,415**	**-**	**10,415**	**(1,657)**	**(339)**	**8,419**
Total	**1,458,935**	**(1,368,993)**	**89,942**	**(50,114)**	**(18,970)**	**20,858**
Financial liabilities:						
CNS money obligations payable[1]	**261,800**	**(237,663)**	**24,137**	**(5,369)**	**-**	**18,768**
Base and ferrous metals futures and options contracts cleared through LME Clear[2]	**1,189,427**	**(1,131,330)**	**58,097**	**(44,730)**	**-**	**13,367**
Other payable to ChinaClear	**15**	**-**	**15**	**(15)**	**-**	**-**
Total	**1,451,242**	**(1,368,993)**	**82,249**	**(50,114)**	**-**	**32,135**

53. Financial Risk Management (continued)

(e) Offsetting financial assets and financial liabilities (continued)

(i) Financial assets and financial liabilities subject to offsetting, enforceable master netting arrangements or similar agreements (continued)

	At 31 Dec 2022					
				Related amounts not offset in the consolidated statement of financial position		
Type of financial instruments	Gross amounts $m	Gross amounts set off in the consolidated statement of financial position $m	Net amounts presented in the consolidated statement of financial position[3] $m	Amounts subject to master netting arrangements $m	Cash collateral $m	Net amounts $m
Financial assets:						
CNS money obligations receivable[1]	228,859	(216,066)	12,793	(2,580)	(4,137)	6,076
Base and ferrous metals futures and options contracts cleared through LME Clear[2]	1,538,681	(1,457,976)	80,705	(52,974)	(27,731)	-
Other accounts receivable from Participants, ChinaClear, information vendors and hosting services customers, net of provision for impairment losses	10,758	-	10,758	(159)	(112)	10,487
Total	1,778,298	(1,674,042)	104,256	(55,713)	(31,980)	16,563
Financial liabilities:						
CNS money obligations payable[1]	231,593	(216,066)	15,527	(2,716)	-	12,811
Base and ferrous metals futures and options contracts cleared through LME Clear[2]	1,538,681	(1,457,976)	80,705	(52,974)	-	27,731
Other payable to ChinaClear	23	-	23	(23)	-	-
Total	1,770,297	(1,674,042)	96,255	(55,713)	-	40,542

[1] HKSCC currently has a legally enforceable right to set off certain CNS money obligations receivable and payable relating to the same Clearing Participant and it intends to settle on a net basis.

[2] LME Clear has a legally enforceable right to set off open positions of certain contracts within an individual member’s account for those contracts settling on the same date and it intends to settle on a net basis.

[3] For the net amounts of CNS money obligations receivable or payable and net fair value of base and ferrous metals futures and options contracts (i.e., after set-off), other accounts receivable and other payable due from/to customers, they do not meet the criteria for offsetting in the consolidated statement of financial position since the right of set-off of the recognised amounts is only enforceable following an event of default of the customers. In addition, the Group does not intend to settle the balances on a net basis.

53. Financial Risk Management (continued)

(e) Offsetting financial assets and financial liabilities (continued)

(ii) The tables below reconcile the "net amounts of financial assets and financial liabilities presented in the consolidated statement of financial position", as set out above, to the "accounts receivable, prepayments and deposits", "accounts payable, accruals and other liabilities" and "derivative financial instruments" presented in the consolidated statement of financial position.

	Accounts receivable, prepayments and deposits		**Derivative financial instruments (assets)**	
	At 31 Dec 2023 $m	At 31 Dec 2022 $m	**At 31 Dec 2023 $m**	At 31 Dec 2022 $m
Net amount of financial assets after offsetting as stated above:				
- CNS money obligations receivable	**21,430**	12,793	**-**	-
- Other accounts receivable from Participants, ChinaClear, information vendors and hosting services customers, net of provision for impairment losses	**10,415**	10,758	**-**	-
- Base and ferrous metals futures and options contracts cleared through LME Clear	**-**	-	**58,097**	80,705
Financial assets not in scope of offsetting disclosures	**1,272**	1,611	**30**	13
Prepayments	**215**	213	**-**	-
Amounts presented in the consolidated statement of financial position	**33,332**	25,375	**58,127**	80,718

	Accounts payable, accruals and other liabilities		**Derivative financial instruments (liabilities)**	
	At 31 Dec 2023 $m	At 31 Dec 2022 $m	**At 31 Dec 2023 $m**	At 31 Dec 2022 $m
Net amount of financial liabilities after offsetting as stated above:				
- CNS money obligations payable	**24,137**	15,527	**-**	-
- Other payable to ChinaClear	**15**	23	**-**	-
- Base and ferrous metals futures and options contracts cleared through LME Clear	**-**	-	**58,097**	80,705
Financial liabilities not in scope of offsetting disclosures	**3,697**	3,504	**3**	-
Amounts presented in the consolidated statement of financial position	**27,849**	19,054	**58,100**	80,705

54. Statement of Financial Position and Reserve Movements of HKEX

Accounting Policy

In HKEX's statement of financial position, investments in subsidiaries are stated at cost less impairment losses, if necessary. The results of subsidiaries are accounted for by HKEX on the basis of dividends received and receivable.

Investment in a subsidiary is tested for impairment upon receiving a dividend from that subsidiary if the dividend exceeds the total comprehensive income of the subsidiary concerned in the period the dividend is declared or if the carrying amount of the subsidiary in HKEX's statement of financial position exceeds the carrying amount of the subsidiary's net assets.

The financial statements of the controlled special purpose entity, The HKEX Employees' Share Award Scheme, are included in HKEX's financial statements.

Written put options to non-controlling interests initially recognised at fair value are accounted for as an investment in subsidiaries with a corresponding credit to financial liabilities at fair value through profit or loss. Subsequent changes in fair value of the financial liabilities are recognised in HKEX's income statement. Upon exercise of written put options by the non-controlling interests, the amount previously recognised as investments in subsidiaries are reversed with a corresponding decrease in financial liabilities at fair value through profit or loss. Written put options to non-controlling interests are included under financial liabilities at fair value through profit or loss on the statement of financial position.

54. Statement of Financial Position and Reserve Movements of HKEX (continued)

Statement of Financial Position of HKEX

	At 31 Dec 2023			At 31 Dec 2022		
	Current $m	**Non-current $m**	**Total $m**	Current $m	Non-current $m	Total $m
Assets						
Cash and cash equivalents	**1,232**	**-**	**1,232**	2,545	-	2,545
Financial assets measured at fair value through profit or loss	**6,357**	**441**	**6,798**	6,177	370	6,547
Financial assets measured at amortised cost	**6,504**	**1,653**	**8,157**	6,923	187	7,110
Derivative financial instruments	**10**	**-**	**10**	-	-	-
Accounts receivable, prepayments and deposits	**307**	**19**	**326**	337	21	358
Amounts due from subsidiaries	**1,231**	**11,817**	**13,048**	1,103	11,582	12,685
Interests in joint ventures	-	**114**	**114**	-	114	114
Intangible assets	-	**435**	**435**	-	429	429
Fixed assets	-	**333**	**333**	-	387	387
Right-of-use assets	-	**1,370**	**1,370**	-	1,446	1,446
Investments in subsidiaries	-	**16,931**	**16,931**	-	16,820	16,820
Total assets	**15,641**	**33,113**	**48,754**	17,085	31,356	48,441
Liabilities and equity						
Liabilities						
Financial liabilities at fair value through profit or loss	**267**	**-**	**267**	340	-	340
Derivative financial instruments	**10**	**-**	**10**	-	-	-
Accounts payable, accruals and other liabilities	**704**	**-**	**704**	614	-	614
Amounts due to subsidiaries	**642**	**-**	**642**	694	-	694
Taxation payable	**358**	**-**	**358**	356	-	356
Other financial liabilities	**11**	**-**	**11**	11	-	11
Lease liabilities	**238**	**1,215**	**1,453**	228	1,321	1,549
Provisions	**52**	**97**	**149**	53	63	116
Deferred tax liabilities	**-**	**80**	**80**	-	84	84
Total liabilities	**2,282**	**1,392**	**3,674**	2,296	1,468	3,764
Equity						
Share capital			**31,946**			31,918
Shares held for Share Award Scheme			**(1,009)**			(918)
Employee share-based compensation reserve			**373**			346
Merger reserve			**694**			694
Retained earnings			**13,076**			12,637
Equity attributable to shareholders of HKEX			**45,080**			44,677
Total liabilities and equity			**48,754**			48,441
Net current assets			**13,359**			14,789

Approved by the Board of Directors on 29 February 2024

Laura M CHA
Director

Nicholas C ALLEN
Director

54. Statement of Financial Position and Reserve Movements of HKEX (continued)

(a) Reserve movements of HKEX

	Employee share-based compensation reserve $m	**Merger reserve $m**	**Retained earnings $m**
At 1 Jan 2022	306	694	13,861
Profit attributable to shareholders	-	-	8,421
2021 second interim dividend at $4.18 per share	-	-	(5,290)
2022 first interim dividend at $3.45 per share	-	-	(4,366)
Unclaimed HKEX dividends forfeited	-	-	26
Vesting of shares of Share Award Scheme	(340)	-	(15)
Employee share-based compensation benefits	380	-	-
At 31 Dec 2022	346	694	12,637
At 1 Jan 2023	**346**	**694**	**12,637**
Profit attributable to shareholders	**-**	**-**	**10,793**
2022 second interim dividend at $3.69 per share	**-**	**-**	**(4,669)**
2023 first interim dividend at $4.50 per share	**-**	**-**	**(5,695)**
Unclaimed HKEX dividends forfeited	**-**	**-**	**23**
Vesting of shares of Share Award Scheme	**(372)**	**-**	**(13)**
Employee share-based compensation benefits	**399**	**-**	**-**
At 31 Dec 2023	**373**	**694**	**13,076**